Neutral Citation Number: [2010] EWCA Civ. 1317

Case No: B3/2009/2205

IN THE HIGH COURT OF JUSTICE
COURT OF APPEAL (CIVIL DIVISION)
ON APPEAL FROM THE HIGH COURT, QUEEN'S BENCH DIVISION
MR JUSTICE FOSKETT
HQ04X04168 / HQ07X0397

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 22/11/2010

Before :

LADY JUSTICE SMITH
LORD JUSTICE LEVESON
and
SIR MARK WALLER

- -

Between :

MINISTRY OF DEFENCE	**Appellant**
- and -	
AB and Ors	**Respondents**

- -
- -

Charles Gibson QC, Leigh-Ann Mulcahy QC, David Evans & Adam Heppinstall (instructed by The Treasury Solicitor) for the Appellant
Michael Kent QC, Catherine Foster, Mark James & Nadia Whittaker
(instructed by **Rosenblatt Solicitors**) for the Respondents

Hearing dates : 7 - 14 May 2010

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Approved Judgment

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Lady Justice Smith:

1. This is the judgment of the Court.

Introduction

2. Between 1952 and 1958, the United Kingdom carried out a series of atmospheric tests of thermonuclear devices in the region of the Pacific Ocean. All three branches of the armed forces took part and, in all, some 22,000 servicemen were involved. In these actions, many of which were begun on 23 December 2004, a group of 1011 claimants comprising mainly former UK servicemen but including a few civilians and some Fijian and New Zealand servicemen, (and in some cases their executors, administrators or dependents) claim damages for the adverse consequences to health which have allegedly resulted from exposure to ionising radiation deriving from the tests.

3. In general terms, the claimants allege that the defendant, now the Ministry of Defence (MOD), exposed them to fallout from the bombs and to food and drink contaminated by radioactive material. They allege that they have suffered injury as a result, in most cases many years after the exposure. The MOD denies liability, alleging that all proper precautions were taken to protect service personnel from exposure to ionising radiation and that, in most cases, the actual exposure of the men was no more than the background radiation they would have experienced in the United Kingdom. Also, the MOD alleges that the claimants cannot demonstrate that the conditions they have suffered from or are still suffering from were caused by their exposure to ionising radiation.

4. The defendant also seeks to rely on the provisions of the Limitation Act 1980. We will set out the relevant provisions of this Act later in this judgment. Because limitation was bound to be an important issue in most if not all the individual claims, the parties agreed, at an early stage, that there should be a hearing at which the limitation issues would be decided in ten individual lead cases. That hearing took place before Foskett J in January and February 2009 and he gave judgment on 5 June 2009. He held that all ten claims could proceed. Five of the lead claimants had not had knowledge of their claims (within section 14 of the Act) until less than three years before they began proceedings; they were entitled to proceed with their claims as of right. The other five, the judge held, were prima facie statute-barred but he exercised his discretion under section 33 of the Act in each case so as to disapply section 11 and to allow the actions to proceed.

5. In addition, at the hearing, and without issuing an application, the MOD invited the judge to strike out the claims under CPR 3.4 as showing no reasonable cause of action or to dismiss them summarily under CPR 24.2 on the ground that they have no reasonable prospects of success. The judge declined to do so in any of the ten lead cases.

6. This is the MOD's appeal from all aspects of that judgment, brought with permission of Foskett J.

Factual Background

7. We do not propose to set out the historical, factual or scientific background to the case in great detail. We commend the relevant passages of the judgment of Foskett J [2009] EWHC 1225 (QB) which appear to us to be thorough and accurate. We propose to explain only that which is essential to the decisions we have to make.

The tests

8. It has been known since the early 20th century that exposure to ionising radiation is potentially harmful. It has also been known that such radiation can be beneficial; for example radiotherapy is a recognised form of treatment for some forms of cancer. Following the detonation of bombs on Hiroshima and Nagasaki in 1945, the catastrophic effects of large doses of radiation came to be understood. In the ensuing years, the effects of lower levels of radiation caused by fallout have been studied. By the early 1950s, the generally accepted view was that there was no completely safe threshold for radiation exposure. There were, however, threshold limits indicating that which was thought to be acceptable.

9. In the period between October 1952 and September 1958, the British Government carried out 21 atmospheric nuclear tests. Some involved fission bombs and some fusion bombs. Some were exploded high above the Pacific Ocean; others were exploded at or a little above ground level. All of them will have given rise to radioactive fallout and also, at the time, to what is known as the 'prompt radiation' effect. The latter is very dangerous to those within its range. Initially, the claimants alleged that they had been exposed to prompt radiation but, at the start of the hearing before Foskett J, that allegation was abandoned because it was accepted that all the claimants had been too far away from any explosion to be so affected. So these cases are now concerned only with the effects of radioactive fallout. The type of bomb and the manner of its detonation will affect the amount of fallout which will result. These differences would be important in the assessment of each individual's radiation exposure. For present purposes, however, the differences are not of significance. We will assume that all the tests gave rise to some fallout.

10. Likewise, the times, dates and positions of the individual tests are not of central importance to the present appeal. It is, however, necessary to appreciate that the claimants were potentially exposed to fallout in different places and for different periods of time. Some tests (Operation Hurricane comprising one test in October 1952 and Operation Mosaic comprising two tests in May and June 1956) took place on the Montebello Islands, a group of uninhabited islands off the North West coast of

Australia. Operation Buffalo (comprising 4 tests in September and October 1956) took place at Maralinga on the Australian mainland. The Operation Grapple X, Y and Z tests took place near Christmas Island, an atoll in the Pacific Ocean.

11. The claimants, many of whom were national servicemen, carried out a wide variety of different functions and were deployed in the various test areas for differing periods of time. We will briefly describe the work of each when dealing with the ten lead cases.

Early interest in the possibility of harm to veterans

12. In medical and scientific circles it has been known since the 1940s that exposure to ionising radiation is capable of causing many forms of cancer although the risk was generally associated with fairly high levels of exposure. Until the 1980s, there was very little public awareness of the association between radiation and cancers and in particular of the possibility that British servicemen might have suffered ill effects as the result of such exposure during the nuclear tests. However, public interest in this possibility was aroused following a series of items on the BBC television news programme 'Nationwide' broadcast in December 1982 and early 1983. These ventilated the possibility that test participants were suffering unusual levels of ill health of various forms. This interest appears to have stemmed from publicity in Scotland generated by concerns raised in the Daily Record by Mr Kenneth McGinley who is now one of the lead claimants. Mr McGinley publicly claimed that he was one of a number of test veterans who had suffered ill health as the result of exposure to radiation.

13. Soon after this publicity, a group of veterans, all of whom had served in the Pacific during the tests, formed the British Nuclear Test Veterans Association (BNTVA). Mr McGinley was their Chairman. Their objectives were to gather information about their exposure and its likely effects, to press for further research and to seek financial recompense for any harm suffered by veterans, either by claiming for war pensions or by making claims for damages. Several of the individual claimants with whom we are concerned in this appeal were active members of BNTVA.

14. As a result of the publicity described above, in January 1983, questions were raised in Parliament about the possibility that the veterans had been injured by exposure to radiation. The MOD's attitude was that the men had not been exposed to excessive levels of ionising radiation. That remains its stance. However, the Government commissioned a health survey of the men involved in the tests, to be conducted by the National Radiological Protection Board (NRPB).

15. The survey sought to identify all the men who had been present in the area at the time of the tests - about 22,000 were identified - and to compare them with a similar sized cohort of men of similar backgrounds who had not attended the tests. The survey examined death registration documents for causes of death and also the incidence of cancer using the NHS Cancer Register. The report, issued in November 1988, disclosed that, among the participants, there was no excess mortality either from all causes or from all cancers. However, there was a significantly higher level of deaths from leukaemia and multiple myeloma among the participants than among the controls. The report expressed the view that this was probably a chance result, to be explained by the very low level of deaths from these causes among the control group. When the deaths among the participants were compared with the national mortality figures for those conditions, the excess among the participants was only slight. It was concluded that participation in the tests was not associated with any detectable effect on expectation of life or the risk of developing cancer. It added:

> "that there may well have been small hazards of leukaemia and multiple myeloma associated with participation in the programme, but their existence is certainly not proven and further research is desirable."

16. The NRPB carried out two more surveys and reported in 1993 and 2003 but the later conclusions did not differ significantly from the earlier ones. These studies provide very little support for the claimants in this action. However, the methodology and conclusions of all three surveys are now criticised by the claimants and in particular by Professor Louise Parker, the epidemiologist instructed on their behalf. Professor Parker holds a chair in Population Cancer Research at the Dalhousie University, Halifax, Nova Scotia. Because, as the judge rightly observed, it is not appropriate at the limitation stage to decide these disputed issues, there is no need for us to explain the basis of her criticisms. We merely note the surveys and the criticism of them. We also note that in 1998, Dr Sue Rabbitt Roff PhD of the Centre for Medical Education at Dundee University published the result of a survey she had undertaken for the BNTVA. She investigated the incidence of multiple myeloma among British and New Zealand test veterans and concluded that there was a marked increase in the incidence of this disease. She also found an increased rate of male infertility and a high rate of spina bifida in children of veterans. The methodology of this work is challenged by the MOD.

The Pearce case

17. Meanwhile, in 1985 an action for damages was begun by a veteran named Melvyn Pearce. He developed a lymphoma in 1978 and alleged that it had been caused by exposure to ionising radiation during the tests. The case was very fully pleaded by Mr Patrick Elias, as he then was. The allegations of negligence in *Pearce* were based on both exposure to prompt high dose radiation (i.e. as a result of proximate presence at one or more of the nuclear tests) and delayed, low dose, exposure (as a consequence of ingesting radionuclides from fallout while swimming in contaminated waters or eating contaminated fish). It was also alleged that the MOD had deliberately

exposed the men to radiation as an experiment to see what the effects were. That allegation became known as the 'guinea pig' allegation.

18. The MOD denied liability and sought to rely on immunity from suit provided by section 10 of the Crown Proceedings Act 1947. It did not plead the Limitation Act. The issue of immunity was treated as a preliminary issue and in due course went to the House of Lords which held in the plaintiff's favour: see *Pearce v Secretary of State for Defence* [1988] AC 755. The plaintiff was free to proceed to trial. However, soon afterwards, the claim was discontinued, because the plaintiff's team concluded that it could not prove a causal link between the exposure and the development of the cancer.

19. We mention this case not because it was likely to have come to the attention of the general public but because it would have sounded a warning to any lawyer who was consulted by a client seeking advice about the possibility of claiming damages for radiation exposure. Any solicitor making enquiries would learn of the discontinuance and this would have underlined the potential difficulty of demonstrating a causal link between the exposure and the disease or condition complained of.

20. From the mid-1980s onwards, there was publicity about various aspects of the link between illness and exposure to radiation during the tests. We do not intend to burden this judgment with a complete account of such publicity. The judge has dealt with it thoroughly and we will refer to his account as and when it becomes necessary for consideration of the knowledge of individual claimants.

The proceedings up to the hearing of the limitation issues

21. Although during the 1980s and 1990s a number of veterans developed diseases and conditions which were potentially attributable to exposure during the tests, no action other than Mr Pearce's was commenced. In 2002, several veterans instructed two different firms of solicitors (Alexander Harris and Clarke Willmott) with a view to bringing claims for damages. Legal Aid was granted for the investigation of the claims. On 23 December 2004, a claim form was issued on behalf of a large number of claimants. It was envisaged that a group litigation order would be made. However the claimants were not then in a position to draft Master Particulars of Claim and an extension of time by way of stay of four months was granted. That stay was later extended by consent when it became apparent that the Legal Services Commission was minded to withdraw its funding support. In August 2005, public funding was finally withdrawn on the ground that the legal merits were insufficient to justify the case being pursued at public expense. Thus, it was only after arrangements had been made for the matter to proceed on a conditional fee basis that the stay was lifted on 1 September 2006. By this time the conduct of the action had been transferred to solicitors Messrs Rosenblatt.

22. On 29 December 2006, Master Particulars of Claim were served. The allegations in this pleading both followed and expanded on the allegations made in the 1985 action

of Pearce. It was alleged that the claimants had been exposed to prompt radiation and to the effects of fallout, by inhalation of fallout in the atmosphere and by ingestion of contaminated food and water. Also, as in Pearce, it was alleged that servicemen had been deliberately exposed to radiation and had been used as 'guinea-pigs'.

23. The allegations in the Master Particulars of Claim ranged widely. It was alleged that the tests had been planned "with disregard for the physical consequences or with the intent of exposing the Claimants to the potentially devastating consequences of ionising radiation" (paragraph 4). It was said that the purpose of many of the tests was "to examine the human limits or thresholds of the biological harm caused by ionising radiation" (paragraph 12). Negligence was based on exposure to ionising radioactive particles both external and internal, the latter by inhalation and/or ingestion (paragraph 13.1); failure to warn or to protect from exposure (including failure to prevent swimming, bathing in water or consuming seafood which the defendant knew or ought to have known would be contaminated with radioactive fallout (paragraphs 13.7-13.10); failure to monitor the health of claimants either during or following the tests (paragraph 13.15). There were also allegations both of fact and of negligence specific to a number of detonations during the individual operations, namely Hurricane, Mosaic, Buffalo and Grapple Z.

24. The pleading then alleged that the negligence and breach of duty was the 'direct and proximate cause of the injury suffered by each individual claimant' (paragraph 14) and later followed the traditional approach, asserting that 'by reason of the negligence the claimants have suffered pain, injury, loss and damage' (paragraph 99). A variety of disorders were specified and the mechanism of causation was described as the destruction or derangement of the molecular integrity of human chromosomes, the evaluation of which was assisted by an 'mFISH assay'. This was a reference to a study or assay carried out by a team of scientists led by Dr R.E. Rowland of the New Zealand Institute of Molecular BioSciences. This study was completed in 2007 and the results were published as 'Elevated chromosome translocation frequencies in New Zealand nuclear test veterans' by Wahab et al in Cytogenet Genome Res 121:79-87 (2008). Using a technique called 'mFISH', which it is not necessary to describe in this judgment, the team had examined the damage to the chromosomes of 49 New Zealand veterans who had served on board two frigates (HMNZS Pukaki and HMNZS Rotoiti) positioned between 20 and 150 nautical miles upwind from certain tests which were part of Operation Grapple.

25. It was pleaded that the assay established the radiogenicity of an illness by determining the frequency of movements of part of a chromosome onto a different chromosome (known as translocations) and had found that exposure to ionising radiation was the only known biologically plausible source sufficient to cause elevated levels of translocations in human genetic material. Thus the assay was said to be a highly reliable and specific bio-indicator of genetic damage caused by exposure to ionising radiation.

26. It may be helpful at this stage to summarise the essential findings of the Rowland study or assay. It was found that the 49 crew members examined had on average

three times as many chromosomal aberrations than 50 controls who had not taken part in the tests. This finding was regarded as significant and probably attributable to long term genetic damage resulting from ionising radiation during and after the nuclear test. An attempt was made to estimate the radiation dose from the level of translocations and, for the veterans, the estimated doses varied between zero and 431 milliSieverts (mSv). The median estimated dose was about 170 mSv. This was far in excess of the median estimated dose of the controls. It is important to note that the study made no claim for any correlation between the raised levels of chromosomal aberrations and the incidence of any illness. Nor is it suggested in this litigation that chromosomal aberrations amount to an injury such as could found a cause of action.

27. Although this was not presaged in the pleading, the claimants now rely on the study as a means of demonstrating that they must have been exposed to inappropriate doses of radiation. If the claims go to trial, they will seek to demonstrate that they must have had a similar (or possibly greater) radiation dose than the New Zealanders because they were closer to the blasts than the crews of the frigates and were in the affected areas for longer. If this method of assessment of radiation dose is to be relied on, the particular circumstances of each claimant's exposure will be a matter of some importance.

28. Served with the pleading was a preliminary expert report from Professor Karol Sikora, Medical Director of CancerPartnersUK. This was a very general report explaining the mechanism by which ionising radiation can cause the development of certain cancers and other pathologies. It did not comment on the mFISH assay but observed that ionising radiation is a "proven carcinogen" and that there is "good evidence" that those exposed to radiation have "a cancer increased risk"; he also noted other diseases "caused by ionising radiation". Although he mentioned the ingestion of radioactive particles through swimming, drinking or touching contaminated water and via the food chain, he appears to have had in mind prompt exposure when he concluded:

> "On the balance of probability those exposed to increased doses of radiation are more likely to develop one or more of the conditions listed above later in life. The existence of a safe threshold is in my opinion immaterial to those witnessing above ground atomic bomb tests as the doses received would have exceeded any reasonable estimate of a safe dose."

29. On 10 July 2007, a Group Litigation Order (GLO) was made. The Master Particulars of Claim was to serve as the Group Particulars of Claim. The defendant was to serve a response to that pleading in summary form only. There was to be a preliminary hearing to determine the issues of limitation in ten lead cases, to be selected by both parties (five each), such selections to be made by April 2008. The claimants were ordered to file and serve individual schedules setting out the individual facts and matters relied on for the purposes of limitation in the lead cases. The defendants were to respond with points of defence on limitation together with counter-schedules on the individual lead cases. There was to be mutual disclosure of documents relevant only to the issue of limitation. We will return to the issue of the scope of the disclosure

given later in this judgment. The claimants were ordered to file and serve any evidence which would be relied on for the purposes of limitation and the defendants were to do likewise. In the event, the selection of the lead cases was not complete until August 2008.

30. Meanwhile, in pursuance of the GLO, on 21 January 2008, a Summary Defence was served which denied causation and specifically responded to Professor Sikora. It summarised the position on causation in this way (at paragraph 88):

> (a) It is admitted that ionising radiation is capable of causing leukaemia (excluding chronic lymphatic leukaemia) and some other cancers … and radiological burns in individuals exposed to high levels of ionising radiation. Save as so admitted, the Claimants are required to prove that exposure to ionising radiation is capable of causing the wide range of conditions alleged in the Master Particulars of Claim and/or the report of Professor Sikora.
>
> (b) On the basis of the totality of the scientific evidence available and pending investigation of any individual cases, it is denied that the Claimants can establish to the required standard of proof that the Claimant Participants' individual conditions were in fact caused by exposure to ionising radiation as alleged or at all.
>
> (c) In light of firstly, the existence of other possible exposures to ionising radiation apart from the tests (eg medical radiation, cosmic radiation, exposure to radon etc); secondly, the generally low levels of exposure as a result of the tests; and thirdly, the existence of other possible causes of the generally common health conditions or diseases which are the subject of the claims (particularly in old age), it is denied that the Claimants can establish to the required standard of proof that those conditions or diseases would not have been suffered but for their participation in the nuclear tests."

31. Points of Claim in relation to limitation were served on 28 March 2008. It was contended that some of the claimants had not had knowledge that their injuries were significant until a date within 3 years of the issue of proceedings. Of those who were aware of a significant injury, it was said that they were not aware that their injuries were attributable to the acts or omissions of the defendants until a date within 3 years of the issue of proceedings. Reliance on section 33 was pleaded.

32. In relation to the issues of causation and attributability, it was accepted (at paragraph 3.4(2)(i)(b) of the Points of Claim) that all the conditions and injuries in respect of which the veterans were claiming could occur without exposure to radiation. The claimants pointed out that the MOD had always challenged the causative link, that Mr Pearce had withdrawn his claim due to causation problems and that the Pension

Appeal Tribunal had refused to grant war pensions in most, if not all, cases. Thus, it was contended that it was only with the availability of the results of the Rowland study in 2007 that "scientific evidence became available that indicated that the conditions suffered by the veterans were attributable to exposure during the tests". For the sake of completeness, we mention that, in response to a request for further information, the claimants said that they had some advance information from Dr Rowland in late 2002 when he told the claimants' solicitors that he believed that his research was "going to show very positive results for the veterans".

33. In paragraph 3.4(2) it was pleaded:

> "(i) the claimants' knowledge of the existence of scientific evidence to demonstrate that their injury was attributable to the acts or omissions of the Defendant did not arise until after the commencement of proceedings and for that reason the claims are not statute barred".

And at (j) it was pleaded, somewhat delphically, that:

> "In the event that the Defendant may allege that the instruction of solicitors in early 2002 and/or the issue of proceedings in 2004 indicates that such knowledge arose before the issue of the Rowland report, the Claimants will contend that these events are explicable not solely by reference to the existence of knowledge on the part of the Claimant but also by reference to the need for caution when dealing with events that occurred many years ago."

34. Under the heading 'Knowledge of exposure' it was accepted that all the veterans knew that they had participated in the tests. However, it was noted that the defendant had throughout contended and maintained that the levels of actual exposure were not such as gave rise to foreseeable risk of harm. It was pleaded that it was only when it came to the veterans' knowledge that the defendant's contention was likely to be false that they acquired the knowledge that their injuries were attributable to the acts and omissions complained of. Several items of information were relied on as supplying this knowledge although no dates were given for the availability of most of them.

35. In essence, the claimants were saying that they did not have knowledge that their injuries might be attributable to the acts or omissions of the defendant until they had the evidence necessary to show at least an arguable case on exposure above the level of exposure which the defendant was contending for. This is an important factor as will become apparent when we reach the judge's approach to the question of knowledge.

36. As to reliance on section 33 of the Act, the claimants pleaded that such delay as had occurred, which in most cases was not great, was explicable by their funding difficulties and by the defendant's own attitude of denial. It was said that the cogency

of the evidence which the defendant might wish to rely on was not greatly reduced by reason of any delay; the defendant had kept all the relevant documents. Moreover, it would have investigated similar allegations in the case of Pearce. Finally, it was contended that, as a number of the claims were not statute-barred, any prejudice to the defendant in having to face additional claims would be reduced accordingly.

37. On the following day, 29 March 2008, after a Case Management Conference (CMC), the order (eventually date stamped 11 April) gave permission for the defendant to serve expert evidence in the fields of radiobiology, epidemiology and nuclear physics. Service was to take place by 30 June 2008, later varied to 31 July. The issue of admissibility of such evidence was adjourned for further argument to take place at the next CMC.

38. On 10 April 2008, the Treasury Solicitor informed Rosenblatt that it intended to serve expert evidence going to the weakness of the claims and, in particular, that issues of prejudice to be considered under section 33 of the Act would include a contention that "the overall merits of the claim, particularly in relation to causation, were weak in any event".

39. Limitation Points of Defence were served in May 2008. This was a long and detailed pleading but, in essence, it alleged that the claimants had, for many years, had actual or constructive knowledge of the facts relevant to their cases. As to section 33, it claimed that the passage of half a century had 'fatally and irrevocably eroded the cogency of the evidence' *inter alia* because many of the senior civilian and military figures whom the defendant would wish to call are now dead or so old that they cannot be expected to remember events with clarity. Further, the pleading again put causation in issue and, in particular, challenged the weight that could be placed on the Rowland Report.

40. On 2 June 2008, Amended Points of Claim on the limitation issues were served but the changes are not relevant for present purposes.

41. On 10 July 2008 the MOD served the first witness statement of Mr Jeffrey Mitchell explaining how it had complied with its duty of disclosure pursuant to the order made on 10 July 2007. There is no need to burden this judgment with the detail of the process. It is apparent that the MOD had taken its duties of search and disclosure seriously as one would expect. This statement dealt with generic disclosure relating to limitation issues. It explained the system adopted for the identification of relevant documents. Thorough searches were conducted for potentially relevant documents and a database was prepared named 'Merlin'. For the actual disclosure, the database had been searched using various key words. Although the order required disclosure limited to documents relevant to the limitation issues, it is apparent from the key words used that the search ranged widely, not least because the MOD intended to contend that the claims were weak on liability and causation and should not be allowed to continue.

42. Mr Mitchell's second witness statement dated 23 September explained the system of disclosure in respect of the ten lead cases which had not been identified until 15 August.

43. On 26 September 2008, the claimants provided answers to a request for further information served by the defendant in May 2008. In response to a request to identify any other scientific papers relied on besides the work of Professor Rowland, a number of earlier papers were cited as providing the background against which Professor Rowland's research had been conducted. It was confirmed that the case on causation remained that the injuries had been suffered "by reason of exposure to radiation during the explosions themselves and/or ingestion of radiation during the aftermath of the explosions". In response to a request to identify those of the many injuries pleaded in the Master Particulars of Claim which it was alleged the Rowland Report showed on the balance of probabilities were attributable to exposure to ionising radiation during the tests (rather than to other causes), the response was:

> "The importance of the Rowland report is that it shows (on the balance of probabilities) that, despite the frequent and repeated denials of the Defendant, the New Zealand veterans (and, by extension, the British, Australian and Fijian veterans) were exposed to significant ionising radiation during the tests because of the higher frequencies of chromosomal translocations compared with a non-exposed but otherwise matched group. Further it was well-established (long before Dr Rowland's report) that ionising radiation can cause certain illnesses, including (but not limited to) cancers. It follows that, by exposing the participants to ionising radiation, the Defendant materially increased the risk of the participants suffering the illnesses from which they have actually suffered."

44. Although the Request sought to identify which of the illnesses identified in the claim were said to be caused by ionising radiation, the response declined to plead to each and every illness but asserted that "the Claimants will be setting out their case on the lead … cases and producing expert evidence on this issue".

45. By this time, the lead cases had been identified and Lead Case Schedules were served at the same time as the Further Information. These schedules specified which conditions each claimant was alleging had been caused by radiation. These included cataracts, infertility and a wide range of cancers, all of which can be caused by radiation. They also included many other conditions which are not usually thought of as being caused by radiation such as osteoarthritis, depression, lethargy, loss of concentration and memory loss, colitis, renal failure and loss of teeth. The schedules were challenged by the defendant as lacking in particularity. Also, counter-schedules (served by the defendant on 10 October 2008) made it clear that causation was in issue and claimed that, there being no individual medical evidence, the claims were bound to fail and should be struck out.

46. On 20 November 2008, lead case factual and expert evidence was exchanged. The claimants served witness statements from each lead claimant and expert reports from Professor Louise Parker, who dealt mainly with the studies published by the National Radiological Protection Board, Professor Carmel Mothersill, who is Professor of Radiobiology in the Department of Medical Physics and Applied Radiation Sciences, McMaster University, Hamilton, Ontario, Dr Patrick Regan, Reader in Nuclear Physics at the University of Surrey and Professor Brenner of Columbia University, New York. Evidence served by the defendant included a generic witness statement of Mr Nicholas Crossley, the solicitor from the Treasury Solicitor's department with conduct of the action on behalf of the MOD. This runs to some 270 pages and is a veritable mine of information about how the MOD would put its case. It included information about the witnesses who would no longer be available to the MOD as the result of the long delay between the tests and the trial of the action. The MOD also served lead cases witness statements and generic expert reports from Dr John Lilley (a nuclear physicist), Professor John Kaldor an epidemiologist of the University of New South Wales, Professor Tomas Lindahl, until 2005 the Director of Cancer Research UK and Dr Firouz Darroudi, a cytogeneticist of the University of Leiden in the Netherlands.

47. We will summarise the effect of the expert opinions in the next section of this judgment.

48. In addition, on the same day, 20 November 2008, the defendant served medical reports dealing with the causation of the injuries alleged by each of the lead claimants. The service of these individual reports led to an exchange of correspondence in which Messrs Rosenblatt complained of having been 'ambushed'. They also said that the Treasury Solicitor's complaint of lack of particularity had been addressed by the served evidence and, by letter dated 5 December 2008, contended that, at the hearing of the limitation issues, "the court does not need to, indeed cannot, resolve the issue of causation". The letter went on:

> "For the sake of completeness, the claim … that any of the individual Lead Cases are doomed to fail because the Claimants are unable to establish causation is refuted. You are in receipt of cogent and compelling expert evidence in support of the claims and establishing causation."

It may be that the claimants had in mind the evidence of Professor Sikora, as they had not at that time abandoned their allegations of prompt exposure. However, if not, it appears that they must have been intending to assert that the evidence of Professors Mothersill and Parker (to the effect that exposure had increased the risk of injury) was 'cogent and compelling' evidence of causation.

49. On 12 December 2008, at a pre-trial review before Foskett J, the claimants were given permission to serve expert evidence in relation to individual lead cases but, save for a report dated 8 January 2009 from Dr John Moore-Gillon, a consultant chest physician with extensive experience of medico-legal work, no further evidence was served. Dr

Moore-Gillon expressly stated in the opening section of his report that he had been asked to consider the general medical evidence as it related to the ten lead cases. He was asked to assume that the claimants had been exposed to low doses of ionising radiation during the atomic tests. He was particularly asked to deal with the date by which the ten claimants would have been advised by a reasonably competent medical practitioner that their various medical conditions were, or could have been caused or contributed to by exposure to radioactivity during the tests. He offered a generic answer to this question rather than a different answer for each individual claimant. His conclusion was that:

> "For the majority of the conditions complained of, I think it extremely unlikely that, until very recently, Claimants would have at any time been told that their conditions were potentially linked with radiation, or have received overt medical support from their treating doctors for their own belief that they were so linked."

He continued:

> "There are a minority of medical conditions complained of where a potential causal link has in the past been better established. Principally, these comprise some malignant (ie "cancerous") conditions and cataracts of the lens of the eye.
>
> For these conditions, the link has been with radioactive exposure greater than that which has been generally regarded as having occurred in these Claimants."

He concluded:

> "These Claimants could not have contemplated litigation, with a reasonable expectation of medical and scientific support for a causal link between the conditions of which complain and the atomic tests in which were involved, before about the present time."

It seems to us that this evidence will be relevant only to the section 33 question of whether the claimants had acted reasonably in delaying the commencement of proceedings until 2004. It does not appear to help on the issue of causation. Dr Moore-Gillon's opinion is couched in essentially negative terms. He does not say that medical support for a causal link will or should be forthcoming at the present time.

50. During November and December 2008 Rosenblatt made a number of requests for specific discovery of documents. The requests were couched in terms of some urgency. The Treasury Solicitor dealt with these in various ways: sometimes by pointing out that the documents had already been disclosed, sometimes by producing the documents requested and in others either refusing disclosure on the grounds of irrelevance or delaying disclosure until security procedures were complete.

51. When written openings were exchanged shortly before the hearing, it became clear that the claimants' case, in relation to knowledge, was that the Rowland study had for the first time presented good scientific evidence to demonstrate that many of those who participated in the tests had had significant exposure to ionising radiation. Also, in relation to causation, the claimants' case was that they had developed injuries in respect of which there were a number of risk factors each of which was likely to have played a material part in causation but that "medical science was unable to say which of those risk factors as a matter of probability caused the development of the condition". The claimants said that they were to rely on *Bailey v Ministry of Defence* [2008] EWCA Civ 883 to prove causation on the basis that the cause (where, for example, the alternative cause was smoking) could be cumulative with a multiplicative effect. We will return to and discuss the case of *Bailey* later in this judgment.

52. In summary, therefore, in the run up to the limitation hearing, it was clear that, in addition to the usual issues relating to knowledge (under sections 11 and 14) and the matters to be taken into account under section 33, the defendant was going to contend that the claimants' cases were very weak on causation. This it regarded as relevant and important in two respects: first because when deciding whether to exercise the discretion under section 33, the court is entitled to take into account a broad view of the merits of the claim and, second, because the defendant intended to ask the judge, of his own motion, to dismiss the claims summarily even if they were not statute-barred. It should be noted however that the defendant had not issued an application for summary judgment under CPR 24.

Summary of the generic expert evidence

53. For the purposes of this judgment, it is not necessary to describe the content of the expert reports in any detail. They were not tested in cross-examination and the judge did not have to assess which experts were most likely to be accepted at trial. Accordingly, we will only outline the gist of each report.

The nuclear scientists

54. We will deal first with the reports of the two nuclear scientists, Dr Regan for the claimants and Dr Lilley for the defendant. On one issue, these experts appear to have been in eventual agreement. Dr Lilley asserted that the veteran claimants had been too far away from any explosion to have been affected by prompt radiation. In opening the case to Foskett J, Mr Browne QC who then represented the claimants, abandoned the pleaded case that any injury to these claimants had been caused by the immediate or prompt effects of radiation. Thus the case as advanced before the judge was different from that which Professor Sikora appeared to have had in mind when he expressed the view that the safe threshold was immaterial to those witnessing above ground atomic bomb tests.

55. Dr Lilley's reports dealt mainly with prompt radiation and, as we have said, such exposure is no longer relied on. As to fallout, his understanding was that the veterans had always been upwind of the explosions. Indeed, his reports appear to be premised on the assumption that all proper precautions had been taken. He was of the view that, if that were so, the men would not have received measurable doses of radiation. However, he considered the positions of the New Zealand frigates, Pukaki and Rotoiti, whose crews provided the veterans whose chromosomes were examined by Dr Rowland's team. Dr Lilley asserted robustly that the crews of those ships could not have received any measurable dose of radiation either from the prompt effect or from exposure to fallout. Dr Rowland's study suggests otherwise.

56. Dr Regan was asked to report on the development of scientific knowledge relating to the effect of radiation and causation. His report is highly technical and among other things explains the ways in which radiation effects can be calculated or estimated. He considers and is critical of the MOD's provisions for monitoring the exposure of personnel (including exposure to internal radiation) and for the gathering of information about contamination in the areas affected by fallout. He disputes the MOD's contention that there was no need to monitor internal dose because external dosimetry was adequate to determine both external and internal exposure. He considers the size and type of each explosion and expresses his views as to the likely fallout. These opinions are however qualitative rather than quantitative. He does not attempt an estimation of the likely total exposure of any individual or group of individuals, which he says is virtually impossible. However, we understand that the claimants' case is that their exposure was not high, rather it was low (see Dr Moore-Gillon's instructions above) but significant. Save that they seek to compare themselves favourably with the crew of the New Zealand frigates, the claimants do not attempt a quantitative estimate of their likely exposures.

57. Dr Regan made the point that the levels of exposure which were regarded as acceptable in the 1950s were very much higher than those which are regarded as safe today.

58. There is therefore a significant dispute about breach of duty. Dr Regan points to breaches of duty but Dr Lilley does not deal with these; he merely assumes that things were properly done. It appears to us that the claimants have some evidence to mount an attack on the MOD's assertion that they did all that could have been expected of them at the time.

The epidemiologists

59. Each side instructed an epidemiologist. Professor Kaldor for the MOD reported first. He had been asked to deal with issues of causation. He began by stating his understanding that it would be necessary for a claimant to prove on the balance of probabilities that his conditions had been caused by ionising radiation. He took that to mean that, if relying on epidemiological studies, the claimant would have to show that exposure to ionising radiation gave rise to a greater than twofold relative risk.

The point he was making was that an increase in risk of less than twofold was not sufficient to prove causation on the balance of probabilities. While accepting that very low levels of exposure are potentially capable of causing cancers, he said that the available epidemiological results, based mainly on the work of the Atomic Bomb Casualty Commission and the Radiation Effects Research Foundation which had undertaken life time follow up of the survivors of the Hiroshima and Nagasaki bombs:

> " have largely focussed on cancer, which has consistently been found to occur at increased levels following exposure to moderate and high levels of ionising radiation (i.e. generally well above 500 mSv, apart from leukaemia, which is associated with lower exposure levels)."

60. He notes that for leukaemia, a relative risk of 2 has been found following exposure to about 200mSv. He also notes that there is no study which conclusively demonstrates an increase in the incidence of any disease other than cancer at less than 100mSv.

61. Professor Parker, the claimant's epidemiologist, undertook as her main task a critique of the three reports produced by the NRPB in 1988, 1993 and 2003. We have already noted the results of these studies and that Professor Parker is critical of the methodology and conclusions. There is no need to explain why; the validity of her criticism is a matter for a trial judge. Professor Parker also criticised the epidemiological work on which Professor Kaldor had relied.

62. Thus, as between the epidemiologists there are disputed issues as to the reliability of the studies presently available. These studies suggest that the levels of radiation to which these veterans might have been exposed have not been demonstrated to cause cancer or indeed any other illness. The MOD relies on them; the claimants criticise them as unreliable. There is also a dispute as to the reliability of the work of Dr Rabbitt Roff which reported an excess of multiple myeloma among test veterans.

The radiobiologists

63. As mentioned above, the claimants relied on a report from the radiobiologist Professor Mothersill. This purported to deal with causation. It is clear from the introduction to her report that her instructions were to "say whether or not, in (her) opinion, the veterans' exposure to ionising radiation during the atomic bomb tests is likely to have materially increased the risk (of harm)." She had not apparently been asked to say whether the exposure had, on the balance of probabilities, caused the various illnesses complained of.

64. She explained that ionising radiation causes damage through "genomic instability" and "bystander effects". The former refers to "an increased probability of or tolerance of mutations in the genome which is transmissible to progeny of cells and to future generations of individuals" and that "low doses of radiation are now thought to cause delayed or persistent damage to chromosomes." The latter can arise when, for

example, chromosome or DNA damage occurs in cells not directly irradiated but as an effect upon those cells of other nearby cells irradiated with low doses of radiation. She expressed her conclusion in these terms:

> "It was well established (long before Dr Rowland's report) that ionising radiation can cause certain illnesses, including (but not limited to) cancers. It follows that, if, as Dr Rowland found, the veterans were exposed to ionising radiation, then this materially increased the risk of the veterans suffering the illnesses from which they have actually suffered."

Dr Mothersill considered each of the claimants and their various illnesses and, in each case, expressed the view that exposure to radiation had increased the risk of the occurrence of that illness. She did not attempt to quantify the extent of the increased risk.

65. Dr Lindahl's first report ranges widely and provides useful explanatory material but in so far as the contested issues are concerned, he subscribes to the results of the NRPB surveys, which he considers were well conducted. He opines that there is no epidemiological evidence to show an excess of cancer resulting from low doses of radiation. He is not critical of the conduct of the Rowland study although he regards the conclusions as unreliable; the raised levels of translocations in the crew members might well have been due to exposure to other substances which the controls had not been exposed to. He considers that the attempt to quantify the dosage retrospectively is unreliable and he underlines the point that, even if the New Zealand veterans' high level of translocation is due to radiation, there is nothing in the study which seeks to correlate those findings with any form of ill health. He is of the view that, even if low level exposure is proved, the claimants cannot show that that is the cause of their illnesses.

66. In a later report, Dr Lindahl comments upon the opinions of Professor Mothersill. He is extremely critical of them. We say no more about that as the judge, very properly in our view, declined to go into or in any way evaluate those criticisms and approached Professor Mothersill's evidence on the basis that, unless and until challenged at trial, Professor Mothersill's views were entitled to the same respect as those of all the other experts.

The cytogeneticists

67. Finally we turn to the cytogeneticists who commented upon validity and utility of the work of Dr Rowland. Dr David Brenner, Professor of Radio-biophysics at the Columbia University Medical Center, New York reported for the claimants. He is of the view that the Rowland study:

> "provides extremely strong evidence that the nuclear test veterans have a statistically significantly increased burden of chromosome aberrations, compared to the controls. The

> measured aberration rates in the matched control group were what one would expect for individuals of their age – indicating that the methodology, precision and accuracy of the 2008 mFISH study was appropriate."

He added, however, that it did not necessarily follow that the increased levels of aberration were due to radiation exposure. There were other substances, to which these seamen might have been exposed, which could have produced a similar effect. (In that he agreed with Dr Lindahl.) He considered, however, that radiation was the most likely cause of the increased level of aberration and he expressly approved the estimates of exposure produced in the Rowland study. His view is that the excess chromosomal aberrations are a 'bio-marker' of past exposure to radiation. He notes that the study does not claim that the aberrations measured were the direct cause of any tumour. He, like Dr Lindahl, stressed that no claim is made in the Rowland study that the men with high levels of chromosomal damage have suffered any particular form or degree of ill health.

68. Dr Firouz Darroudi, of the Leiden University Medical Centre in the Netherlands, the cytogeneticist instructed by the defendant is of the view that the mFISH technique used by Rowland cannot yet be regarded as a reliable method for the retrospective assessment of radiation dose although he accepted that the recent studies give reasons to be optimistic as to its use. Moreover, he is critical of some particular aspects of the Rowland methodology, asserting that they render the results of uncertain reliability. It follows, in his view, that the estimates of past exposure are unreliable and overestimated.

69. It is not appropriate at this stage of the action to embark upon any discussion or analysis of the merits of these disagreements. We note only that there appears to be a real issue as to the reliability of the retrospective dose estimates on which the claimants seek to rely. Also it appears to be agreed that, at its highest, the presence of increased levels of translocations is only a bio-marker of past exposure to ionising radiation and tells us nothing about the causation of any form of illness.

Strike out and summary judgment

70. As we have said, the judge declined to strike out the lead claims under CPR 3.4 or to give the defendant summary judgment under CPR 24. We consider that he was right to do so, although our reasons for reaching the same conclusion are different from his.

71. CPR 3.4(2) permits the court (either on application or of its own motion) to strike out a statement of case if it appears to the court –

> (a) that the statement of case discloses no reasonable grounds for bringing or defending the claim;

(b) that the statement of case is an abuse of the court's process or is otherwise likely to obstruct the just disposal of the proceedings; or

(c) that there has been a failure to comply with a rule, practice direction or court order.

In our view, this power is intended to be exercised on examination of the pleading itself, not after examination of the evidence supporting it. It is open to the court to raise the issue of strike out under this rule of its own motion. It should not be necessary and is not appropriate for evidence to be served in support of or opposition to an application to strike out under this rule. Moreover, provided that the party whose pleading is under attack has sufficient time to consider the arguments raised, it does not seem to us that the lack of a formal application need deter the court from making a decision.

72. The pleadings in the present case do disclose reasonable grounds for bringing the claim; they are not an abuse of the court's process and there has been no failure to comply with any rule etc. In our view it would be wholly inappropriate to apply rule 3.4(2) to these claimants' cases.

73. The defendant also invited the judge to give it summary judgment in respect of all ten lead cases pursuant to CPR Part 24(2) on the ground that the claimants have no real prospect of succeeding. In this case also, the defendant did not issue an application notice, putting the issue formally before the court. However, the defendant had made clear its intention to invite the court to make an order under this rule and the claimants cannot claim that they were taken completely by surprise. In particular, they knew that the defendant was going to allege that the claims could not succeed on causation. They received the individual medical reports obtained by the defendant, which, in each case, opined that the claimant's illness could not, on the balance of probabilities, be attributed to exposure to radiation. They complained that these reports had 'ambushed' them. These individual reports were served not long before the limitation hearing and, although the claimants were given the opportunity to serve individual reports, they claim to have had little time in which to do so. In fact, Rosenblatt had known the identity of the lead claimants since mid-August and we would have thought that, as solicitors experienced in this field of legal work, they would immediately have commissioned medical reports dealing with causation in the ten lead cases. In the event, they instructed Dr Moore-Gillon whose report, as we have already observed, did not assist the claimants in proving causation.

74. The judge was prepared to consider the application for summary judgment notwithstanding the fact that no application had been issued. He refused to give the defendant summary judgment because he thought that the claimants' cases were arguable on causation. He said that there were difficulties for the claimants but that their claims were not bound to fail.

75. We take a different approach but would also refuse summary judgment. We defer consideration of the issue of causation until later. We are of the view that we should refuse summary judgment on purely procedural grounds. We recognise that the claimants had been informally put on notice that causation would be raised in an application for summary judgment. Further, we acknowledge that, even without such informal notice, it behoved the claimants to prepare themselves to show the general merits of their claims in case the judge had to consider whether to exercise his discretion under section 33. But notwithstanding those two factors, we consider that we should not grant summary judgment in the absence of a formal application. The claimants should have been left in no doubt that they faced summary judgment if they could not show an arguable case on causation. It was simply not appropriate in a case of this importance and complexity to place on the judge the decision as to whether or not to exercise the jurisdiction under Part 24 of his own motion. Thus, because of the lack of formal notice, we consider that it would not be fair to give summary judgment against the claimants under this rule. We dismiss the grounds of appeal relating to the judge's decision under Part 24.

The judge's approach to limitation

76. We turn now to the judge's approach to the issues of limitation which lie at the heart of this appeal. It is convenient at this stage to set out the relevant provisions of the Limitation Act 1980.

> "Section 11:
>
> (1) This section applies to any action for damages for negligence, nuisance or breach of duty (whether the duty exists by virtue of a contract or of provision made by or under a statute or independently of any contract or any such provision) where the damages claimed by the plaintiff for the negligence, nuisance or breach of duty consist of or include damages in respect of personal injuries to the plaintiff or any other person.
>
> …
>
> (3) An action to which this section applies shall not be brought after the expiration of the period applicable in accordance with subsection (4) or (5) below.
>
> (4) Except where subsection (5) below applies, the period applicable is three years from –
>
> (a) the date on which the cause of action accrued; or
>
> (b) the date of knowledge (if later) of the person injured.

(5) If the person injured dies before the expiration of the period mentioned in subsection (4) above, the period applicable as respects the cause of action surviving for the benefit of his estate by virtue of section 1 of the Law Reform (Miscellaneous Provisions) Act 1934 shall be three years from –

(a) the date of death; or

(b) the date of the personal representative's knowledge; whichever is the later …

Section 12:

(1) An action under the Fatal Accidents Act 1976 shall not be brought if the death occurred when the person injured could no longer maintain an action and recover damages in respect of the injury (whether because of a time limit in this Act or in any other Act, or for any other reason

….

(2) None of the time limits given in the preceding provisions of this Act shall apply to an action under the Fatal Accidents Act 1976, but no such action shall be brought after the expiration of three years from –

(a) the date of death; or

(b) the date of knowledge of the person for whose benefit the action is brought; whichever is the later.

(3) …

Section 14:

(1) … in sections 11 and 12 of this Act references to a person's date of knowledge are references to the date on which he first had knowledge of the following facts –

(a) that the injury in question was significant; and

(b) that the injury was attributable in whole or in part to the act or omission which is alleged to constitute negligence, nuisance or breach of duty; and

(c) the identity of the defendant; and

(d) if it is alleged that the act or omission was that of a person other than the defendant, the identify of that person and the additional facts supporting the bringing of an action against the defendant; and knowledge that any acts or omissions did or did not, as a matter of law, involve negligence, nuisance or breach of duty is irrelevant.

(2) For the purposes of this section an injury is significant if the person whose date of knowledge is in question would reasonably have considered it sufficiently serious to justify his instituting proceedings for damages against a defendant who did not dispute liability and was able to satisfy a judgment.

(3) For the purposes of this section a person's knowledge includes knowledge which he might reasonably have been expected to acquire –

(a) from facts observable or ascertainable by him; or

(b) from facts ascertainable by him with the help of medical or other appropriate expert advice which it is reasonable for him to seek; but a person shall not be fixed under this subsection with knowledge of a fact ascertainable only with the help of expert advice so long as he has taken all reasonable steps to obtain (and, where appropriate, to act on) that advice.

Section 33:

(1) If it appears to the court that it would be equitable to allow an action to proceed having regard to the degree to which –

(a) the provisions of section 11 … or 12 of this Act prejudice the plaintiff or any person whom he represents; and

(b) any decision of the court under this subsection would prejudice the defendant or any person whom he represents;

the court may direct that those provisions shall not apply to the action, or shall not apply to any specified cause of action to which the action relates.

…

(2) The court shall not under this section disapply section 12(1) except where the reason why the person injured could no longer maintain an action was because of the time limit in section 11 [or subsection (4) of section 11A].

If, for example, the person injured could at his death no longer maintain an action under the Fatal Accidents Act 1976 because of the time limit in Article 29 in Schedule 1 to the Carriage by Air Act 1961, the court has no power to direct that section 12(1) shall not apply.

(3) In acting under this section the court shall have regard to all the circumstances of the case and in particular to –

(a) the length of, and the reasons for, the delay on the part of the plaintiff;

(b) the extent to which, having regard to the delay, the evidence adduced or likely to be adduced by the plaintiff or the defendant is or is likely to be less cogent than if the action had been brought within the time allowed by section 11 … or (as the case may be) by section 12;

(c) the conduct of the defendant after the cause of action arose, including the extent (if any) to which he responded to requests reasonably made by the plaintiff for information or inspection for the purpose of ascertaining facts which were or might be relevant to the plaintiff's cause of action against the defendant;

(d) the duration of any disability of the plaintiff arising after the date of the accrual of the cause of action;

(e) the extent to which the plaintiff acted promptly and reasonably once he knew whether or not the act or omission of the defendant, to which the injury was attributable, might be capable at that time of giving rise to an action for damages;

> (f) the steps, if any, taken by the plaintiff to obtain medical, legal or other expert advice and the nature of any such advice he may have received.
>
> (4) In a case where the person injured died when, because of section 11 [or subsection (4) of section 11A], he could no longer maintain an action and recover damages in respect of the injury, the court shall have regard in particular to the length of, and the reasons for, the delay on the part of the deceased.
>
> (5) In a case under subsection (4) above, or any other case where the time limit, or one of the time limits, depends on the date of knowledge of a person other than the plaintiff, subsection (3) above shall have effect with appropriate modifications, and shall have effect in particular as if references to the plaintiff included references to any person whose date of knowledge is or was relevant in determining a time limit.
>
> (6) A direction by the court disapplying the provisions of section 12(1) shall operate to disapply the provisions to the same effect in section 1(1) of the Fatal Accidents Act 1976.

77. The judge properly recognised that the question of when each individual claimant had the requisite degree of knowledge for limitation purposes had to be decided on the basis of the evidence in relation to that individual. Nonetheless, he considered that there were certain issues of general application in respect of both the issues of knowledge and the factors to be considered under section 33 where it arose. It is necessary for us to consider the judge's views on those general issues before proceeding to the individual cases.

Knowledge - generic issues

78. First, the judge noted (correctly in our view) that if the issue arises as to when a claimant's cause of action has arisen, the test is when he has in fact suffered more than minimal damage: see *Cartledge v Jopling*. In *Cartledge* the House accepted that a cause of action might well have accrued some years before any symptoms were apparent. However, we do not think that any of these cases will turn on the date when a cause of action accrued. Rather they will turn upon when each claimant knew that he had suffered a significant injury and that it was capable of being attributed to the acts or omissions of the defendant which are alleged to constitute breach of duty.

79. At paragraph 480 of the judgment, the judge recognised that a claimant might acquire knowledge for limitation purposes in two stages. First, he would realise that he had

something wrong with him and then, later, he might consider attributability. Of course that is so, but it seems to us important to recognise that knowledge of the injury and appreciation of attributability might arise the other way round. It is in our view entirely possible that a claimant might know or believe for many years that he has been exposed to radiation and that such exposure is capable of causing some forms of illness, for example cancer. Of course, while he is fit and well, he does not have the knowledge of a significant injury that would start time running against him; but if he develops symptoms of illness and is diagnosed as suffering from cancer, he will then have all the knowledge necessary to start time running.

80. Starting at paragraph 485, the judge considered the authorities on the question of what constitutes knowledge that the injury in question is significant. This is not contentious. The test is an objective one: see *A v Hoare* [2008] AC 844. If a claimant reasonably regarded the condition from which he knew he was suffering as 'not worth bothering about' he will not be held to have knowledge of a significant injury: see *Dobbie v Medway Health* Authority [1994] 1 WLR 1234.

81. The judge then considered a dispute which had arisen between the parties as to the position of a claimant who had developed different conditions at different times and was now alleging that both or all were caused by radiation exposure. The defendant's stance was that, as soon as a claimant developed a significant injury and knew that it could possibly be attributed to radiation, time began to run against him and, if he did not commence proceedings within three years, he would have to rely on section 33 to bring an action in respect of that injury and also in respect of any further injuries which had developed since the first significant injury. The claimants' stance was that it was open to a claimant to choose which injuries he wished to claim for and, even if he had allowed time to expire for his first significant injury, time would start running again when he knew he had developed a further significant injury. The judge was inclined to accept the claimants' argument on this issue although he did not reach a firm conclusion. He held, (at paragraph 496) that it would all depend on facts of the individual case.

82. We agree that every case must be considered on its own facts although we are of the view that the defendant's submission is correct. It is well established that a claimant can bring only one action for personal injuries arising from a particular tort whenever those injuries arise: see *Brunsden v Humphrey* [1884] 14 QBD 141 per Bowen LJ at 148, affirmed by Lord Hoffmann in *Rothwell v Chemical & Insulating Co Ltd* [2008] 1 AC 281 at 291E. It follows that once a claimant has a cause of action and has knowledge of it (that is he has knowledge of a significant injury and that it is capable of being attributed to the relevant acts or omissions), time begins to run against him. He must then bring his claim in respect of all the consequences of that tort, relying, if he believes that there might be later medical developments, on a claim for provisional damages under section 32A of the Senior Courts Act 1981. If he brings his claim and it proceeds to judgment, it would seem that there is nothing he can do if he develops a further condition as a result of the same tort unless that condition is covered in the provisional damages order. Paradoxically, if the claimant delays bringing his claim in respect of the first significant injury and waits until he has developed a second condition, he will be able to claim in respect of both if he can persuade the court to

exercise its section 33 discretion in his favour. Having expressed that view, we do not think that the point will be determinative in any of the lead cases.

83. At paragraph 498, the judge cited from *Spargo v North Essex District Health Authority* [1997] 8 Med LR 125 which he took as the leading exposition of the correct approach to knowledge of attributability. He cited the following well known propositions:

> "(1) The knowledge required to satisfy section 14(1)(b) is a broad knowledge of the essence of the causally relevant act or omission to which the injury is attributable;
>
> (2) "Attributable" in this context means "capable of being attributed to", in the sense of being a real possibility;
>
> (3) A plaintiff has the requisite knowledge when [he] knows enough to make it reasonable for [him] to begin to investigate whether or not [he] has a case against the defendant. Another way of putting this is to say that [he] will have such knowledge if [he] so firmly believes that [his] condition is capable of being attributed to an act or omission which [he] can identify (in broad terms) that [he] goes to a solicitor to seek advice about making a claim for compensation;
>
> (4) On the other hand [he] will not have the requisite knowledge if [he] thinks [he] knows the acts or omissions [he] should investigate but in fact is barking up the wrong tree; or if [his] knowledge of what the defendant did or did not do is so vague or general that [he] cannot fairly be expected to know what [he] should investigate; or if [his] state of mind is such that [he] thinks [his] condition is capable of being attributed to the act or omission alleged to constitute negligence, but [he] is not sure about this, and would need to check with an expert before [he] could be properly said to know that it was."

84. The judge also considered a large number of other authorities but did not state what conclusions he drew from them until at paragraph 514, he began to express what he described as 'his preferred view' of the approach he should take to the issue of knowledge of attributability in these cases. He expressed the view that the claimant would need to appreciate the following:

> "(i) That the injury of which he complains is capable of being caused by radiation and by more than just background radiation, the existence of which we must all be taken to appreciate.

> (ii) That there is some credible evidence that he was exposed to ionising radiation in consequence of his time at the tests which was at a level above the ordinary background level."

We find the syntax of (i) above slightly confusing but think that what the judge meant was that the claimant must know that the injury of which he complains is capable of being caused by the higher level of radiation to which he thinks he has been exposed by the defendant as opposed to being capable of being caused merely by the background levels of radiation to which we are all exposed. The judge then expressed the view that, in the context of this case, that would mean that the claimant would need to appreciate that exposure to a level of ionising radiation above background level could be caused by inhalation or ingestion of radionuclides from fallout well after the detonation had taken place. He was of the view that a claimant's belief that he had been exposed to prompt radiation would have been a significant misconception and would not be sufficient to give knowledge of attributability. In short, the judge was saying that it would not be enough for the claimant to know that he had been exposed to radiation during his attendance at the tests and to know that such exposure was capable of causing his injury; he had to know that his exposure had been above background level and that it had occurred due to exposure to fallout. He said that, if he was right about that, none of the claimants would have had the necessary knowledge until they learned of the outcome of the Rowland study. Only then would they have known that there was credible scientific evidence that they had been exposed to radiation above background levels. Before that there was, he said, only suspicion that they had suffered such exposure. However, having expressed this rather robust view, the judge indicated that he had to accept that, on the authorities, the threshold of appreciation of attributability was not quite as high as he had suggested. He did not then explain where he thought the threshold ought to be set.

85. In our view, he was plainly right to reject these propositions, albeit he did so with apparent reluctance. It is clear from the principles set out in *Spargo* that it is the knowledge of possibilities that matters; a claimant needs only enough knowledge for it to be reasonable to expect him to set about investigation. He can have knowledge even though there is no helpful evidence yet available to him. The claimants' contention that they did not have knowledge of possible attributability until they received the results of the Rowland study demonstrates a fundamental misunderstanding of the concept of knowledge for limitation purposes.

86. Further, we think that the judge was wrong to regard knowledge about prompt radiation as a significant misconception or an example of 'barking up the wrong tree'. These claimants commenced their actions alleging both prompt radiation and exposure to fallout and we are unaware of the suggestion that any claimant's knowledge or belief about his exposure was ever limited to prompt radiation. Their state of mind from an early stage appears to have been that they thought they had been exposed to both. Now, at a late stage, they have had to acknowledge that there was no prompt radiation and they have confined their claims accordingly. But it does not seem to us that, in these cases, the distinction between the two can be relevant to the limitation issues.

87. For those reasons, we think that the judge was wrong to be attracted to the claimants' propositions and right to abandon them. It will, however, be necessary to have careful regard to the judge's reasoning on the individual cases, given that he was attracted to these unsound propositions.

88. Let us take the kind of situation which arises in some of these cases. A claimant knows that he was present in the area of the nuclear tests and over the years he realises that this means he may have been exposed to radiation whether by virtue of having watched a test or by exposure to fallout or both. For the purposes of section 14(1)(b), that will be enough knowledge of the acts or omissions of which complaint will be made. As Lord Hoffmann said in *Broadley v Guy Clapham & Co* [1994] 4 All ER 439 CA:

> "…the court should look at the way the Plaintiff puts his case, distil what he is complaining about and ask whether he had in broad terms knowledge of the facts on which that complaint is based."

Lord Hoffmann stressed that it was not necessary for the claimant to know that that the matters that he was complaining about amounted to negligence or breach of duty. On both these points, his remarks were expressly approved by the House of Lords in *Haward v Fawcetts* [2006] UKHL 9.

89. For the purposes of section 14(1)(b), the claimant also needs to know that there is a real possibility that the condition he is suffering from could have been caused by the factual matters he is complaining about. He does not need to know, from an expert, that his own condition has probably been so caused: see *Spargo* and *Nash v Eli Lilly & Co* [1993] 1 WLR 782 at 797-8.

90. At paragraph 523, the judge noted the proposition, which he derived from *Sniezek v Bundy (Letchworth) Limited* [2000] PIQR P213 that a firm belief in the attributability of a condition to the acts or omissions in question (even though not supported by expert evidence) could amount to knowledge for the purposes of section 14 although it would not necessarily do so. The judge said no more about that issue at that stage, preferring to leave further discussion to the individual cases. We wish to say a little more at this stage because the question of when belief can amount to knowledge is important in several cases.

91. Some of the claimants came to believe (sometimes quite strongly) that their illness or condition has been caused by radiation exposure. Yet even the possibility of that being so is in issue in the proceedings. So the strongly held belief might actually be a mistaken belief. When is a belief which is not founded on medical, scientific or other expert advice sufficient to amount to knowledge? This question will, we think, depend to a large extent on the facts and circumstances of the individual case. But the judge needed a test by which he could decide the question. In the end, we think that the test is whether the claimant had such a degree of belief that, objectively considered, it was reasonable to expect him to commence investigating whether or not

he had a viable case. That test is an adaptation of the test suggested by Lord Nicholls at the end of paragraph 9 in *Haward.* To understand the context we cite from paragraph 7, where he said:

> "By these provisions, Parliament sought to identify the knowledge a claimant needs to possess before it is fair and reasonable that time should run against him. That is their purpose. .. The claimant is to have a reasonable period, set by Parliament at three years, in which to start proceedings after he has the knowledge he reasonably needs for that purpose"

And at paragraph 9:

> "Thus, as to the degree of certainty required, Lord Donaldson of Lymington MR gave valuable guidance in *Halford v Brookes* [1991] 1 WLR 428,443. He noted that knowledge does not mean knowing for certain and beyond the possibility of contradiction. It means knowing with sufficient confidence to justify embarking on the preliminaries to the issue of a writ, such as submitting a claim to the proposed defendant, taking advice and collecting evidence: "Suspicion, particularly if it is vague and unsupported will indeed not be enough but reasonable belief will normally suffice". In other words, the claimant must know enough for it to be reasonable to begin to investigate further."

92. So, in a case where the claimant's state of mind is more accurately described as one of belief rather than knowledge, it seems to us that what matters is whether his state of belief is such as to make it reasonable to expect him to begin to investigate further. In general that assessment will have to be made by reference to the things that he has said and done. For example, if he says that, at such and such a time, he had a firm belief that his illness had been caused by radiation, it would obviously be reasonable to expect him to begin investigating. If he said that he had a firm belief that his illness could have been caused by radiation, that would also, we think, be enough. In cases in which there is no such direct evidence, it would be relevant to consider how he acted. For example, if a claimant applied for a war pension alleging that his condition had been caused by radiation at the tests, it seems to us that it would be difficult to avoid the conclusion that his belief in the causal connection was sufficient to make it reasonable that he should investigate the possibility that he had a viable common law claim. We note that the judge did not agree with that general proposition. We will return to that issue in the individual cases.

93. We note that, in *Halford,* Lord Donaldson MR suggested that a belief would have to be reasonable before it could amount to knowledge. With great respect, we do not think that the belief needs to be objectively reasonable. We think that what matters is the claimant's subjective state of mind. If a claimant comes to believe that there is a causal connection between his condition and the matters complained of, it will matter not from where he has derived that belief, even it were from an incompetent expert

adviser or from a newspaper article which was not based on sound research. If the belief were of such strength that it was reasonable to expect him to start investigating his claim, it would amount to knowledge within section 14.

The section 33 discretion - generic issues

94. Whatever the outcome of the individual appeals on the question of knowledge, the section 33 discretion will have to be exercised in some cases. That process involves the balancing of a number of factors and the need to do what is equitable in all the circumstances of the case. It is axiomatic that this court will not interfere with the exercise of the discretion by the judge below unless he has misdirected himself in law, taken an irrelevant factor into account, omitted to consider a relevant factor or otherwise reached a conclusion which is irrational or clearly wrong.

95. The judge examined a number of factors which would be relevant to the exercise of his discretion in all the cases in which the section 33 issue arose. We must examine his approach to those generic issues. The MOD is critical of the judge's generic approach, submitting that the section 33 exercise must be tailored to the individual case. We agree that that is so, but see no reason why the judge was not entitled, at a preliminary stage, to consider issues that would arise in most if not all the lead cases. That is acceptable so long as each individual case is separately considered when the time comes.

96. The judge began this section of his judgment by observing, correctly in our view, that the burden of proof under section 33 lies on the claimant (see *Thompson v Brown* [1981] 1 WLR 744 at 752) recognising that the suggestion made in *KR v Bryn Alyn Community Holdings Limited* [2003] QB 1441 that it is a heavy burden is no longer good law. The discretion to disapply section 11 is unfettered and the court's duty is to do what is fair: see *Horton v Sadler* [2007] 1 AC 307 and *A v Hoare.*

97. He noted, correctly, that in exercising its discretion, the court had to have regard to all the circumstances of the case and to the six factors set out in section 33(3).

98. As to subsection 3(a) (the length of and reasons for delay on the part of the claimant), the judge said that the delay referred to was that which occurred after the primary limitation period had expired. However, there might well be longer delay going back to the time when the acts of alleged negligence occurred and that would be relevant as part of 'all the circumstances of the case'. After citing a passage from the judgment of Smith LJ in *Cain v Francis* [2008] EWCA Civ 1451 paragraphs 73 and 74, he expressed the view that in the particular circumstances of the present cases, the essential question on delay was going to be whether a fair trial of the primary factual issues could now take place. We agree that this is an important issue.

99. As to subsection 3(b) (the effect of delay on the cogency of the evidence), he observed that, although the subsection had in mind the delay after expiry of the

limitation period, what would really matter in these cases was the loss of cogency resulting from the overall delay. We agree with that to some extent although we think that there will be some cases where the post-expiry delay could be of greater significance than appreciated by the judge. At paragraphs 572 to 611, the judge considered in detail the MOD's arguments relating to prejudice which it alleged it would suffer as the result of delay and its contention that a fair trial was no longer possible. This alleged prejudice included the non-availability of witnesses, many of whom were either dead or extremely old. The MOD broke down the evidence of non-availability into different periods of time so that the judge would be able, if he chose, to see how many witnesses had been lost due to the delay in each individual case. However, the judge's generic approach was to consider the adverse effect of the overall delay since the events under examination and to ask himself whether a fair trial was still possible. He concluded that it would be, largely because of the availability of a great number of contemporaneous documents. He referred also to the fact that many of the witnesses no longer available had given evidence to the Australian Royal Commission in the 1980s and that transcripts of their evidence had been preserved. He was of the view that there would be sufficiently cogent evidence of conditions and arrangements for the defendant to have a fair trial on the issues of breach of duty.

100. The judge also considered whether it would be possible for there to be a fair trial on the issues of exposure. He was of the view that, if this had to be done, it would have to be by retrospective estimation using modern scientific knowledge. He plainly had in mind the inferences which might be drawn from the Rowland study. But, rather surprisingly in our view, he thought it would probably not be necessary at all. In that, he accepted the submission of Mr Browne QC for the claimants that, provided it could be shown that the men had probably been exposed to above background level radiation, it would not be necessary to have a precise reconstruction of any claimant's involvement or whereabouts. If the defendant's records showed that a claimant had been in an area affected by fallout, that would be enough. Mr Michael Kent QC who represented the claimants on the appeal to this court did not embrace that argument. He accepted that an assessment of individual exposure would be necessary. In our view, he was plainly right. That said, we are of the view that the difficulties of estimating individual exposure will fall largely on the claimants.

101. Because the defendant has preserved a great deal of documentary evidence made at the time of the tests, we do not disagree with the judge's overall conclusion that it would still be possible to have a fair trial of the issues notwithstanding the delay and the evidential difficulties which the defendant will face. Those difficulties are very considerable and will remain a factor to be taken into account in any case where the section 33 discretion falls to be exercised. We stress that, in addition to the difficulties due to the overall delay (which is not the responsibility of the claimants) it will remain important to consider the lesser periods of delay which have to be laid at the door of the individual claimants. The fact that it will still be possible to have a fair trial does not render irrelevant the effect on the cogency of evidence of that individual delay.

102. Under subsection 3(c) (the conduct of the defendant after the cause of action arose including the extent to which it had responded or failed to respond to requests for information relevant to the claimants' action) the judge considered the claimants' complaints that the defendant had consistently misled the claimants about the extent of their exposure. However, as the judge pointed out, it was not yet established what exposure had been suffered and the judge could not therefore say that anyone had been misled. The claimants' other complaint was that the defendant had deliberately concealed relevant documents. When that complaint was withdrawn, as it was, the claimants argued that the defendant had been unhelpful over the production of documents. However, this complaint eventually resolved itself into an assertion that it was very difficult for claimants to locate all the relevant documents in the public domain. They had needed expert help in finding documents in the National Archives at Kew. In the end, the judge accepted that finding documents had been difficult for the claimants but acquitted the defendant of causing any of those difficulties. We agree with the judge's analysis and conclusion. We note that any complaints that the claimants now make about disclosure within the context of the group action cannot be relevant to the issue of delay before the action was begun.

103. Subsection 3(d) was not relevant and the judge turned to subsection 3(e) - the extent to which the claimant acted promptly and reasonably once he had learned that he might have a cause of action. He acknowledged that this would usually depend on individual circumstances but then expressed the view that, because of the difficulties of obtaining funding, it was reasonable for any individual claimant to delay until a group action could be mounted. We are concerned about this generic approach to the reasons for delay. We think that it is important to consider reasons for delay individually and, as we will eventually show, the judge did not always deal with the reasons for delay when discussing individual cases; he must have been relying on his general observation. We doubt the validity of the proposition the judge accepted, first because in some cases, legal aid might well have been available at the material time. Also, the availability of a conditional fee agreement is not necessarily limited to group actions although we can see that a group action would be more potentially cost effective than a single action and therefore more attractive to a firm of solicitors contemplating taking it on. However, having expressed our reservations about the judge's generic approach, we do not think that this issue will be crucial when we come to the individual cases.

104. Finally under this section of the judgment, the judge said that the issues raised in subsection 3(f) – the steps taken by the claimant to obtain medical, legal or other advice and the nature of any advice received – would not impact greatly on his decisions in any of the lead cases. That was a self-fulfilling prophecy as there are some cases in which the judge did not consider this issue at all.

105. Under the heading 'Other circumstances', the judge considered a number of factors and expressed a general view as to their importance. We have already referred to and approved of the judge's view that it will still be possible to have a fair trial. Another issue was whether there was a public interest need for the issues to be ventilated. The judge recognised that 'public interest' can be artificially engendered by sensationalist reporting in the media - and there has been some relating to these claims - and was

therefore inclined to dismiss this as a reason for allowing the actions to proceed. However, he did think that the claimants themselves were entitled to their day in court – he meant on the substantive issues in the case, not merely on limitation. This was because of the long held belief (of at least some of them) that they had suffered as the result of radiation exposure, that they had been so exposed involuntarily in the service of their country and because there is no other venue in which an independent assessment of the issues can take place. The judge thought that this was not a weighty factor but was one which could not be ignored.

106. The court is required to take into account all the circumstances of the case. The section 33 discretion involves a balancing of factors the weight of which has to be objectively considered. However, we do not think that Parliament had in mind the subjective wishes of the parties. We do not think that the desire of a claimant to have his day in court can be a significant factor, however understandable that desire might be. Every claimant wants his day in court. But every defendant would wish to avoid a trial where the limitation period provided by Parliament has expired. Why should the wish of one outweigh that of the other?

107. We note that the judge did not regard this subjective desire as a weighty factor. However, he gave considerable weight to a related matter, namely the need to avoid apparent injustice. He said:

> "618. Whatever view is taken of the strengths and weaknesses of an individual's claim to a favourable exercise of the section 33 discretion, it does seem to me that one needs to have regard to the overall justice of the situation in this case – and indeed the perception of what is just. It would be the ultimate slap in the face for those veterans who genuinely believe on apparently reasonable grounds that they have a case only to be told after all these years that for some reason their case cannot proceed whilst others can. If a proper exercise of the discretion results in that consequence then, of course, it must be; but it would, in my judgment, be a very regrettable consequence.
>
> 619. Avoiding an apparent injustice such as this would, in my view, constitute a weighty factor."

108. We find this passage puzzling. In so far as the judge wanted to have regard for the 'overall justice of the situation', he seems to be speaking of real merits not merely someone's perception of the merits. It is well established that, under section 33, the judge should take into account a broad assessment of the merits of the claims and defences. That must be an objective assessment of the merits. But we do not think that this is what the judge was talking about in the quoted passage. By speaking of the veterans' 'genuine belief on apparently reasonable grounds' he seems to us to be referring to the claimants' subjective perception of the merits. We think that it would be an error to take into account a party's subjective view of the merits. Nor is it the

apparent merits of the case which must be taken into account but the actual merits in so far as he is able objectively to assess them.

109. Furthermore, we are not sure whose perception of injustice the judge had in mind. He seems to have been mainly concerned with the subjective feelings of the claimants who will be aggrieved if their claims are rejected at this stage. That is only another way of saying that they think they are entitled to their day in court and will be aggrieved if it is not allowed. Yet the judge had already said that that is not a weighty factor.

110. The judge also appeared to think that there is a public interest in the claims being tried out. We would agree that there can be said to be a public interest in establishing whether or not appropriate precautions were taken to protect servicemen and also whether servicemen have suffered ill health as a result of service in the tests. No doubt it was in order to investigate the latter that the NRPB studies were commissioned. We accept that there has been no public investigation into the adequacy of the precautions taken. We note that there does not appear to have been a coroner's inquest into any veteran's death which raised these issues. If it were thought that there should be an investigation, an attempt could be made to persuade the Government to order a public inquiry or some other form of investigation. However, we do not think that it is for the court to form a view that there should be such a public investigation and to take that perceived need into account when deciding whether to exercise the section 33 discretion.

111. We think that the judge erred in saying that the need to avoid an apparent injustice was a weighty factor to take into account under section 33. We think that the judge must have had in mind the impression of injustice that would exist in the minds of the claimants if their claims are struck out and also possibly in the minds of readers of the rather unbalanced coverage that these issues have received in the press. In our view those are not proper considerations for section 33.

The broad merits test

112. In all the lead cases where section 33 arises, the broad merits test will be a prominent consideration. The outcome of these limitation proceedings is very important for both sides. For the claimants it is important for obvious reasons. It is also important to the MOD, who will, if the appeals fail, face an extremely lengthy and expensive trial. We are told that the claimants have after-the-event insurance so that, if the MOD succeeds in the end, it should not be badly out of pocket. However, regardless of litigation cost, the resource implications for the MOD and the impact on the Treasury Solicitors will be enormous. The trial will also impose a heavy drain on the resources of the court. It would be inappropriate for the court to allow an expensive and resource-consuming trial to take place if the prospects for the claimants' success are slight. If the prospects of success are even reasonable, those resource considerations fade into relative insignificance.

113. The judge said very little about the broad merits test when considering section 33. He had, however, considered the issues of causation at some length for the purpose of deciding whether to grant the defendant summary judgment. He had formed the view that the claimants' cases on causation were difficult but arguable. However, the general merits test must of necessity also embrace some consideration of the issues of radiation exposure and breach of duty.

Radiation exposure and breach of duty

114. The judge appears to have been sanguine about the claimants' prospects on those issues. We must now consider whether that sanguine approach was justified and appropriate.

115. On the basis of the evidence we were shown at the hearing, it appeared to us that the claimants would face some difficulties. We have mentioned that the report of Dr Regan, which at the time of the hearing before Foskett J was not effectively challenged by expert evidence from the MOD, gave some support for the contention that the MOD had not taken all the precautions that it might have done and perhaps that it ought to have done. However, whether any deficiency in precautions amounted to a breach of duty would depend upon the extent of the radiation exposure to which the men were subjected. In the 1950s, there was a level of exposure which was regarded as acceptable. Nowadays the acceptable level is lower than it then was. The claimants would, as we understand it, have to demonstrate that they were exposed to what was, at that time, regarded as an unacceptable radiation dose. To do that they would have to advance some means of estimation of their exposure. We understand that it is their intention to draw inferences from the results of the Rowland study and possibly to extrapolate from them. No expert evidence has been provided to show how that might be done. That may have been because, at the time of the limitation hearing, the claimants were of the view that they did not need to prove any particular level of exposure. As we understand it, they are no longer of that view.

116. Further, although by the time of the limitation hearing, some months had passed since disclosure of documents had been given, it was not suggested that any assessment of exposure could be made from the disclosed materials. Thus, there was at the hearing a lacuna in their case on breach of duty. That lacuna remained unfilled at the time of the hearing before us despite the passage of more time in which the disclosed documents could have been examined. Had any significant information been discovered in the meantime, we think we would have been told about it at the appeal. But we were not. For those reasons, our impression was that the claimants' cases were far from strong on breach of duty.

117. We were aware during the appeal hearing that there was a dispute as to the completeness of the disclosure given by the MOD. The claimants were alleging that it was incomplete and that disclosure had related only to limitation issues. Mr Gibson QC for the MOD asserted that, although the order for disclosure related only to those documents relevant to limitation, in fact the MOD had given disclosure in respect of

all issues. This dispute arose on the last day of the hearing and it was apparent that we would not be able to resolve it. We said that we would simply recognise that there was a dispute.

118. Matters have moved on. The dispute continued in correspondence after the hearing was over. Without obtaining the views of counsel, Rosenblatt made allegations that Mr Gibson had misled the Court. This was hotly denied. Eventually, following a hearing in the War Pensions and Armed Forces Compensation Chamber of the First Tier Tribunal (where there are pending a group of appeals from the refusal to grant war pensions to veterans), Rosenblatt decided to inform the Court of this continuing dispute. The trigger for this decision was an order made by Tribunal Judge Hugh Stubbs that the MOD must give further disclosure of documents in those proceedings. He had examined certain documents which had come to light but which had not apparently been disclosed in either the tribunal appeals or the High Court action. He regarded them as highly relevant and he ordered disclosure of them. Rosenblatt sent to this Court a copy of the tribunal judge's order, his reasons and a letter of explanation. The Treasury Solicitor responded with its side of the story and attached a substantial bundle of the correspondence which had passed between the parties.

119. We have read the correspondence. We do not propose to burden this judgment with a detailed analysis of the dispute because we can state our conclusions quite shortly. We are quite satisfied that Mr Gibson did not mislead the Court. It is clear to us that the MOD has given disclosure which was intended to go beyond the scope of the order made (limitation issues only) and was intended to be complete. We can see the good sense of making that attempt. First, in a case like this, where the broad merits of the claims are likely to be an important issue in the limitation decision, it would be difficult to decide which documents were relevant to limitation issues and which need not be disclosed until later. Second, the process of trawling through the enormous number of potentially relevant documents was inevitably time consuming and costly; it would be wasteful to have to undertake that process twice over.

120. Whether the disclosure given achieved its intended object of completeness is another matter about which there are two views. The MOD has always contended that it was required only to make a proportionate search for relevant documents; it accepts that the method of search adopted might not have identified every such document. It is prepared to deal with specific requests for further documents and, as we can see from the correspondence, it has done so. It appears from the tribunal order that there may be yet more relevant documents, although the MOD contends that some of the documents within that order have already been disclosed in the High Court action. It does not surprise us that further requests for disclosure should be made. Under the modern disclosure regime, it often transpires that the initial tranche of disclosure is incomplete. For one thing, it is often the case that a disclosed document refers either explicitly or implicitly to other documents, not yet disclosed, which may be relevant. That this process of further disclosure is necessary, however, does not necessarily indicate bad faith in the initial disclosure exercise. We are quite prepared to accept that there might have to be further disclosure if this matter proceeds to trial.

121. That said, we have to make our broad merits assessment as best we can on the basis of what we know now. It is inevitable at any limitation hearing and appeal that the material on which the court has to make its broad merits assessment will be incomplete. All that we have learned from the dispute about disclosure and the correspondence is that disclosure may well be incomplete. We recognise that it is possible that further disclosure might contain a 'golden nugget' of information which could transform the claimants' case on breach of duty. But that will often be the case where limitation is tried as a preliminary issue. For that reason, when assessing the broad merits, the court will always take into account the possibility that the case might improve on further investigation. In the end, we consider that we should not form a strongly adverse view of the claimants' prospects of success in showing sufficient exposure and sufficient lack of care by the MOD as would enable the claimants to establish breach of duty. We cannot say that their prospects are good but we will not say that they are poor.

Causation

122. The extent to which the claimants are able to demonstrate exposure to radiation could have an important impact upon their case on causation. It is entirely possible that they could show a sufficient degree of exposure to prove a breach of duty and yet fail to establish causation.

123. In a common law claim the burden of proving causation lies on the claimant and, subject to the discussion which follows, the claimant must prove causation on the balance of probabilities. That is usually done by the production of one or more expert reports which, after analysing the extent of exposure to the noxious substance in question (the dose) and the scientific and epidemiological evidence as to the effect of certain doses of that noxious substance, opine that the dose of noxious substance is the probable cause of the condition complained of. Those opinions will usually be closely examined both as to the assessment of the dose and as to the reliability of the scientific and epidemiological work relied on. In the present case, the claimants have produced no evidence which begins to satisfy those usual requirements and Mr Kent QC has accepted that they cannot do so. He did not qualify that admission with any claim that they might reasonably hope to do so, given time.

124. The evidence produced by the claimants in relation to causation is limited. As we have already noted in our discussion about the broad merits of the case on breach of duty, the claimants have not produced evidence of how they will estimate their radiation doses. We know that in late 2008, Dr Moore-Gillon was asked to advise on the assumed basis that the claimants had been exposed to a 'low' dose of radiation. We think that Professor Mothersill received similar instructions. Low dosage has not been defined for us in terms of millisieverts.

125. As we have said, at the limitation hearing, the claimants' primary case was that proof of dose was not necessary but that, if necessary, inferences as to dose could be drawn from the Rowland study. During the hearing before us, it was accepted that some

estimate of dose would be required. We enquired whether any further scientific work was contemplated by which the extent of chromosomal translocations present in these claimants could be estimated. We were told that such was not intended. It is still intended, we understand, to draw inferences as to these claimants' dose from the Rowland study. But we note that the estimates of the doses received by the New Zealand veterans vary from zero to 431 mSv, with a median level of 170 mSv. That in itself is puzzling as we understand the sailors on each frigate had similar experiences. But we can see at least in theory how a case on dose might be mounted by reliance on and extrapolation from that median result. Whether it would stand up to scrutiny is another matter. It has not been suggested that the disclosure of documents will enable the claimants to show a radiation dose in excess of what might be inferred from Rowland, although that must remain a possibility.

126. As we have said, we have to assess the broad merits on the material put before us, making some allowance for what we can foresee might become available. We think that we must approach causation on the basis that the best the claimants can hope for is to show low but significant exposure of the order of magnitude which Professor Mothersill has assumed for the purpose of her reports.

127. This may be less than wholly satisfactory but we do not think that it is unfair to the claimants. The claimants well knew that the issue of causation as part of the broad merits test might be potentially determinative in the exercise of the section 33 discretion. The MOD warned them of its contention in this regard at an early stage. It therefore behoved the claimants to put their best foot forward on causation. Their attitude towards this has been somewhat bifurcated. On the one hand, they objected that the defendant's decision to obtain individual medical reports dealing with causation had 'ambushed' them. Yet when given some time (admittedly not much) in which to obtain their individual reports they did not do so. On the other, they claimed in a letter dated 5 December 2008 that they had already put forward "cogent and compelling evidence establishing causation". They must have been relying on the evidence of Professor Mothersill and her opinion that radiation exposure increases the risk of developing the various conditions.

128. The MOD accepts in respect of many of the conditions complained of (such as the cancers), Professor Mothersill is right to say that radiation exposure increases the risk of developing the disease. It also accepts that, for present purposes, it must accept that Professor Mothersill could be right in respect of all the other conditions, such as arthritis and depression. But, submits the MOD, as a matter of law, the claimants still cannot succeed on causation.

129. We summarise first the arguments advanced by the MOD both before the judge and before this court.

130. It is common ground that in tort, causation must usually be demonstrated by evidence from which it can be concluded or inferred that, but for the tort, the claimant would probably not have suffered the injury complained of. Its application can give rise to

difficulty in claims in which there is more than one potential cause for the condition complained of and only one of those potential causes arises from the negligence of the defendant. It is common ground that all the conditions of which the claimants complain have several different possible causes besides radiation.

131. The MOD submitted that no claimant would be able to show that it was radiation which had probably caused his conditions as opposed to other possible causes. The ruling of the House of Lords in *Wilsher v Essex Health Authority* [1988] AC 1074 governed the position. In that case, there were several potential causes for the condition from which the infant plaintiff was suffering; only one of them arose as the result of the negligence of the defendant. The plaintiff could not show which of the several potential causes had probably caused his condition and, as a result, his claim failed.

132. In particular, submitted the MOD, no claimant will be able to demonstrate, by reference to scientific and epidemiological evidence, that his exposure to radiation has at least doubled the risk of developing his condition to which he was otherwise subject. If that could be done, a claimant could demonstrate that the tort is probably (more likely than not) the cause of his injury: see *Novartis Grimsby Ltd v Cookson* [2007] EWCA Civ 1261. But, submitted the MOD, there is no evidence that this could be shown.

133. Further, the claimants cannot as a matter of law rely on the method of proving causation relied on in *Bonnington Castings v Wardlaw* [1956] AC 613. There, the plaintiff developed pneumoconiosis from exposure to a noxious dust. Part of the exposure came from a source which the employer negligently failed to prevent; part of the exposure was unavoidable. The House of Lords held that the plaintiff could succeed on the basis that the negligent exposure had made a material contribution to the plaintiff's disease. This method of proving causation was not available to these claimants because the radiation exposure could not be said to have contributed to the severity of their conditions, only to the risk that the conditions would occur.

134. We think that a word of explanation of this submission is warranted. The decision of the House of Lords in *Bonnington* amounted to a modification of the 'but for' rule of causation because the plaintiff recovered damages for the harm caused by all the dust, not just the tortious component. At no stage in that case was it suggested that the damages should be apportioned as between the effect of the tortious and non-tortious components. If that had been suggested, and if expert evidence had been called showing the effect of the different components (as we think it would be nowadays), the damages would probably have been apportioned. The plaintiff would have recovered damages for only the harm caused by the tort and there would have been no need for any modification of the 'but for' rule. This type of modification of the 'but for' rule is still available where the negligent and non-negligent causative components have both contributed to the disease (as opposed to the risk of the disease) and it is not possible to apportion the harm caused and therefore the damages. This method of proving causation (by showing that the tort made a material contribution to the condition or disease) is only available where the severity of the disease is related to

the amount of exposure; further exposure to the noxious substance in question is capable of making the condition worse. Thus the MOD's submission is that, in the present cases, at least so far as the cancers were concerned, that could not be said. The cancers either developed or they did not. Their severity did not depend on the extent of the exposure. It could not be said that the exposure to radiation had made a material contribution to the disease, only to the risk that it might occur.

135. Finally, submitted the MOD, the claimants would not be able to bring themselves within the exception to the 'but for' rule, established in *Fairchild v Glenhaven Funeral Services Ltd* [2003]1 AC 32. Under the exception, it will be sufficient for the claimant to show that the tort has materially increased the risk that he will develop the condition complained of. That exception is of very narrow application based upon the particular facts of the case which involved the disease of mesothelioma. The House of Lords had said that the exception would only be extended in exceptional circumstances.

136. In *Fairchild*, the workmen in respect of whom the claims were brought had all developed mesothelioma as the result of asbestos exposure. They had been negligently exposed to asbestos by more than one different employer. There was no doubt that it was asbestos which had caused the disease; indeed, there is no other established cause for that condition. The claimants' difficulty was that they could not show whose asbestos had caused their disease. They could not rely on *Bonnington* because mesothelioma is an indivisible condition. All the claimants could say was that each employer's exposure had materially increased the risk that they would develop the disease. The House of Lords held, largely for policy reasons, that it would be enough in cases of mesothelioma for the claimant to show that any employer's tortious exposure to asbestos had materially increased the risk.

137. The House of Lords recognised that attempts would be made to extend the scope of that exception to other conditions besides mesothelioma and, in *Fairchild* itself and in the later case of *Barker v Corus UH Ltd* [2006] 2 AC 572, some of their Lordships attempted to define its potential limits. The MOD submitted that these limits were very narrowly defined. It was stressed that the reason why the House had been prepared to allow the exception at all was because asbestos was the only known cause of mesothelioma. There was no other different potential cause. The exception would not apply where, as here, there was more than one different potential cause. In such cases *Wilsher* would apply.

138. The MOD also contended that the shifting of the claimants' stance on causation was indicative of the difficulties in which they found themselves. Their claims on causation were not well founded either on principle or in fact.

139. Before Foskett J, the claimants appear to have recognised their difficulties. As to 'but for' causation, their argument appears to have been that, by the time the case came on for trial, they might be able to produce more satisfactory evidence and might then be able to prove on the balance of probabilities that radiation was the cause of their

conditions. How it was envisaged that this might happen was not clear. In particular it was not suggested that evidence was likely to emerge that their exposure to radiation had been so high as to have doubled the increase in risk present from other causes, as for example, smoking. The judge appears to have accepted that more evidence might well be found.

140. In addition, the claimants were hopeful that they might be able to show a more than doubling of the risk by demonstrating that the risk from radiation interacted multiplicatively with the risk from other causes, such as smoking. However, there was no medical evidence to support such a contention.

141. The claimants' other argument was that they would be able to rely on Professor Mothersill's evidence that radiation had materially increased the risk of the development of their various conditions. They recognised that this approach would require some extension of the scope of the *Fairchild* exception but submitted that there was no reason why that should not be allowed for reasons of public policy.

142. Foskett J was not impressed with the concerns expressed by the Defendant that the basis of the claim in causation was shifting and not founded in principle or fact. He considered that the Master Particulars of Claim followed "the traditional pattern of a normal personal injury pleading" and that issues such as material increase in risk did not need to be pleaded but would be dealt with in the expert evidence. He considered that obtaining individual reports in each case would have been disproportionate. He went on (the emphasis being his) [187]:

> "I would … hold that the lack <u>at this stage</u> of individual medical reports in each individual case supporting a causation approach is not fatal to success on the limitation issue. There is, in my view, sufficient material available at this stage to support the (adequately) pleaded case."

143. He also considered that causation was essentially a matter of fact and that, until the facts were established, it was not possible to know whether the individual case was sustainable although he recognised that he would be obliged "to form a very general view of the position at the section 33 stage" [230]. When at that later stage he came to consider the submission that the individual cases could not succeed on causation grounds, however, he took a robust line. By way of example, in relation to Mr Ayres (who suffered prostate cancer), he recognised the weakness of the evidence supporting causation; from Professor Mothersill ("materially increased of risk of … developing prostate cancer"), Professor Parker ("equivocal … not conclusive … little evidence supportive of an association") and Professor Kaldor ("not consistently found to be a cause"). Nonetheless, he held that the causation case was "arguable but by no means strong" and that it did not outweigh the other factors militating in favour of a trial.

144. It must be remembered that the judge was considering causation mainly in the context of whether the defendant should be entitled to summary judgment. He set a very high

threshold: were the claims bound to fail? He held that they were not. Before deciding that the causation case was 'arguable but by no means strong' he had not analysed in any depth the legal arguments raised by the defendant. His view was that the law in relation to causation was uncertain and that questions about it should be left until the facts had been found.

145. On the appeal to this court, the claimants sought to uphold the judge's approach. In their skeleton argument, it was argued that insofar as the claimants may need to resort to an exception to the 'but for' test, whether under *Fairchild* or any alternative developing policy-based principle, that decision could only be taken when the evidence was complete: it was very likely that some of the concepts used to discuss the scope of this doctrine (divisible/indivisible injuries, material contribution, material increase in risk) would prove inadequate and that a more refined lexicon would be required.

146. The claimants' case before this court is, first, that they accept that, as the evidence stands, they cannot show that tortious exposure to radiation has increased the risk of injury by anything approaching two fold. But they hope to be able show at least a doubling of the risk by demonstrating that the risk arising from radiation will interact synergistically with that arising from any other potential cause which may be present in the individual case. However, the claimants have not produced any medical evidence that would enable them to launch such an argument. We did not understand them to argue that there was any prospect of demonstrating a doubling of the risk merely on account of the size of the radiation dose.

147. Second, they submitted that they would or might be able to rely on the case of *Bailey v Ministry of Defence and another* [2008] EWCA Civ 883 and to demonstrate that the radiation had made a material contribution to their conditions.

148. Their third contention was that it is at least arguable that it will be sufficient for them to show that the tortious radiation exposure has materially increased the risk of injury. For that, they would need an extension of the *Fairchild* exception. They accept that they cannot bring themselves within the present scope of the extension but they submit that the scope of the extension is uncertain. In *Novartis Grimsby*, where the claimant had bladder cancer, which might have been caused by exposure to dyestuffs at work or to cigarette smoking, the Court of Appeal said that the scope of the *Fairchild* exception was uncertain and that it was arguable that that case might fall within it. In any event, the claimants contended that it might be possible to persuade the Supreme Court to widen the scope of the exception. They argued that there are powerful policy reasons why it might do so. After all, in *Fairchild* itself, the House of Lords had been persuaded to make a radical change in the law of causation. Why could this not be done again?

149. We accept the submissions of the MOD. First, unless there were to be an extension of the *Fairchild* exception, the claimants will have to show 'but for' causation: see *Wilsher*.

150. Second, we accept that, at least so far as cancers are concerned, the claimants cannot rely on proving that the radiation exposure has made a material contribution to the disease, as in *Bailey* and *Bonnington Castings.* This principle applies only where the disease or condition is 'divisible' so that an increased dose of the harmful agent worsens the disease. As is well known, in *Bonnington*, the claim succeeded because the tortious exposure to silica dust had materially aggravated (to an unknown degree) the pneumoconiosis which the claimant might well have developed in any event as the result of non-tortious exposure to the same type of dust. The tort did not increase the risk of harm; it increased the actual harm. Similarly in *Bailey*, the tort (a failure of medical care) increased the claimant's physical weakness. She would have been quite weak in any event as the result of a condition she had developed naturally. No one could say how great a contribution each had made to the overall weakness save that each was material. It was the overall weakness which led to the claimant's failure to protect her airway when she vomited with the result that she inhaled her vomit and suffered a cardiac arrest and brain damage. In those cases, the pneumoconiosis and the weakness were divisible conditions. Cancer is an indivisible condition; one either gets it or one does not. The condition is not worse because one has been exposed to a greater or smaller amount of the causative agent.

151. Third, on the present state of the evidence there is no prospect that the claimants will be able to satisfy the 'but for' test by showing that risk arising from radiation is at least twice that arising from other causes. It is not claimed that there is any prospect of them doing so by reliance on a sufficiently high dose of radiation. Nor is there at present any possibility that the claimants will be able to rely on the synergistic inter-reaction of two different causative agents. The foundation of medical evidence has not been laid. That approach was discussed by MacKay J in *Shortell v Bical Construction* [unreported 16 May 2008] although in the event the claimant succeeded without reliance on it. The claimant had developed lung cancer as the result of a combination of smoking and asbestos exposure. There was evidence assessing the risks arising from each and evidence that the two risks interacted multiplicatively. So, on the facts, it would have been possible to demonstrate that, on the balance of probabilities, the claimant would not have developed the condition if he had not been exposed to asbestos. We stress that such an approach could only be taken if there is available scientific evidence of the manner of interaction and also expert evidence assessing the risk arising from each, which depend in turn on reliable estimates of exposure. In the present cases, there is no such evidence and no sign that it could be obtained.

152. Finally, these are not cases to which the *Fairchild* exception could foreseeably be made to apply. The House of Lords in that case and in *Barker* has made it plain that the scope of the exception will be very narrow. It is clear that the exception will only apply where the two or more potential causes act either through the same agent (eg asbestos dust in *Fairchild* or brick dust in *McGhee v National Coal Board* [1973] 1 WLR 10) or possibly through different agents which act on the body in the same way. At paragraph 24 of *Barker,* in a passage with which the other members of the House appear to have been in agreement, Lord Hoffmann said:

> "In my opinion, it is an essential condition for the operation of the exception that the impossibility of proving that the

> defendant caused the damage arises out of the existence of another potential causative agent which operated in the same way. It may have been different in some causally irrelevant respect … but the mechanism by which it caused the damage, whatever it was, must have been the same. So for example I do not think that the exception applies when the claimant suffers lung cancer which may have been caused by exposure to asbestos or some other carcinogenic matter but may also have been caused by smoking and it cannot be proved which is more likely to have been the causative agent.

153. Smith LJ had that observation in mind when she said, in *Novartis Grimsby*, that it was arguable that that case might be brought within the exception. That was because there was medical evidence that the amines which were the active carcinogenic substance in the dyestuffs to which the claimant had been exposed at work were the same amines that were present in cigarette smoke. (In the event, there was evidence to show that the risk from the dyestuffs had more than doubled the risk from smoking so the claimant succeeded without relying on the *Fairchild* exception.) But in contrast with that case, there is no evidence in the present cases to suggest for example that the carcinogenic effect of radiation operates in the same way as the carcinogenic effect of cigarette smoke. Nor has it even been established what the other risk factors are. All that can be said of many of the conditions is that they are very common, particularly in the elderly population.

154. So, we conclude that there is no foreseeable possibility that the Supreme Court would be willing to extend the *Fairchild* exception so as to cover conditions such as we are here concerned with, which have multiple potential causes some of which have not even been identified. We reject as highly unlikely the suggestion that the Supreme Court might be prepared, on policy grounds, to extend the exception well beyond that which was contemplated at the time of *Fairchild* or *Barker*. We say that because, to effect such a change would be to upset completely the long established principle on which proof of causation is based. It is true that *Fairchild* itself made a small inroad into that principle. The inroad is slight and there were strong policy reasons for it. But the inroad applies only to cases where the cause of the condition is known. It does not apply where the cause is unknown. Here the causes of the claimants' conditions are not known. All that can be said in these cases is that radiation exposure is one of several possible causes.

155. It is the task of the courts to apply the law as it presently stands. If we thought that there was any realistic possibility that the Supreme Court would change the law so as to accommodate these cases within the *Fairchild* exception, we would have regard to that when we applied the broad merits test. But we do not. We think that possibility is so remote that it can safely be discounted.

156. The purpose of our consideration of causation is limited to the role it will play if and when we come to exercise our section 33 discretion. We conclude that the claimants' cases on causation face very great difficulties, which are much more serious than they

appeared to Foskett J. We accept the theoretical possibility that further evidence might become available. But we must apply the broad merits test on the basis of the evidence which the claimants have put before the court.

Conclusion in respect of the judge's approach to the section 33 issues

157. We summarise our conclusions in respect of the judge's general approach to section 33 issues by saying that we think that there is sufficient concern about the propriety of the judge's approach legitimately to render his conclusions open to challenge and in the circumstances we are firmly of the view that we will have to exercise our discretion afresh as and when it becomes necessary to consider section 33. That is first because we think that the judge has significantly and wrongly underestimated the claimants' difficulties on causation and is therefore unlikely to have given appropriate weight to that when applying the broad merits test. We think also that he has demonstrated an incorrect willingness to give weight to the claimants' contention that if their cases are not allowed to proceed, there will be a perceived injustice.

The individual cases

158. We come at last to the question of the individual lead cases. We will take them in the same order as the judge.

Roy Keith Ayres

159. At the date of the hearing, Mr Ayes was 76 years old. He was unwell, suffering from cancer of the prostate with secondary bone cancer, but was able to give evidence by videolink.

160. Mr Ayres claimed damages for osteoarthritis of the left knee, cataracts and the cancers already mentioned. The prostate cancer was diagnosed on 2 December 2003 and the bone cancer in February 2004. The other conditions had been diagnosed much earlier but, for the purposes of the limitation issues, the parties focussed on the prostate cancer. His claim was deemed to have been commenced on 1 February 2007 and the essential question for limitation purposes was whether (as the MOD contended) the claimant had knowledge of the attributability of his condition as soon as it was diagnosed in December 2003 or whether, as he contended, he did not have knowledge until some time after he read a newspaper article in 'The Mail on Sunday' on 7 May 2006. This was headlined "Damning new evidence that could finally win justice for 1,000 nuclear bomb test veterans of Christmas Island". This referred to the work of Dr Rowland in New Zealand. Rosenblatt were named as the solicitors with conduct of the action.

161. Mr Ayres served as an aircraft fitter on Christmas Island from April to July 1957 and from July to October 1958. He recalled working on aircraft which had flown through

the mushroom cloud following each test and he swam in the sea and ate locally caught fish. He was not issued with a monitoring badge. He seems to have been aware of the potential for harm because he recorded in a notebook which he kept while there that "no effort had been spared in the organisation of the tests to ensure the safety of the personnel involved and to obviate danger to persons and property". He told the judge that it did not occur to him at the time that he might have suffered any harm as a result of his service in the Pacific. However, the judge recorded: "It was not until years later that he began to associate certain features of his deteriorating health with his time there".

162. The MOD's contention was that, some years before he was diagnosed with cancer, Mr Ayres had come to believe that he had been exposed to radiation and that this might be affecting his health. The result was that, as soon as he was diagnosed with cancer, he was able to attribute this to the radiation exposure. The MOD relied on an admission made in evidence that when he was given the diagnosis of prostate cancer, he knew there was a real possibility that it had been caused by radiation on Christmas Island.

163. In addition, the MOD relied on an admission that when he was suffering from haematuria in the late 1990s, Mr Ayres had read some articles about the BNVTA campaign and had realised that there was a possibility that that condition was linked to his time at Christmas Island. It was common ground that the haematuria was an early sign of the prostate cancer which was eventually diagnosed. In cross-examination, Mr Ayres admitted that from the time he had read a newspaper article in December 1998, "he firmly believed that (his haematuria) was capable of being blamed on the radiation". That article described the results of the work of Dr Rabbitt Roff and her view that there was a marked excess of cases of multiple myeloma among test veterans. Dr Rabbitt Roff was recorded as expressing the view that the MOD ought to compensate these victims.

164. Notwithstanding these admissions, the judge described Mr Ayres' state of mind as only a 'generalised suspicion' about the possible cause of his haematuria and justified that conclusion by reference to the fact that, although at this time Mr Ayres and his wife were aware of the BNTVA, they did not contact that organisation; nor when Mr Ayres consulted his GP on 31 December 1998, only a few weeks after reading the newspaper article about multiple myeloma, did he ask his GP whether his problems might be related to his time in Christmas Island.

165. Pausing there, in our view, it was not open to the judge to conclude that Mr Ayres' state of mind about his haematuria was one of 'generalised suspicion'. We recognise that the judge saw the witness and was entitled to make some allowance for the fact that he was not at all well. But even so, some good reason must be found for declining to give the words used by Mr Ayres their ordinary natural meaning. A man cannot say that he 'firmly believed' that his haematuria was capable of being blamed on radiation and yet be taken to have meant that he had only a 'general suspicion' that that was so. In any event, Mr Ayres had also admitted that, when he received the

diagnosis of cancer, he knew there was a real possibility that it was caused by radiation exposure.

166. Having concluded that Mr Ayres had only a generalised suspicion about the possible cause of his haematuria, the judge turned to consider whether, as the MOD contended, he must have realised the possible connection with radiation as soon as he was diagnosed with prostate cancer. The judge declined to do so, saying in effect, that it would have been natural for Mr Ayres to assume that he was just one of those unfortunate people who had developed prostate cancer later in life. Also, receiving the diagnosis would have been a very difficult time for him and his mind would have been on how he was going to cope with his illness.

167. We entirely agree with the judge's sympathetic view of Mr Ayres' state of mind in the weeks following the diagnosis of prostate cancer. However, in our view, the judge was starting from the premise that Mr Ayres had only a generalised suspicion about the cause of his haematuria. When one accepts, as we think we must, that Mr Ayres had a firm belief that his haematuria was capable of being blamed on radiation from the tests, and when one recalls Mr Ayres' admission that he knew, at the time of the cancer diagnosis that there was a real possibility that it was due to radiation, it seems to us that it was not open to the judge to do other than to hold that Mr Ayres had knowledge within section 14 as soon as he was diagnosed with cancer in December 2003.

168. Of course, no one expects a man who has just been diagnosed to rush off immediately to see a solicitor. He must have time to gather his thoughts. But that is why he has three years in which to take stock and seek out a solicitor and his solicitor has time to investigate the claim before it becomes time-barred.

169. Even if Mr Ayres' state of mind in December were more properly described as one of belief rather than knowledge, we would hold that his knowledge was sufficiently firmly held to make it reasonable that he should commence investigations into the viability of his claim. We are confirmed in that view by the fact that Mr Ayres did not feel the need to consult any expert before going to solicitors, Rosenblatt, having learned that they were conducting actions on behalf of other veterans.

170. For those reasons, we hold that Mr Ayres had knowledge for the purposes of section 11 in December 2003 and that by the time he commenced his action in February 2007, it was time-barred by a period of two months. If his action is to proceed, this Court must exercise its discretion under section 33.

171. Although the judge did not need to consider section 33, he expressed his view as to how he would have exercised it had it been necessary. He considered the reasons for the delay and thought they were understandable, given the personal difficulties Mr Ayres faced. We would not disagree with that and we recognise that a delay of only two months has little significance where the difficulties potentially faced by the MOD

relate to a delay over a period of 50 years, for which Mr Ayres has no responsibility at all.

172. The judge reminded himself of his earlier consideration of the question of whether it would still be possible to have a fair trial on the issues of liability. He thought it would be. We think he was entitled to reach that conclusion and we adopt it.

173. The judge then considered the broad merits test and the MOD's submission that the case could not succeed on causation. He reviewed the medical and epidemiological evidence in relation to Mr Ayres' prostate cancer. He noted Professor Mothersill's evidence that exposure to radiation would have increased the risk of that disease. He also noted Professor Parker's evidence that there are some studies 'which suggest that there may be a relation between prostate cancer and exposure to ionising radiation'. This evidence comes from a report of the United Nations Scientific Committee on the effects of Atomic Radiation (UNSCEAR). However the judge noted that the evidence was not conclusive and that overall there was little evidence supportive of an association. The judge concluded that, on the evidence, the link between prostate cancer and radiation was weak.

174. The judge then said that Mr Ayres' case on causation was 'arguable although by no means strong'. He acknowledged that Mr Ayres 'may face the difficulty of establishing that it was not more likely to have arisen spontaneously given his age rather than as a result of exposure to ionising radiation'.

175. We consider that the judge gravely understated the claimant's difficulty on causation. In our view, he most certainly would face the difficulty of showing that, on the balance of probabilities, his condition was due to radiation. We say that because, for the reasons we have already given we do not think it possible that the claimant could succeed on the basis that such exposure had increased the risk of the condition occurring. We think that the judge underestimated that difficulty. Having held that the case was arguable on causation, the judge exercised his discretion in the claimant's favour, after referring to the factors that he had set out earlier. We assume that he meant to include his view that it was important that there should not appear to have been an injustice.

176. Although this Court will always pay regard to the views of a trial judge who has heard all the evidence (even where the judge's views are only expressed *obiter* as here), we have come to the conclusion that Foskett J misdirected himself here in the exercise of his section 33 discretion. We say that mainly because we consider that he failed properly to assess the weakness of the claimant's case in applying the general merits case. We think also that he erred in that he appears to have thought that refusing to exercise his discretion in the claimant's favour would give rise to the appearance of injustice.

177. Our own assessment of the broad merits of Mr Ayres' case is that it is very weak on causation. We accept that, if he were to establish exposure amounting to a breach of

duty (as to which we will assume without deciding that he has a reasonable prospect), he would be able to show that the tort had materially increased the risk of him developing cancer. But for the reasons we have explained, that is not enough. On the evidence before us there is no real prospect at all of him demonstrating that the kind of exposure that he would have shown could on the balance of probabilities have caused his cancer. The epidemiology referred to by the judge shows what he called a weak link; we would describe it as tenuous. Moreover, we do not know whether such weak or tenuous link as has been observed is found in cases where the exposure is as low as the claimants anticipate demonstrating here.

178. It follows that, on consideration of the broad merits of his claim, we conclude that Mr Ayres' prospects of success are remote. That being so, we do not consider that it would be equitable to allow the action to proceed. We decline to exercise our discretion in his favour.

John Allen Brothers deceased

179. Mr Brothers was born in 1933 and developed oesophageal cancer in 1997. In 1999, he developed cerebral carcinoma secondary to the oesophageal cancer and died on 13 June 2000 at the age of 67. His widow, Mrs Wendy Brothers, commenced a claim for damages on 23 December 2004. It was common ground that Mr Brothers had died before the expiry of 3 years from the date on which he developed a significant injury. Therefore the limitation issue fell to be determined under section 12(2) of the Limitation Act. The limitation period would expire either three years after the death (13 June 2003) or three years after Mrs Brothers' date of knowledge, whichever were the later. The MOD's contention was that Mrs Brothers had such knowledge during her husband's lifetime or, if not then, she had it or should have had it soon afterwards. Her case was that she did not have knowledge until some time in 2002.

180. Mr and Mrs Brothers married in 1966, some years after Mr Brothers had taken part in the nuclear tests. He did not tell her much about his time in the Royal Air Force; he regarded himself as being bound by the Official Secrets Act. From the MOD records, it appears that Mr Brothers enlisted in the RAF and was present in the Pacific during the Mosaic tests starting in May 1956 and Operations Buffalo, Grapple and Antler in September and October 1957. He also took part in some smaller trials known as the TIMS trials.

181. Mr Brothers was a navigator and served on aircraft which flew through the radioactive clouds collecting samples. He wore a dosimeter and the MOD accepts that he was exposed to 108.8 mSv. Mrs Brothers alleges that this is an underestimate of his exposure, although there is no evidence to suggest by how much it is underestimated. The accuracy of the measurements is challenged and it would be contended that the dosimeter would not record any internal radiation dosage. In support of her case, Mrs Brothers produced a witness statement from Mr John Spatcher, a former pilot and colleague of her late husband. His evidence suggests that there were occasions on which they were exposed to significant radiation. In

addition, Mrs Brothers contends that her husband would have been exposed to fallout while swimming in the sea and as a result of eating contaminated fish. However, the MOD records suggest that for most of the time he was based on the Australian mainland.

182. Although Mr Brothers suffered a number of illnesses for which his widow initially claimed damages, the focus for limitation purposes was the diagnosis of oesophageal cancer. That was plainly a significant injury.

183. The couple lived in Australia from 1977 onwards and Mr Brothers died there. Mrs Brothers returned to the UK in 2007. Her evidence (which the judge accepted as truthful) was that, after the diagnosis of oesophageal cancer in 1997, she asked her husband whether he could have been affected by his service in the Pacific. He was adamant that he could not have been so affected because, he told her, he had been in a sealed aircraft with a sealed air supply. Mrs Brothers said that she did not persist in asking her husband about this, as he did not like to discuss his illness and she did not want to cause additional stress. Neither she nor her husband spoke to any doctor about the possible cause of his illness while he was alive.

184. In cross-examination Mrs Brothers was asked about the time when she had asked her husband about whether he could have been affected by his service in the radiation. She agreed that she had been angry to learn of the diagnosis but did not accept the suggestion put to her that that was because she believed the illness was due to radiation. The following exchange then took place:

> "Q: But in your mind, the cancer had caused by ---
>
> A: No, no, I was just asking
>
> Q: So you weren't sure, but you knew it was capable of having been caused by radiation?
>
> A: Well yes. But John had been protected. He understood that he had been protected totally. ---- So it was just—it did not apply to him."

The judge did not refer to this passage in his judgment although we consider it to be of some importance.

185. Mrs Brothers also said in evidence that, in the 1980s, she became aware from newspaper reports that some Australian test veterans were bringing claims for damages for illnesses, including cancer, which they alleged were due to radiation. She said that her attitude was that such reports did not relate to her husband because he was satisfied that he had been properly protected. The judge did not bring this evidence into account when considering Mrs Brothers' state of knowledge during her husband's lifetime although he did acknowledge it when considering the issue of

constructive knowledge under section 14(3). We think it is not without relevance to Mrs Brothers' actual state of knowledge during her husband's lifetime.

186. After the death, Mrs Brothers was deeply distressed and did not begin to make any enquiries about the death for about 9 to 12 months. The judge recorded that she then contacted Mr Spatcher who put her in touch with a Mrs Shirley Denson who was active within the BNTVA and whose deceased husband had been a veteran. Mrs Denson advised her to obtain the dosimetry records from the NRPB, which she did in January 2002. The records were received on 13 February 2002.

187. Mrs Brothers said in evidence that, about a year after her husband's death, she found a scrapbook that he had kept. Within it was an article dated 1994 relating to the atomic tests. After she found this, she herself began collecting such articles.

188. In her statement, Mrs Brothers said that, after her husband's death, she approached a physician at Albany Hospital named Dr Lindsay and asked him whether there might be a connection between her husband's cancer and his participation in the tests. He told her that he did not know enough about such matters to give an opinion. In evidence, Mrs Brothers said that this conversation took place about a year after the death.

189. The high point of the MOD's primary submission that Mrs Brothers knew before the death that her husband's cancer could possibly be attributed to radiation came from letters she wrote on 4 February 2002 to two doctors (Dr Ransom and Dr Harper) at the Royal Perth Hospital who had treated her husband in his last illness. The letters contained the same paragraph:

> "I have always believed that that John's cancers were caused by his RAF service in 1956/7, when he was flying through atomic clouds, collecting radiation samples at the Monte Bello Islands, Maralinga and Christmas Island. I have recently obtained a copy of his Radiation Dosage Chart. ……."

We will discuss the significance of the words 'I have always believed' in that paragraph in due course.

190. Dr Ransom replied on 4 April 2002, advising Mrs Brothers that it was possible that the radiation dose had at least in part contributed to the development of her husband's malignancy. However, Dr Ransom noted that Mr Brothers had been a smoker and that this was a known risk factor for carcinoma of the oesophagus. Mrs Brothers told the judge that her husband had smoked 20 cigarettes a day for many years.

191. Dr Harper, an oncologist, replied in June 2002 saying that exposure to ionising radiation increases the risk of malignancy but he warned that smoking is strongly associated with the development of malignancy in the oesophagus. He mentioned that

the risk from radiation might be magnified by smoking. He also said that malignancy was a complicated process and oesophageal cancer was associated with diet in some cultures.

192. In addition to advising her to write to the NRPB, Mrs Denson also put Mrs Brothers in touch with the solicitors (Russell Jones and Walker) who were investigating the death of her husband. The judge recorded that the advice she received from them (and also from Clarke Willmott whom she consulted the following year) was that she would have to wait until supportive evidence was available. However, the evidence shows that Russell Jones and Walker obtained a medico-legal report which opined that it would be difficult to prove that the cancer had been caused by radiation rather than smoking.

193. Mrs Brothers also applied for a war pension in April 2002 and this application was granted in October 2002.

194. The argument as put to the judge by the MOD was that Mrs Brothers plainly believed while he was still alive that her husband's cancer was capable of being attributed to radiation exposure. First, it relied on her admission that she was aware that Australian veterans were bringing claims for damages during the 1980s. Even if this did not affect her and her husband, it was background information which she had acquired. Second, the MOD relied on her admission that she knew, at least in general theory, that her husband's cancer was capable of having been caused by radiation, even though she believed that he himself had been fully protected. Moreover, she told Drs Ransom and Harper that she had always believed that her husband's cancer had been caused by radiation. In cross-examination, she explained to the judge that she was 'over-emphasising' the point. She wished to express herself forcibly to the doctors so that they would take her enquiry seriously. In his judgment, the judge recorded that and his acceptance of it. However, he did not record the passage of cross-examination which immediately followed that explanation. It was put to Mrs Brothers that it would have been more accurate to say (in the letters to the doctors) that she strongly believed that the cancers were capable of being caused by radiation but not that they were actually so caused. She agreed with that proposition, perhaps somewhat reluctantly, by saying: "Yes I suppose".

195. The judge concluded that Mrs Brothers did not have knowledge of attributability until some time in April 2002 after she had taken medical and then legal advice. He rejected the MOD's contention that she had had the requisite degree of knowledge before her husband's death. The judge said this at paragraph 671:

> "The Defendant's argument is that she had raised in her own mind (and indeed directly with her husband) the question of whether the tests could have had anything to do with the cancer that he developed. However, as it seems to me, her husband's adamant view that it was nothing to do with that would have to be conclusive on the issue unless there was clear evidence that she did not accept it and had been looking into the matter with

> vigour prior to his death. … I have absolutely no doubt that, entirely reasonably, the whole focus of her life and that of her husband after the diagnosis in 1997 was to address the treatment he needed rather than to spent time questioning how it all came about. …. There is nothing in the contemporaneous medical records to suggest that either she or Mr Brothers raised the question of the tests with any other doctors. The only basis upon which it could be suggested that Mrs Brothers was herself convinced of a connection between his presence at the tests and the cancer was the sentence in her letter, commencing with the words "I have always believed". Those words were, of course, used nearly two years after her husband had died and at a time when she had taken some preliminary steps to start investigating. She says that she was over-emphasising the strength of her feeling to ensure that the recipients of the letters took notice. I am inclined to accept that. There is really no material prior to that letter that suggests that she had formed any such clear and unambiguous belief before his death. It may be that the true reading of that letter is that by the time she wrote it she had come to believe in the connection between his presence at the test an his death but anything prior that was in my judgment nothing more than a generalised suspicion."

196. The MOD makes a number of criticisms of that passage. Dealing first with the last sentence, it seems to us that the judge's attempt to explain the meaning of the words "I have always believed" is not justified on the evidence. Mrs Brothers did not suggest this in evidence; her explanation was that she was over-emphasising her views for a purpose. Moreover the use of the word 'always' is quite inconsistent with the notion that this was a recently acquired belief.

197. However, the MOD makes two further points. First, the judge has omitted to note and take into account significant aspects of Mrs Brothers' evidence as to her state of mind during her husband's lifetime. We have mentioned these in summarising her evidence. They relate first, to her knowledge that Australian veterans were claiming damages in respect of radiation exposure; second to her admission that she was aware certainly by 1997 that radiation was capable of causing cancers and third to her acceptance that, when she wrote to the doctors in 2002, a more accurate (ie not over-emphasised) version of what she wanted to say to the doctors was that she strongly believed that the cancers were capable of being caused by radiation. The implication is that she had held that view, if not for always, at least for some considerable time.

198. The MOD's second further point is that the judge has set far too high a threshold for the knowledge that Mrs Brothers needed to have before it could be said that she had knowledge within section 14(1)(b) as explained in *Spargo.* The judge thought that the words used in the letters to the doctors were insufficient evidence that Mrs Brothers was "convinced of a connection" between the radiation and her husband's cancer. He says that there is nothing to suggest that she had "any such clear and unambiguous belief" before her husband's death. If the judge thought it was necessary for her to be

'convinced' of or to have a 'clear and unambiguous belief' in the connection, that would be too high a threshold. Attributability means only knowledge that the condition was capable of being attributed to the exposure in the sense of being a real possibility. Also, from *Spargo* and the other authorities we cited earlier, it is clear that the claimant has the requisite knowledge when she knows enough or believes sufficiently strongly in the connection to make it reasonable to begin to investigate whether or not she has a case against the defendant.

199. We accept the MOD's criticism of the judge's approach to Mrs Brothers' actual state of knowledge during her husband's lifetime. We think that he set the threshold too high in that he appears to have been looking for evidence that Mrs Brothers had a conviction or a clear and unambiguous belief in the connection between her husband's illness and his cancer. The threshold is much lower, as principles 2 and 3 in the report of *Spargo* make clear.

200. On the evidence, Mrs Brothers knew in 1997 that her husband's cancer was capable of being caused by radiation. She knew also that there was a possibility that he had been exposed to radiation during the tests, even though he himself did not believe that he had been. She knew that his job had entailed flying through the atomic clouds. It seems to us therefore that she had sufficient knowledge for the purposes of the Limitation Act even though there were a number of matters which still required investigation, such as how much exposure her husband had had and whether any doctor was of the view that her husband's cancer actually had been caused by radiation. But those investigations were for later. As soon as she knew that her husband had cancer, she knew enough to make it reasonable for her to begin to investigate whether or not there was a case against the MOD.

201. Of course we understand why Mrs Brothers did not begin those enquiries until later. Her life had been turned upside down and she and her husband had to concentrate on his treatment and to cope with all their problems. We understand and are wholly sympathetic to Mrs Brothers when it comes to considering why she did not begin her enquiries for some time after her husband's death. Those matters, which go to explain why she delayed in taking action, are properly to be taken into consideration at the stage of the section 33 enquiry. They do not alter the fact that, objectively considered, she had enough knowledge by 1997 to start investigating the merits of the claim. For those reasons, we conclude that Mrs Brothers' claim was prima facie time- barred on the third anniversary of the death, that is on 13 June 2003. The claim was brought about 18 months out of time.

Section 33

202. We will consider briefly the factors set out in section 33(3). As we have said, there was about 18 months delay before proceedings were issued. The MOD makes the point that there is no very clear explanation as to why the action was not begun before June 2003. After all, Mrs Brothers had consulted Russell Jones and Walker in 2002. The delay in the last 18 months before issue was not directly attributable to Mrs

Brothers' inability or unwillingness to take steps due to her state of bereavement and distress. She had taken legal advice in good enough time. We would accept that there is no clear reason why this particular action was not commenced earlier. The evidence, which the judge accepted, was that there were all sorts of collective difficulties with funding which made the delay inevitable. The judge made the point that, whatever the explanation or lack of it, the delay was trifling when considered in the context of the MOD's overall evidential difficulties. We agree and agree with the judge also that, in a case like this one, the real issue on evidential difficulties is not the effect of 18 months delay in issue but that which is inherent in a claim which relates to events more than 50 years ago.

203. For reasons which the judge set out in some detail and which we have earlier referred to, we consider that although the MOD would face formidable evidential difficulties in this as in each and every case, those difficulties are not such as would prevent a fair trial. The real issue in this case, as in that of Mr Ayres, is whether it would be equitable to allow this action to proceed, bearing in mind the application of the broad merits test.

204. The MOD argues that the claimant's case is weak on the liability issues, notwithstanding the admission that Mr Brothers was exposed to 108 mSv of radiation. That, they contend, was within acceptable limits and the claimant gives no indication of how she would propose to demonstrate that this was an underestimate of his actual exposure. We observe that this does not appear to be a case in which the claimant could attempt to estimate a dose from fallout by reference to the Rowland report as Mr Brothers does not appear to have been stationed in an area which is in any way comparable to the positions of the New Zealand frigates. So, we would say that the claimant's case on liability and exposure (above the admitted level) appears to have real difficulties but is not unarguable.

205. The claimant's real problems arise on causation. We know that both the Australian doctors of whom Mrs Brothers made general enquiries in 2002 did not provide opinions supportive of a causal link; rather they stressed that it was well known that smoking was a powerful cause of oesophageal cancer and that Mr Brothers was a smoker. Further, it appears that when Russell Jones and Walker obtained a medico-legal legal report, the chest physician advised that the claimant would have difficulty in showing on the balance of probabilities that the cancer was due to radiation as opposed to smoking.

206. It is common ground between the parties that exposure to radiation would increase the risk of oesophageal cancer. For reasons we have already explained that will not be sufficient to prove causation.

207. The claimant has not produced any medical evidence to show how she might hope to satisfy the 'but for' test of causation. Professor Kaldor for the MOD has opined that in order to show that the risk of developing oesophageal cancer had been doubled by exposure to radiation, it would be necessary to demonstrate exposure of the order of

1000 mSv. We do not think that the claimant has any hope of demonstrating so large a radiation dose.

208. Accordingly we conclude that the general merits of the claim are extremely weak. Accordingly, we do not think it equitable to exercise our discretion so as to allow this action to proceed.

Kenneth McGinley

209. Mr McGinley was born in 1938. He gave evidence at the hearing. His claim, which was commenced on 23 December 2004, relates only to infertility which he says was diagnosed in 1976. He has at times in the past alleged that he has suffered from a variety of illnesses which were attributable to exposure to radiation during the Pacific tests but those conditions are no longer relied on.

210. The main issue in his case was therefore when he had knowledge that his infertility could possibly be attributed to his exposure to radiation during the tests. The MOD's case was that he had had knowledge from about 1982. That was based upon his acquisition of a great wealth of knowledge resulting from his involvement with the BNTVA of which he was Chairman for some years from its inception in 1983. In view of the statements he had made publicly since the early 1980s about the known effects of radiation on health, including infertility, it was difficult for Mr McGinley to argue that he had not had the requisite knowledge. The judge held that he had had knowledge from the mid-1980s and that his claim was therefore prima facie statute-barred. There is no cross-appeal in respect of that holding.

Section 33

211. The judge began by acknowledging that there had been a long delay in commencing the claim. In fact, the delay is of the order of 16 years. One might have expected that that delay and the reasons for it would figure largely in the judge's reasoning but they did not. No reasons were advanced; we think that the judge must have had in mind the generic reasons for delay which he had referred to earlier, namely the evidential difficulties which he thought were relieved only in 2002 when the claimants' solicitor became aware that the Rowland study was likely to be helpful to the claimants and the problems of funding. The judge rather brushed the delay aside observing that the defendant would be in no worse a position than it would be in any of the other cases. There was an abundance of contemporaneous documentation and he was satisfied that there could be a fair trial.

212. While we do not disagree with the conclusion that a fair trial would still be possible, we do think that a delay as long as this should not be brushed aside quite so readily. Although a trial might be fair, the defendant must have been disadvantaged by the passage of time as long as 16 years. If the present case had been brought in time, many of the witnesses whom the MOD would have wished to call would still have

been alive and able to give evidence. That is not an insignificant feature and should have been brought into the balance when deciding the section 33 issue. However, we would accept that Mr McGinley's delay is excusable to a large degree because of the evidential difficulties he faced, which he and his advisers seem to have thought were adequately resolved by 2002.

213. The judge considered difficulties of causation only briefly. It is common ground that exposure to radiation can cause infertility and reduced fertility. It is also common ground that infertility is a not uncommon finding throughout the population. There may, so far as we are aware, be many causes, some known and some unknown. The judge referred to the fact that Mr McGinley had not had a seminal analysis done before he went out to the Pacific as a young man in his early 20s. No analysis was done until he was 38. The judge acknowledged that it may be difficult for him to prove that the infertility was caused by radiation as opposed to anything else. No medical evidence has been produced to assist him in this task.

214. The judge exercised his discretion in Mr McGinley's favour on the basis that these difficulties in proving causation would not outweigh the other factors which he had identified earlier as being of general application and which tended to point in favour of allowing the actions to proceed.

215. With respect, we think that the judge has erred in the exercise of his discretion. We have already explained why we consider the judge to have been wrong to regard the perception of injustice as a weighty factor. That was one of his factors of general application. In addition, we think that the judge has wrongly failed to take into account the effect on the cogency of the defendant's evidence which must have resulted from a delay of 16 years. The fact that the delay was excusable and that one could still say that a fair trial is possible does not wipe out the prejudice caused by the long delay in this case. Finally we would say that the claim is not strong on causation. It may not be quite as weak as some others in that the evidence may be that relatively low levels of exposure can cause infertility; we have not been shown any figures. For reasons we have explained, we say nothing more about the prospects on liability save to repeat that they are not strong.

216. Taking these factors into consideration and balancing the prejudice to the parties, we would conclude that it is not equitable to require the MOD to defend this very stale claim.

Michael Richard Clark, deceased

217. Mr Clark was born in April 1938 and died of lung cancer and metastatic lymph node and bone cancer in September 1992 at the age of 54. A claim was commenced by his widow on 31 March 2005. It was accepted on Mrs Clark's behalf that, on any view, the primary limitation period had already expired when she commenced proceedings and that she would need a favourable exercise of the court's discretion under section 33. However, the concession made by the claimant was that the limitation period had

only just expired and that there was very little delay to be taken into account. That was not accepted by the MOD who contended that both Mr and Mrs Clark had had the requisite knowledge in his lifetime and that the primary limitation period therefore expired in September 1995, three years after his death. If that were right, a delay of about 10 years would fall to be taken into account. The judge eventually accepted that Mrs Clark's concession represented the true position; there was very little delay in commencing proceedings. He exercised his discretion in her favour under section 33. The MOD appeals this, contending first that the judge was wrong to hold that the delay was very short and second that, whatever the outcome of the knowledge issue, the section 33 discretion had been wrongly exercised.

218. Mr Clark was stationed on Christmas Island as a sapper in the Royal Engineers from November 1957 until November 1958. He was involved in the Grapple Y and Z tests. After discharge he worked as a taxi driver. Over the years he has complained of various illnesses but the focus of the claim and the limitation issue was the diagnosis of lung cancer in February 1991.

219. There was clear evidence that, at the time of his diagnosis Mr Clark was aware of the possibility that his condition had been caused by radiation. He immediately mentioned to the doctor that he had served on Christmas Island. He dictated a statement of his recollections of conditions on the island, the purpose of which was, as Mrs Clark told the judge, so that "everything could be put down for future reference in case it were needed for a case like this". Mrs Clark was aware at the time that her husband was doing this and why. Further, Mr Clark was soon in touch with Mr McGinley at the BNTVA. A representative of that organisation came to visit him at their home and Mr and Mrs Clark then learned that many veterans were alleging that their ill health had been caused by exposure to radiation and that the BNTVA was helping them to claim damages. Further still, in November 1992, shortly after her husband's death, Mrs Clark made an application for a war pension in her own right based upon the claim that her husband's cancer and death were related to his service on Christmas Island. That application was rejected in due course.

220. In our view, it is somewhat surprising that the judge held that Mrs Clark did not know during his lifetime that her husband's cancer, which was clearly a significant injury, was possibly attributable to exposure to radiation on Christmas Island. He accepted that Mr Clark himself had had the requisite knowledge but held that Mrs Clark was not 'infected' by that knowledge. So far as we can see from examination of the transcripts of her evidence, she shared in his knowledge, although she made it plain that, because of her state of distress, she was not focussing on the issues to the extent that he was. It is clear that she was there when the representative from the BNTVA came to visit and she heard him talking about the other servicemen who were trying to bring claims for damages. She told the judge that, later, after her husband's death, she stayed in touch with BNTVA and came to understand that there was not sufficient evidence to start proceedings at that time. She also said that the only reason she applied for a pension was that BNTVA told her to do so and she did not think much about the basis on which she was applying.

221. The judge was of the view that, although Mr Clark had knowledge of the possibility of the connection, Mrs Clark was and remained in a state of 'uncertainty'. That uncertainty was confirmed by the refusal of a war pension which asserted that Mr Clark had not been exposed to any radiation above background levels. The judge concluded, at paragraph 734 of the judgment, that although Mrs Clark had suspicions that her husband's cancer might have been caused by radiation, she did not have the 'level of conviction' that he had. Accordingly, the judge thought it necessary to examine later events to see how and when she crossed the threshold into the 'arena of knowledge'. Having done that, he concluded that it was not until she consulted solicitors in 2002 that she had knowledge. He does not explain by what process of reasoning she decided to consult solicitors, although her evidence to the judge shows that this was at the encouragement of her daughter who had read an article in a newspaper.

222. It seems to us that, in this case, as in the case of Mrs Brothers, the judge has set too high a threshold for knowledge. He seems to require that the claimant should have a degree of conviction about the causal connection. That in our view is wrong. All that needs be shown is that the claimant knew that there was a real (as opposed to fanciful) possibility that there might be a causal connection between the exposure and the illness. In so far as Mrs Clark's state of mind would more aptly be described in terms of belief rather than knowledge, she needed only to have a strong enough belief to make it reasonable to expect her to start making enquiries. That, in our view, she certainly had while her husband was alive. We can understand why she did not take steps during his lifetime and for some time thereafter but in our view she cannot be heard to say that she was not aware of the real possibility that her husband's cancer was due to his employment on Christmas Island.

223. It follows that, in our view, the primary limitation period expired on the third anniversary of the death, in September 1995. The claim was delayed by the substantial period of 9.5 years. For that reason and for the reasons already given, we must exercise our discretion under section 33 afresh. In considering that, we note that the main reason why Mrs Clark did not take action sooner was that she believed, from information provided by the BNTVA that there would have been real evidential difficulties standing in the way of a successful claim. That we can well understand as we think that there still are. However, we must observe that legal aid could have been available to Mrs Clark in the period in which she should have commenced proceedings.

224. We consider that a delay of 9.5 years must have caused some real prejudice to the MOD's position, in that some of the witnesses who could have been called at the trial of an action in, say, the late 1990s, will not now be available to them. However, that is not to say that there could not be a fair trial.

225. The most important issue is the application of the broad merits test, in particular in relation to causation. The evidence on causation in this individual case is not helpful to the claimant. It is common ground that the most common cause of lung cancer is cigarette smoking. Mr Clark smoked quite heavily throughout his adult life. It is also

common ground that radiation exposure is a cause of lung cancer. Therefore, both radiation (to the extent that it can be proved) and cigarettes are risk factors in the present case. Professor Kaldor (for the MOD) expressed the opinion that, in order to double the risk of lung cancer, the radiation exposure would have had to be in excess of 1000 mSv. It is not suggested that Mr Clark could have had exposure of that order. Indeed, we think that in order to be fair to the claimants, we must work on the assumption that the radiation dose which the claimants might hope to prove would be in the general order of that assessed for the New Zealand Veterans, viz about 170mSv. Professor Parker (for Mrs Clark) appears to accept Professor Kaldor's evidence but makes the point that the risk of lung cancer is materially increased at exposures much lower than 1000mSv. Professor Mothersill says that Mr Clark's exposure will have increased his risk of lung cancer. That is not disputed but, for reasons which we have already explained, it is not enough to enable Mrs Clark to prove causation. The claimant has produced no medical evidence to support a causal link on the balance of probabilities or to explain how the risk from radiation might inter-act with the risk from smoking. The MOD has done so. The report of Dr Spiro, a chest physician instructed by the MOD opines that because the relative risk of lung cancer is between 13 and 21 times greater for a smoker than a non-smoker, it is likely that Mr Clark's cancer was caused by smoking. Even taking into account that any risk arising from radiation would be additive to the smoking risk, any additional risk from radiation would be small and would not affect his conclusion.

226. As we have said, we have to apply the broad merits test on the basis of the materials which the parties have put before us. On that material, we conclude that the claimant's case on causation is extremely weak; overall, the prospects of success are very poor. Taking that into account, together with the other factors which we have discussed earlier, we conclude that it would not be equitable to allow this action to proceed.

Andrew Dickson, deceased

227. Mr Andrew Dickson was born in 1938 and died of a heart attack on 26 May 2006. On 23 December 2004, he commenced an action against the MOD alleging that he had developed various medical conditions as a result of exposure to radiation on Christmas Island. These included skin conditions, first noticed in 1958 but recurring since, lethargy, loss of concentration and memory loss starting in the early 1980s, stomach problems/colitis starting in the late 1950s but worsening in the 1980s and ischaemic heart disease and renal failure from about 2003. After Mr Dickson's death, the action has been continued by his widow, Mrs Evelyn Dickson.

228. The limitation issue in this case was whether Mr Dickson had the knowledge necessary to start time running before 23 December 2001. The judge held that he did not and that Mrs Dickson was entitled to proceed to trial as of right. However, he indicated that, even if he had found that the claim was prima facie time-barred, he would have exercised his discretion in the claimant's favour. The MOD appeals the primary finding and submits that, if the claim was time-barred, the discretion should not be exercised.

229. Mr Dickson served on Christmas Island from March 1958 and March 1959 as a lance corporal in the Royal Engineers. This period encompassed the Grapple Y and Z tests. His witness statement dealt mainly with allegations of prompt radiation, which have now been abandoned, and there is little detail as to the manner in which he was exposed to fallout. We will assume that the claim in relation to fallout exposure will be put in a way similar to the others.

230. The evidence in relation to Mr Dickson's knowledge about a possible connection between exposure and his various illnesses comes mainly from published materials. Mr Dickson became a member of the BNTVA in 1986 and was described by the judge as being a 'tireless and obsessive campaigner for the cause from (then) until his death'. The cause in question was that of obtaining 'justice' for the veterans. Mr Dickson's activities included writing to Government ministers, writing for various newspapers and magazines, giving interviews and lectures. It appears that he did not always express himself with moderation. The judge noted that he had been expelled from the BNTVA in 1990, probably, said the judge, because he was 'saying things of which they disapproved'. He continued his campaign as an individual after his expulsion. By way of example of the less than accurate way in which Mr Dickson could express himself, the judge quoted from an article which appeared in *The People* in February 1992 in which he had apparently said that his files had been checked and demonstrated that he had been exposed to quite high levels of radiation – something the Ministry of Defence had never admitted. He had added "Now I want some action". No such 'files' appear to exist.

231. The judge found that Mr Dickson held a genuine belief that his health problems had been caused by radiation exposure and that successive governments had not been truthful about the level of exposure which had occurred or the effect of it upon those present. The judge did not say to what period that finding related but it appears to have been based on an inference from Mr Dickson's own writings and statements published over the years beginning with his involvement with the BNTVA. In 1989, Mr Dickson applied for a war pension alleging that his immune system had been damaged by radiation. The range of conditions in respect of which he claimed was later greatly widened. His claim was rejected and his appeals failed.

232. In contrast to the quite forceful expressions of opinion by Mr Dickson, his widow told the judge that her husband had

> "believed that his health problems might have been caused by radiation exposure during his time on Christmas Island. He was of this view from the mid 1980s and as his health continued to deteriorate he wondered whether this was part of the continuation of a pattern of radiation related ill health".

The judge emphasised the words 'might' and 'wondered'.

233. It is not clear what the judge made of the contrast between Mr Dickson's 'genuine belief' and Mrs Dickson's evidence of his wondering uncertainty. He had accepted

Mrs Dickson as a witness to truth but, as the MOD submitted, it would have been perverse for the judge to hold that Mr Dickson had only a suspicion about the connection when, as the judge had already held, he had a 'genuine belief' in it.

234. The MOD argued that, even accepting Mrs Dickson's description of her husband's state of belief, that was enough to fix him (from the mid-1980s) with knowledge of a possible connection between his ill-health (by that time, recurring skin conditions, lethargy etc and stomach problems/colitis) and radiation exposure. The judge did not explicitly deal with that submission. Instead, he considered the whole question of whether Mr Dickson had knowledge in the 1980s of the possible connection between his then current illnesses and radiation exposure. He held that Mr Dickson did not have the knowledge necessary for section 14 because, at the time, none of those conditions (except the skin condition) were generally thought of as being attributable to radiation.

235. We observe first that the judge did not go on to deal with the skin condition, which he seems to have accepted was one which 'people generally' did think could be attributable to radiation. He did not consider whether the skin problems amounted to a significant condition so that time could have started to run in respect of those problems. But that matters not because the real question is whether the judge was right to hold that time had not begun to run in respect of any of the conditions present in the 1980s because they were not then generally thought to be attributable to radiation – and one might add, are still not generally thought to be so attributable.

236. The MOD submitted that the judge was wrong. He should have asked himself what Mr Dickson knew or believed. Instead, he asked himself what other people generally thought; in other words what an expert would have thought and said if asked. That, submits the MOD is irrelevant; it is Mr Dickson's state of knowledge or belief which matters. We agree. It seems to us that the judge could not go back on his finding that Mr Dickson had a firm belief that radiation exposure had made him ill. That belief may well have been mistaken but that does not matter. It was held with such conviction that he ought at that stage to have begun investigating his claim; in other words, time had started to run in respect of the conditions from which he was then suffering. There is nothing to suggest that they were not significant conditions. Indeed, we understand that Mr Dickson gave up work on account of them.

237. Shortly after expressing the conclusion discussed above, the judge also said that it appeared to him that although Mr Dickson was expressing his concerns (we would say beliefs) about the health consequences of the tests, time did not run against him because he had been 'barking up the wrong tree'. His erroneous belief could not be translated into 'knowledge' for the purpose of the Limitation Act. We disagree. First, we take it that the expression 'barking up the wrong tree' is a reference to the use of those words in *Spargo* where it is said that a claimant will not have knowledge if he thinks that he knows the acts or omissions he should investigate but in fact is barking up the wrong tree. We do not think that it could be said that Mr Dickson was 'barking up the wrong tree' simply because he was convinced of something which may not in the event have been true. From about 1986 Mr Dickson entertained a conviction that

all his illnesses were not only capable of being attributed to radiation exposure but were in fact so attributable. His medical records show that he was in the habit of informing his doctor that the condition from which he was suffering had been caused by radiation exposure. The records do not make it plain whether the doctor or doctors ever told him that he was wrong. In any event, whatever was said to him did not affect his state of belief in the causal connection. We do not know why Mr Dickson did not consult a solicitor at that stage but one might infer that it was because, through the BNTVA, he gathered that there was insufficient evidence on which he could sensibly proceed. It cannot have been because he did not believe in the causal connection. His belief in that connection was eventually extended to embrace his ischaemic heart disease when he developed that in about 2003. The evidence shows that his belief was the foundation of his decision to instruct solicitors to commence this action. It can hardly be said that a belief which founds a decision to commence an action does not amount to knowledge for the purpose of limitation.

238. We conclude that, so far as the 1980s illnesses are concerned, Mr Dickson had knowledge sufficient to start time running from about 1986. Because he had only one cause of action for personal injury arising from exposure, it follows that he was also out of time in respect of the development of ischaemic heart disease, which was diagnosed in 2003 and was, we understand, a significant condition from about then or by 2004. Thus, for his widow to be permitted to proceed with the claim, it will be necessary for her to obtain a favourable exercise of the section 33 discretion.

239. The judge began his hypothetical consideration of section 33 by observing that the evidence of a causal connection between radiation exposure and ischaemic heart disease was 'weak'. That seems to us to be an understatement. The judge had noted that Professor Mothersill had not been able to support the claim in respect of ischaemic heart disease and that Professor Parker had done so only to a very limited extent, saying that recent research suggested that exposure to ionising radiation increased the risk of a number of 'non-cancer outcomes' including ischaemic heart disease.

240. However, the judge said that this was not important because he had to consider whether the claimant should be allowed to proceed in respect of the other conditions, those which were present in the 1980s and which, *ex hypothesi* Mr Dickson had knowledge of. He then said that, when one considered the state of medical knowledge at that time, there was little support for the attributability of those conditions to radiation. We would observe that we are not aware of any such support, other than in respect of the skin conditions. The judge expressed the view that, on the basis of the 'old evidence' he would have hesitated to allow the case to proceed. Now, however, there was new evidence on attributability. Both Professors Mothersill and Parker had said that there was evidence that radiation could cause 'immuno-compromise' which could lead to a 'wide range of diffuse symptoms'. That being so, the judge felt that the claim was not so weak on causation that that must override the other general factors mentioned by him earlier which militated in favour of continuance.

241. We do not agree. We think that the case on causation is extremely weak in relation to lethargy etc, stomach problems/colitis and ischaemic heart disease. It is not strong even in relation to the skin conditions, although we would accept that it would be arguable. No doctor has said that these skin conditions were probably caused by radiation. But the MOD has produced a report from Dr White a dermatologist who opines that these skin conditions were not related to radiation exposure.

242. The delay since the expiry of the primary limitation period has been considerable, of the order of 15 to 18 years, certainly long enough to give rise to prejudice to the MOD through the loss of available witnesses. No doubt the delay is excusable in that there have been evidential difficulties standing in the claimant's way.

243. But in the end, we ask whether it would be fair as between the parties to require the MOD to meet this claim when the only part of the claim on which there is any even arguable possibility of success is in respect of the skin condition. The damages would be modest and we do not think continuance of this claim would be equitable.

Arthur Hart

244. Arthur Hart was born in 1937 and served as a Royal Navy engineer mechanic on HM Diana which was operating at Monte Bello during the Mosaic I and Mosaic II tests in May and June 1956. On 23 December 2004, he commenced an action against the MOD claiming damages for several conditions some of which have now been abandoned. At the hearing before the judge, Mr Hart was seeking damages for multiple lipomas (benign fatty lumps on the skin), which had first manifested themselves in about 1960 and for bowel cancer which had been diagnosed on 23 July 2002. The MOD's case was the lipomas were a significant injury and that, by 1988 or by 1991 at the latest, Mr Hart had known or believed that they were capable of being attributed to his exposure to radiation in the Pacific. For Mr Hart, it was contended that the lipomas were not significant and that he never knew or believed that they were capable of being attributed to radiation exposure. The judge appeared to hold that the lipomas were not a significant injury, (saying that Mr Hart "would not have wanted to go to court simply for the lipomas, which although unsightly were not interfering with his life") but in any event held that Mr Hart did not have knowledge of attributability such as would start time running against him. Thus, he could rely on his bowel cancer as the significant injury for limitation purposes. As this was diagnosed less than three years before he commenced proceedings, his claim was not statute-barred. But, the judge indicated that, if he were wrong about that, he would exercise his section 33 discretion in Mr Hart's favour.

245. The MOD appeals, contending that the judge was wrong about the primary limitation period; he should have found that the lipomas were a significant injury and that the claimant had knowledge of their attributability by 1991; so the claim was statute-barred by 1994. The section 33 discretion should not be exercised. There was significant prejudice to the MOD and the claim was very weak on liability and causation. For Mr Hart, it was conceded that the judge had been wrong to hold that

the lipomas were not a significant injury it was contended that the judge had been right in other respects.

246. Mr Hart served on the HMS Diana and it was common ground that this ship sailed through the atomic cloud after at least one of the Mosaic explosions. Mr Hart alleged that, during this procedure, he was stationed on the open deck and was provided with 'supposed' protective clothing. It is clear that this account would be strongly challenged by the MOD whose contention was that all the crew were below decks in a 'citadel' which was secure against radiation exposure.

247. In the 1970s, some years after Mr Hart had begun to develop lipomas, he mentioned to his GP and a consultant that the lipomas had begun to appear not long after he had been present at the nuclear tests. He was reassured that there was unlikely to be any connection between the two. However, in the 1980s he began to see articles in the press which, he said, made him wonder whether there might be a connection between his exposure and his skin problems. He joined the BNTVA in January 1988, having received information about that organisation from Mr Jack Ashley MP. He told the BNTVA that he had had severe skin problems and unsightly lumps ever since the tests. He then learned from Mr McGinley about the organisation's objectives of gaining 'recognition and eventually recompense from the MOD". The recompense was to be for the illnesses and deaths due to contamination with radiation.

248. Notwithstanding that evidence which strongly suggests that Mr Hart knew or believed at that time in January 1988 that there was a possibility that his skin problems and lipomas had been caused by radiation, the judge held that he did not have such knowledge.

249. In April 1991, Mr Hart saw an article in *The People* entitled 'Ship of Doom'. It was about the HMS Diana and invited former crew members to come forward. Similar articles appeared later in the year. In consequence of this and following advice of the BNTVA, in August 1991, Mr Hart applied for a war pension asserting that he had been on the upper deck as HMS Diana had sailed through the radioactive cloud. He said that since his discharge from the Royal Navy he had suffered approximately 100 unsightly body lumps. He told the judge that he believed the contents of his pension application to be true. He underwent a medical examination but in due course his application was refused. The MOD asserted that he had not been on the upper deck as alleged. His radiation exposure would not have significantly exceeded zero and, in any event lipomas were not related to radiation.

250. The judge said that he could not 'bring himself' to conclude that Mr Hart had knowledge of the possible connection between his lipomas and radiation exposure at the time when the MOD was saying that the proposition was unsustainable on several grounds. With respect, we consider that the judge was wrong so to hold. The fact that a defendant makes statements which amount to a denial of liability and causation does not mean that a claimant is deprived of the knowledge of a possible connection which he otherwise believes in. In any event, there is no evidence that the MOD's

rejection of his pension application had any effect on his mind. Far from it, the evidence suggests that he continued to harbour his belief in the connection but did nothing further about it until he was diagnosed with bowel cancer in 2002.

251. In our judgment, the judge erred when he held that Mr Hart had never had more than a suspicion about the connection between radiation and his lipomas. The judge did not record the acquisition of any further degree of knowledge in the period between 1991 and 2002 when, on developing bowel cancer, Mr Hart consulted solicitors. If he had sufficient knowledge in 2002 (as he clearly did) he must, as it seems to us, have had a similar degree of knowledge by 1991 at the latest.

252. We note in particular, that the judge accepted Mr Hart as a witness of truth. We note also that, after his discharge from the Royal Navy, he worked for British Rail for many years and rose to a position of some seniority. On his retirement from that employment in 1992, he was employed as General Services Manager with Fiat Auto. We do not think that an intelligent man, as he clearly was, could apply for a war pension and yet claim that he did not believe that there was a casual connection between his exposure and his medical condition.

253. It is our view that probably by 1988 and certainly by 1991 at the latest Mr Hart had knowledge that his lipomas were a significant condition and also believed that they were caused by radiation exposure. His belief was strong enough to make him apply for a pension and we think it was strong enough to make it reasonable to expect him to begin investigating a possible claim. We conclude that an action in respect of radiation exposure was prima facie time-barred by 1994 at the latest. Mr Hart requires the exercise of the court's discretion under section 33.

254. The MOD contended that the delay of ten years had caused significant additional prejudice. Several witnesses who would have been available had the claim been brought in time have now died. This is particularly important as there is such a stark conflict of evidence about the somewhat unusual circumstances of Mr Hart's alleged exposure. We would accept that there has been additional prejudice due to this delay and that it should not be left out of account. However, we remain of the view that, even so, it would still be possible to have a fair trial.

255. The real difficulty as it appears to us is, once again, with causation. So far as the lipomas are concerned, the only evidence supporting a causal link comes from Professor Mothersill. It is in the most general terms. She explains that "radiation effects have subtle consequences and may cause depression of the immune system response due to delayed expression of damage in the bone marrow stem cells and disruption of signalling in the microenvironment. These mechanisms are both implicated in the response to infection and to potentially tumourigenic cells". She expresses the view that these mechanisms could underlie Mr Hart's conditions. She says that the plethora of conditions (several of which are no longer included in his claim) is just what one would expect from radiation-induced compromise of the immune system.

256. Professor Mothersill's view receives some support from Professor Parker, but she claims no special knowledge of skin conditions. Even if her evidence is accepted and putting it at its highest, it amounts only to an assertion that radiation can cause lipomas. It does not amount to an opinion that radiation has probably caused them or even contributed to causing them. But in any event, Professor Mothersill's opinion is not common ground. Professor Kaldor, the epidemiologist, opines that radiation exposure has not been found to be a cause of lipomas. Dr White a consultant dermatologist instructed by the MOD expresses a firm view that lipomas are a very common occurrence and tend to run in families. He asserts that Mr Hart's lipomas have not been caused or materially contributed to by radiation exposure.

257. So far as the bowel cancer is concerned, it is common ground that radiation can be a cause and it would, as we understand it, be common ground that if radiation exposure is proved, this will have increased Mr Hart's risk of developing the condition. But Professor Kaldor opines that it would be necessary to demonstrate exposure to about 1000mSv in order to prove causation on the balance of probabilities. It appears to us that the prospects of proving so high an exposure are poor; indeed they are non-existent on the evidence presently available. Professor Parker opines that a lower radiation dose than 1000mSv would materially increase the risk. That is accepted but an increased risk is not sufficient. Finally, Professor Forbes, a gastroenterologist instructed by the MOD, said that bowel cancer is an extremely common condition in a non-irradiated population. It now affects 1 in 30 of the UK population. It is the commonest cause of cancer death in non-smokers. Professor Forbes expresses the view that it is very unlikely that Mr Hart's tumour is causally connected with radiation exposure in the 1950s.

258. In our view, applying the broad merits test, the prospects of success for this claim are very poor, simply when examining the evidence of causation. The case on liability depends, it seems, almost entirely on Mr Hart's credibility. We recognise the possibility that further discovery might help Mr Hart on this issue but we have to apply the broad merits test on the basis of the materials the parties have put before the court. We are quite satisfied that it would not be equitable to allow so weak a claim to proceed to trial.

Christopher Edward Noone

259. Christopher Edward Noone was born in 1938. He served in the RAF from 1956 until 1966 and, during 1957, he spent three short periods on Christmas Island, totalling some 7 months in all. However, it appears that he was only on the island for 7 days following the Grapple X test. Thus, contends the MOD, he could only have been exposed to fall out for a short period.

260. Mr Noone has had poor health for much of his adult life; in particular he has suffered from severe suppurative acne and depression. He commenced an action for damages on 23 December 2004 alleging that radiation had caused skin problems, depression

and loss of memory, loss of teeth, cataracts and arthritis. The claim in respect of depression and memory loss has been abandoned.

261. It appears that from an early date Mr Noone suspected that his ill health was associated with radiation exposure but he received no support for this theory from the doctors to whom he mentioned this concern. It was not until the early 1980s that he became convinced that his conditions were so related. In 1983, he gave an interview to the *Guardian* newspaper in which he alleged that he had growths on his back as the result of radiation exposure. In that year, he joined the BNTVA and also applied for a war pension alleging that his skin complaints were related to radiation exposure. His medical records for 1986 show that he told two different GPs that he had suffered skin problems as the result of radiation exposure. The judge held that Mr Noone had had knowledge for limitation purposes by 1986. The MOD appeals that finding on the basis that he clearly had knowledge by 1983. We agree that that appears to be so. We can see no basis for a finding as late as 1986. However, the real thrust of the appeal in Mr Noone's case is the judge's willingness to exercise his section 33 discretion in Mr Noone's favour, notwithstanding the delay of 18 years (even on the judge's own finding) and the significant difficulties which the MOD contends Mr Noone will face on both liability and causation.

262. The judge began consideration of section 33 by declaring that he did not think that the delay had had any significant effect on the MOD's ability to defend the case on liability. That, he said, was because the Grapple tests had been well documented. With respect to the judge, we do not think it was right for him so lightly to dismiss a delay of even 18 years, let alone 21. The MOD had provided unchallenged evidence that witnesses whom they would have wished to call would not be available as a result of this delay. As we have said, we do not disagree with the judge's holding that it would still be possible to conduct a fair trial but that does not mean that the prejudice resulting from loss of available witnesses can be ignored.

263. The judge did not mention the reasons for Mr Noone's long delay in commencing proceedings and indeed there does not appear to have been any real explanation for it other than the understanding of several if not all the claimants that they lacked the evidence on which to proceed successfully. We are inclined to accept that explanation as reasonable.

264. In this as in the other cases we have discussed, the main issue on section 33 seems to us to be the broad merits test. Quite apart from any difficulties Mr Noone might face in demonstrating significant radiation exposure in the short time he was on the island after the Grapple X test, the real difficulties arise on causation. The judge acknowledged that the case was weak on causation but said that it was 'not so weak that I should decline to disapply the time limit'.

265. We do not agree. We think that, on the evidence before us, the claimant has very little chance of demonstrating that any of his conditions are, on the balance of probabilities, related to radiation. From the medical records it appears that the skin condition is a

severe form of acne, known as acne conglobata (which affects the sebaceous glands of the skin) with an associated condition called hidradenitis suppurativa which affects the apocrine glands. The claimant has not produced any evidence of a connection between radiation and these types of skin condition. He relies on the very general evidence of Professor Parker (who expressly disclaims any specialist knowledge of dermatology) to the effect that radiation exposure is known to be a cause of a variety of skin conditions. She also says that radiation exposure can cause 'a variety of health effects which include problems such as those reported by Mr Noone'. The claimant also relies on Professor Mothersill's evidence that skin lesions are a known consequence of acute exposure to radiation. We interpose to say that it is not now alleged that Mr Noone had any acute exposure. She also said that 'these types of skin lesions can also result from immune insufficiency which can be a late consequence of low dose exposure'.

266. Putting this evidence at its highest, it amounts to no more than an opinion that radiation is a possible cause of these skin problems. Even if accepted, that falls a long way short of an opinion that it is the probable cause. The MOD on the other hand has put in a report from Dr White a consultant dermatologist containing his opinion that these specific types of skin condition have not been caused or contributed to by ionising radiation.

267. The other conditions in respect of which Mr Noone has claimed present even greater difficulties. So far as the loss of teeth is concerned, the judge noted that the medical records show that there was no medical or dental reason why all Mr Noone's teeth had to be extracted. It appears that he was unwilling to undergo conservative treatment and preferred total extraction. As for the alleged cataracts, there is no evidence at all that Mr Noone has ever had cataracts. Finally, the claim for arthritis was added at the hearing and has never been pleaded. As a result, there is no evidence at all relating to its cause.

268. Bearing in mind the effect of the delay on the MOD's case on liability and the obvious weakness of the claimant's case on causation, we do not think it would be equitable to exercise the section 33 discretion in the claimant's favour.

Eric Ogden deceased

269. Eric Ogden was born in 1934 and died on 5 August 2004 from metastatic cancer of the colon. On 23 December 2004 an action was begun on behalf of his estate claiming damages for that cancer and also for skin problems suffered from 1968 and a meningioma (benign tumour of the brain) from which he suffered in 1986. The limitation issue was whether, as the MOD contended, he had knowledge in 1986 that his meningioma (which was clearly a significant condition) was possibly attributable to radiation exposure. For the claimant it was contended that Mr Ogden did not have knowledge of attributability during his lifetime, either in respect of the meningioma or in respect of his other significant condition, the colon cancer which was first

diagnosed in 1995. In the alternative, the claimant contended that Mr Ogden did not have knowledge until 2003.

270. The judge held that Mr Ogden had knowledge of attributability in early 2001 with the result that the claim was prima facie statute-barred. In those circumstances, the delay was of short duration and the judge exercised his section 33 discretion in the claimant's favour. Moreover, he indicated that, even if he had found that Mr Ogden had knowledge in 1986, he would still have exercised his discretion favourably.

271. The MOD appeals against these decisions, maintaining that the date of knowledge was 1986 and that the section 33 discretion should not be exercised.

272. Mr Ogden served in the RAF and was a member of the Shackleton ground crew of Squadron 269. He worked on the servicing and testing of aircraft. His claim is based on radiation exposure while based on Christmas Island in August and September 1958 during the Grapple Z tests.

273. The judge acknowledged that, some time before he was diagnosed with meningioma in March 1986, Mr Ogden was aware of the possibility that he had suffered ill health as the result of radiation exposure. The judge recorded an extract from a medical record dated 1983 in which a dermatologist who was treating him for urticaria noted that Mr Ogden wondered whether he had been affected by nuclear fallout from his time on Christmas Island. The doctor thought that this weighed heavily on Mr Ogden's mind.

274. In April 1986, a month after the meningioma had been diagnosed, Mr Ogden applied for a war pension, asserting that this condition was due to radiation. The judge was of the view that applying for a pension at this time did not mean that Mr Ogden had knowledge for limitation purposes. He seems to have been of the view that this application was speculative, made in hope rather than expectation and that it was not founded upon any belief in a causal connection. Moreover the judge recorded that the doctors whom Mr Ogden had consulted had rejected any causal link.

275. We cannot agree with the judge's approach to an application for a war pension. We can quite accept that Mr Ogden was not certain that his meningioma had been caused by radiation and it may well be that at the time he made his application he had received no medical advice as to a causal link. However, we do not think it could possibly be said that he did not know that there might be a connection between his condition and his radiation exposure. To hold otherwise would be to conclude that Mr Ogden had made a dishonest application and there is no suggestion of that. We consider that his application for a war pension demonstrates a sufficient degree of knowledge for limitation purposes. In any event, we note that in a medical record dated 1 May 1986 a neurological house officer recorded that it was significant that he had been involved with the nuclear trials on Christmas Island in 1957. Mrs Ethel Ogden, Mr Ogden's widow agreed in evidence that a causal connection had been suggested to her husband at about this time.

276. We conclude therefore that the judge erred in holding that Mr Ogden did not have knowledge in 1986. We are satisfied that he did and there is therefore no need for us to examine in detail the circumstances in which the judge concluded that he acquired knowledge in 2001. Suffice it to say that the judge's finding was related to a second application for a war pension, this time including a claim in respect of the colon cancer which had been diagnosed in 1994 as well as the meningioma. It appears to us that Mr Ogden's state of knowledge in 2001 was very much as it had been in 1986 and we cannot understand why the judge held that he had knowledge in 2001 but not in 1986.

277. It follows from what we have held above that there was a delay of some 18 years between Mr Ogden's date of knowledge and the commencement of proceedings or 15 years from the expiry of the primary limitation period. The claimant needs a favourable exercise of the section 33 discretion.

278. The judge acknowledged that no reasons had been advanced for the long delay but considered that it was excusable because Mr Ogden had been coping with a serious illness. That is certainly true in respect of the period after 1994 when the colon cancer was diagnosed, although it appears that Mr Ogden was able to continue in employment for some 5 years after the diagnosis. That is enormously to his credit but it does mean that there was no real explanation for his failure to take action in respect of the meningioma after 1986 or for the delay in taking action in the earlier years after diagnosis of the colon cancer. We note in passing that legal aid would in principle have been available for such an action to be brought during this period. We think that the reason why Mr Ogden did not take action must have been because he, like other men who were in contact with the BNTVA, was of the view that there was insufficient evidence available to given an action reasonable prospects of success. As with other cases, we think that was a reasonable stand to take.

279. The judge confined himself to the question of whether it would still be possible to have a fair trial. He did not mention the effect of the long delay on the availability of witnesses whom the defendant would have wished to call. In our view, even if a fair trial would still be possible because of the retention of documents, the prejudice to the defendant through the loss of witnesses should not have been ignored. The defendant had provided evidence that many potential witnesses had died since 1989.

280. As for a fair trial, the judge had earlier concluded that in all the cases a fair trial would still be possible and again we do not disagree. However, in respect of this case, the judge considered that there was an additional factor which militated in favour of the possibility of a fair trial. As Mr Ogden had applied for a war pension in 1986, the MOD must have investigated his claim then. The fruits of that investigation must still be available. We can see that that should be so although we think that there may well be a difference between investigating the issues relevant to a war pension and those relevant to a common law claim.

281. The judge referred only briefly to the issues of causation. He recorded that Professor Mothersill had said that radiation exposure materially increased the risk of developing meningioma and cancer of the colon and that Professor Parker had said that UNSCEAR 2006 had said that the available evidence "continues to indicate that colon cancer is inducible by ionising radiation, compatible with a linear dose response". We do not think that that evidence is disputed by the MOD but, put at its highest, it does not come anywhere near to satisfying the test of causation on the balance of probabilities. The judge thought that the case was arguable on causation. On the basis of that evidence, we do not agree.

282. The evidence on causation was rather more extensive than was recorded by the judge. In respect of the various skin conditions included in the claim, Professor Mothersill and Professor Parker opined that radiation was a possible cause of various skin conditions as a result of immune insufficiency but did not descend into particulars. Dr White, the MOD's dermatologist, opined that the particular conditions from which Mr Ogden had suffered were not associated with radiation exposure and he rejected any causal link.

283. In respect of the meningioma, Professor Kaldor opined that a radiation dose of 1000mSv would be required before it could be shown that the risk had doubled. Professor Parker was of the view that a lower dose than that would increase the risk. There seems to be agreement as to that but the claimant's difficulty would be in showing a dose which came anywhere near 1000mSv and a mere increase in risk of less than twice is not sufficient to show causation on the balance of probabilities. Professor Mothersill's opinion was couched in tentative terms; she said that the possibility of a causal link could not be excluded. That is not enough.

284. As for the colon cancer, Professors Kaldor and Parker made the same points as before. Professor Mothersill said that the causal connection could not be excluded and Professor Forbes, the gastroenterologist instructed by the MOD opined that it was highly unlikely that Mr Ogden's colon cancer was related to radiation.

285. Taken as a whole, the evidence on causation is extremely weak. Even assuming that the claimant could prove a significant radiation dose we feel bound to say that the application of the broad merits test leads to the conclusion that it would not be equitable to allow this action to proceed.

Pita Rokoratu

286. Pita Rokoratu is a citizen of Fiji. He was born in 1936. He commenced an action on 23 December 2004 claiming damages for a variety of conditions which he alleged had been caused by radiation exposure. The claim in respect of some conditions was abandoned but it was pursued in respect of stomach and bowel problems (from the 1960s to the 1990s), hair loss in 1959, lipomatous growths (from 1965 onwards), arthritis and joint problems (2003) and bilateral cataracts, a new allegation made in 2008.

287. The limitation issue in his case was whether there should be a favourable exercise of the section 33 discretion since it was conceded on this claimant's behalf that he had had 'knowledge' before August 2001. There was a dispute as to how long the delay had been. The MOD contended that there was actual knowledge from 1997 and constructive knowledge in the early 1990s. The judge found that Mr Rokoratu had knowledge in 1998. We do not propose to go into these issues in any detail. We see considerable force in the MOD's arguments that Mr Rokoratu had actual knowledge by 1997. We are unimpressed by the MOD's arguments on constructive knowledge. But we are firmly of the view that the difference between a finding of 1997 and 1998 could make no real difference to the exercise of the section 33 discretion.

288. Mr Rokoratu served as a Fijian Royal Naval Volunteer Reserve. He was posted to Christmas Island for a year between August 1958 and August 1959 which period included the Grapple tests. His role was as a stevedore transporting cargoes from British ships onto the island. He witnessed the tests and gave an account of swimming and fishing in the sea and drinking desalinated water.

289. The judge dealt with the section 33 discretion quite briefly. He referred back to his generic reasons for allowing the cases to proceed. He said nothing about the reasons for or the effect of the delay which he seems to have thought was insignificant in this case. He said that he would be minded to allow the case to proceed and then applied his mind to the broad merits test. He observed that the case on liability was similar to several others. By that we think he means that there is some prospect of demonstrating a significant dose of radiation by extrapolation from the findings of the Rowland study.

290. Finally the judge turned to causation. He noted that there were some difficulties as the case then stood. He referred to the difficulty in piecing together a reliable medical history; the medical records were sparse and incomplete. One diagnosis recorded in the medical records was now accepted to have been erroneous. Moreover, some of the conditions for which Mr Rokoratu claimed could readily be attributed to causes other than radiation. But, having recognised those difficulties, the judge was of the view that they did not outweigh the more positive factors which he had identified in the generic part of his judgment. He exercised his discretion so as to disapply section 14.

291. We are firmly of the view that the judge erred in the exercise of his discretion. We have already said that he was wrong to give weight to the need to avoid the perception of injustice. But, our main reason for so holding is that we think that the judge gravely underestimated the difficulties Mr Rokoratu would face on causation.

292. First, as Professor Kaldor pointed out, the stomach and bowel symptoms complained of are given so general a description that they could be a manifestation of many diseases, some of which could possibly be linked to radiation and others not. Professors Mothersill and Parker repeated their opinions that radiation is capable of causing a wide range of health effects including those reported by Mr Rokoratu. Professor Mothersill thought that the illnesses taken together indicated a generalised

genomic instability allowing a link to be made to ionising radiation. Professor Forbes, the gastroenterologist instructed by the MOD reported that the symptoms included blood in the stools which had begun about 10 years after radiation exposure, had continued for about 30 years but had now ceased. He could see no reason to link these symptoms with radiation exposure. There was no evidence of prompt onset due to acute radiation damage and the only late onset condition which could possibly be related to radiation was bowel cancer which was not alleged.

293. It is common ground that radiation can cause hair loss but in the opinion of Professor Kaldor this is an immediate effect and is reversible. Mr Rokoratu's evidence was that his hair loss began about three years after he had left Christmas Island. He also said that early hair loss was very common in Fiji and he had not been surprised when he lost his. Professor Mothersill supported this part of the claim only by saying that the hair loss could have been related to radiation as part of a pattern of multiple illnesses attributable to whole body genomic instability.

294. Professors Parker and Mothersill supported the claim in respect of lipomatous growths only on the basis that they could be part of the multiplicity of health effects due to generalised genomic instability. Professor Catovsky, instructed by the MOD, opined that lipomatosis is usually a familial condition. He noted that Mr Rokoratu's sons also suffer from this condition (a fact confirmed by the claimant in evidence) and opined that this would support the proposition that this was an inherited condition. He also said that there is no known association between this condition and radiation.

295. Much of the medical evidence relating to the claim for 'anaemia' was based on the misapprehension that Mr Rokoratu was suffering from aplastic anaemia, as had apparently been diagnosed by a Fijian doctor. However, it was accepted that this was a misdiagnosis and that what had to be considered was iron deficiency anaemia. Professor Kaldor accepted that iron deficiency anaemia can be caused by high levels of radiation (well over 1000mSv) but said that this would manifest itself shortly after exposure. He rejected the proposition that Mr Rokoratu's symptoms could be related to radiation. Professors Mothersill and Parker did not comment on iron deficiency anaemia; they had been under the misapprehension mentioned above.

296. The claim in respect of arthritis and joint pains received little support. Professor Mothersill said that it was possible that these symptoms were due at least in part to low dose radiation but accepted that this opinion was 'controversial'. Professor Parker reported that arthritis could occur following radiation of the joints but it is clear that what she was speaking about was radiation focussed on the body during radiotherapy rather than low dose systemic radiation.

297. Finally, there was no evidence at all in relation to the allegation that Mr Rokoratu had cataracts which were caused by radiation. The allegation was made so late that the experts did not consider it. However, it can be said that cataracts are a known consequence of radiation and that they are also very common in the elderly population with no history of radiation exposure.

298. Taking this evidence at its highest, there is some support for the theory that the whole constellation of Mr Rokaratu's illnesses could be the consequence of genomic instability due to radiation exposure. That evidence might be accepted but even if it is it would not enable this claimant to prove that his conditions either singly or collectively could, on the balance of probabilities, be attributed to radiation exposure. In our view, the application of the broad merits test leads to the conclusion that it would not be equitable to allow this action to proceed.

Bert Sinfield deceased

299. We can deal with the last of the lead cases very briefly as there is no appeal against the judge's holding that this claim was brought in time. Mr Sinfield was born in 1938 and died in March 2007 from non-Hodgkin's lymphoma which was diagnosed in October 2005. He commenced an action on 1 February 2007 and this has been continued by his widow after his death. Apart from the non-Hodgkin's lymphoma, the only condition for which he claimed was a mild form of iron deficiency anaemia, first diagnosed in about 1973. The judge accepted that that had never been a significant condition within the meaning of that term in section 14(2) and that time did not begin to run against Mr Sinfield until October 2005. His claim was therefore brought in time.

300. The MOD wished however, to appeal against the judge's refusal to strike out the claim or to grant it summary judgment on the ground that it had no reasonable prospect of success. The main ground for that contention is that the claim cannot succeed on causation but it also alleged that the claim is weak on liability and that the pleadings in relation to exposure are embarrassing; it is alleged that the exposure was wrongful but no indication has been given as to what degree of exposure is alleged.

301. We have already dealt generically with the appeals against the judge's refusal to grant summary judgment. We have dismissed the appeals on procedural grounds. We do not propose to give special consideration to summary judgment in this lead case simply because it is the only one to survive scrutiny of the limitation issues. Nor do we intend to give any indication of what our views would be on the questions which would be canvassed on an application for summary judgment. It is possible that the MOD will make a formal application and that the issue will be decided by a judge. We simply confirm that the judge's decision on limitation stands unchallenged and Mrs Sinfield may proceed as of right.

Conclusion

302. We dismiss all the appeals against the judge's refusal to strike out the claims or give summary judgment to the MOD. We allow the MOD's appeal in all the lead cases except that of Mrs Sinfield. All the other lead cases are statute- barred.

303. We recognise that these decisions will come as a great disappointment to the claimants and their advisers. We readily acknowledge the strength of feeling and conviction held by many of the claimants that they have been damaged by the Ministry of Defence in the service of their country. The problem is that the common law of this country requires that, before damages can be awarded, a claimant must prove not only that the defendant has breached its duty of care but also that that breach of duty has, on the balance of probabilities, caused the injury of which the claimant complains. These can be heavy burdens to discharge.

304. If we look back to 1985, Melvyn Pearce won a significant victory in the House of Lords, which established that the MOD could not rely on the immunity of the Crown from suit. Yet, within a few months of that victory, Mr Pearce abandoned his claim because his advisers recognised that they could not satisfy the burden of proving that Mr Pearce's cancer had probably been caused by radiation exposure; for his personal position, the victory was entirely pyrrhic. As we noted earlier, the abandonment of that case comprised a warning to those who wished to follow after. Causation would be a potentially difficult issue and would have to be addressed if any such actions were to have a prospect of success. Thus, it was no surprise that one of the first steps taken by Russell Jones and Walker, solicitors originally instructed by Mrs Brothers, was to seek evidence to establish causation (which was not forthcoming). Further, although the MOD raised the issue of causation both generically and, later, in the individual cases, no attempt was apparently made when the lead cases were identified to obtain specific evidence on this topic. It may be that it is not yet possible for a doctor to say that a condition such as cancer has probably been caused by radiation as opposed to any of the other possible causes but, until such evidence is available, claimants will face the difficulty which caused Mr Pearce to abandon his claim.

305. We have no doubt that it will appear that the law is hard on people like these claimants who have given service to their country and may have suffered harm as a result. No doubt partly with this background in mind, Parliament has provided that servicemen who have been exposed to radiation which **might** have caused them injury will be entitled to a war pension. Of course, a war pension is not as financially beneficial as common law damages but it is some compensation. Of particular importance on this issue, on an application for a war pension, the burden of proving causation is reversed; thus, the MOD has to exclude the possibility that the applicant has been harmed by radiation. We cannot say that any of these claimants who have, so far, not been awarded pensions will succeed in their attempts to do so but their chances of success must be far greater with the MOD having to prove the absence of causation than they ever were while the claimants had to establish it.