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IN THE HIGH COURT OF JUSTICE
QUEEN'S BENCH DIVISION

No. HQ17A02373

Rolls Building
Fetter Lane
London, EC4A 1NL

Wednesday, 16 October 2019

Before:

HIS HONOUR JUDGE COTTER

B E T W E E N :

TRUDY McGUINNESS
(AS WIDOW AND EXECUTRIX OF THE ESTATE OF DEREK ROWE
DECEASED)

Claimant

- and -

THOMAS & EDGE LIMITED

Defendant

MR R. WEIR QC (instructed by Leigh Day) appeared on behalf of the Claimant.

MR J. WILLIAMS (instructed by BC Legal) appeared on behalf of Defendant.

EVIDENCE OF MR ANDREW STELLING

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(11.44 a.m.)

A

MR ANDREW CHARLES STELLING, Sworn

Examined by MR WILLIAMS

B

Q Can you give your full name, please?

A Mr Andrew Charles Stelling.

Q And your occupation, please, Mr Stelling?

A I'm an occupational hygienist of the Institute of Occupational Medicine.

C

Q Thank you. Could you take up bundle B, please, its to your side (inaudible)? My Lord, is it all right for Mr Stelling to sit if he prefers?

JUDGE COTTER: Of course, yes.

MR WILLIAMS: Thank you. If you turn would turn to p.112, please, Mr Stelling, first of all, you should be looking at the first page of your first substantive report in this case. Is that right?

D

A I am.

Q And we see at the top it is dated January 2019. I think it was produced for potential show cause proceedings at that time. Is that right?

A It was, my Lord.

E

Q And if you go, please, to p.6-- sorry, 174 - forgive me - can you confirm that that is your signature and we see it is dated 15 January 2019 under the usual declarations and statement of truth?

A It is, my Lord.

F

Q You then produced a second substantive report after disclosure of witness statements and the like had been completed and if you turn to p.259, please, I hope you are looking at the first page of your report dated August 2019. Is that right?

A It is, my Lord.

G

Q And then if you go forward, please, to pages-- well, first of all, p.331 and then 332 I think we see your signature under the declaration and statement of truth dated 7 August 2019. I think that is on 332.

A It is, my Lord.

H

Q You have then participated in the joint statement with Mr Chambers which begins at p.417 and we see your signature on p.430 dated 17 September 2019, the joint statement.

A That's my signature, my Lord.

Q And that is your signature, yes, and then, finally, for the sake of completeness you have produced a short supplemental report commenting on the Bill of Quantities. I am not sure if it has made its way into your bundle there.

A It hasn't.

Q It was handed up, my Lord, yesterday to be put in the bundle but can you confirm that you did subsequently review the full Bill of Quantities and produced a supplemental report commenting on them?

A Commenting on the presence of Limpet or sprayed asbestos.

Q Yes.

A I did, my Lord.

Q Do those reports contain your own opinion in the case?

A Yes, they do.

Q They do. Thank you. Lastly, just briefly, in terms of your qualifications and experience, you introduced yourself at page-- if I look at your second report, you introduced yourself at p.265 setting out a brief summary of your (inaudible) qualifications and occupational qualifications and experience and then for my Lord's note at p.410 is your CV, your expanded CV, giving greater details of your qualifications and positions held to date in the field of occupational hygiene and your experience in terms of advising employers both on a day-to-day basis and in litigation.

A Yes, my Lord.

Q Thank you. If you wait there, please.

A Thank you.

Cross-examined by MR WEIR QC

Q Good morning, Mr Stelling.

A Good morning.

Q Mr Stelling, I think you heard me yesterday say that I was going to rely on your second report rather than the first and why I prefer to do so is there are treasures in the first report that have not made it to the second one.

A I don't know what you're alluding to exactly but----

Q No, no. I mean you produced two reports.

A I did produce two reports.

A Q I am hoping to make life a bit simpler for all of us by relying on your second report----

A That's fine.

A Q -- rather than your first report.

A That's fine.

A Q But I am just checking there are no nuggets in the first report that did not make it into the second report----

A No.

B Q -- that I have missed on reading the pair of them.

A I don't believe so. The second report was produced based on the-- the deceased's evidence on commission.

C Q I understand it. If I put it a slightly different way, coupled with the joint statement and the additional report produced, the second report completes your evidence as if we had not had to read your first?

A I believe that is a fair-- a fair assimilation.

D Q So if I start with the amount of spray, I think it is agreed between you because I got it from the joint statement (inaudible) which if we work towards the back of your bundle. It is B (inaudible). There were 1,470 yards at 18(w) where you set it all out. Do you have it?

A I do, my Lord.

E Q 470 yards of sprayed asbestos coating in the teaching block; 260 feet in the assembly hall, so at my arithmetic (inaudible) about 400-- 4,680 feet in all. Now, that is for the length of columns, as I understand it.

A I believe that to be the case.

F Q Which-- which columns would be sprayed on at least two sides, as Mr Chambers explains?

A I haven't seen it personally, my Lord, but I would suspect that he's-- he's correct in that.

F Q And if they iron framed columns then you have got to go round the full length of the metal.

A I----

G Q Does that make sense?

A Yes, that makes perfect sense.

G Q The purpose of spraying the steelwork was for fire protection?

A That would be the case, my Lord.

H Q And I think if some steelwork was left unsprayed, in sticking for the moment to the teaching block, they would probably be the upper floors which would be left unsprayed because you would want to ensure fire protection of the ground floor over the upper floors. Is that fair?

- A I'm not sure. I can't say which were unsprayed and which weren't. The survey report does not-- well, the survey reports I've reviewed do not provide any information on that.
- A** Q Well, I understand the survey reports do not assist us. Do you agree with the general premise of what I said, namely that if it is for fire protection and not all of the steelwork has been sprayed you would expect the ground floor to be sprayed in preference to the top floor all to be sprayed?
- A I'm-- I really can't comment on that, I'm afraid.
- B** Q I think it is agreed in the joint statement - this is at 421-- 421, that the spraying did not involve any pre-damping?
- A I agreed that with Mr Chambers. On the balance of probabilities, it was unlikely to have been pre-- pre-damped spraying.
- C** Q Pre-damping really came in by-- I think Mr Chambers' evidence yesterday was the late 1960s. Is that fair?
- A I agree with Mr Chambers that there was evidence of it having been introduced at an earlier time but the guidance that I've read, my Lord, suggests that the majority of spraying was being undertaken throughout the 1960s in an un-pre-damp manner and, therefore, at the end of the sixties, it was becoming more common practice to adopt a pre-dampened spraying approach.
- D** Q Pre-damping was very effective in reducing the amount of dust. Is that right?
- A Yes. The guidance would suggest so.
- E** Q I think in your report, if we can just have a look at it at pp.301 to 302, you have referenced to 301. Let me just wait (inaudible) for the Judge to pick that up. It is p.301 in Bundle B (inaudible)----
- A Yes, got it.
- F** Q -- and you have referenced a report from JW Roberts in 1970 and, so I am following this, your 7.5 is sample data that has been obtained for un-pre-damped-- it is a bit of a chemical process (inaudible) phrase that but, anyway, we know what you mean, not pre-damped, asbestos spraying and 7.6 for pre-damped or dampened asbestos spraying. Is that right?
- A That is correct, my Lord.
- G** Q And the figure which given-- is given over the spray operative's shoulder for non-pre-damped is 1,500 fibres per ml. Is that right?
- A That is what is in that particular piece of literature, yes----
- Q Yes.
- H** A -- we produce there.

A Q I think that figure is the same-- do you get the same when you look at-- over the page at (inaudible), that you referenced a paper by Smithers and Cross----

A Yes.

Q -- and that has got the same figure of 1,500 and you have explained, I think, at the bottom. It says, "The paper published by Smithers and Cross included much of the JW Roberts data." Is that to say that was just a copy of the data?

A I believe it was a copy of the data, my Lord.

B Qidentified (inaudible).

A I believe you're right it's a copy of the data. I believe Smithers and Cross were using data that that was available to them.

Q I see. So we have one source of data for these two papers, really, which is the JW Roberts source data?

C A I believe that to be the case, my Lord.

Q No reason to doubt the figure that JW Roberts produced in 1970 of 1,500 fibres per ml for over the operative's shoulder?

A No reason that I can see to-- to doubt it. It was-- it was undertaken with the supervision of the HM Factory Inspector.

D Q Whereas when it is dampened or pre-dampened, I should say, it goes down from 1,500 fibres per ml to 4 fibres per ml. That is 7.6. Is that right?

A That is correct, my Lord.

E Q And hence your agreement that it is a-- I forget exactly what words I used but it is a very significant-- very significant effect of reducing the level of dust that is created----

A yes indeed.

Q -- to the factor of 1,500 down to 4?

A Yes.

F Q (inaudible)?

A It was dealing with the principle of protection. It was seen as a-- as a control measure, pre-damping at source.

Q Now the spraying of asbestos involved a mixture of asbestos fibres, cement and water. Have I got that right?

G A To the best of my understanding, you have that right, my Lord.

Q And the asbestos cement mix would be asbestos fibres up to 85 per cent?

A I've seen a variety of different ranges of-- of constitutions but I'm not going to dispute that that's probably about right.

H

A Q In terms of the mechanics of getting the asbestos onto the steel girder, if you just go to Mr Chambers' report, please, at p.37, do you see at 2.97 he sets out how bags of dry asbestos bags of cement were emptied into a hopper? Is that right?

A Yes, it is.

Q And the fibre was pneumatically transported by a fan via a carding process to a spray gun. Do you agree with that?

B A I would not disagree. I would also refer to the Chief Inspector's guidance of 1949 which gives a similar----

Q Similar description?

A I believe so, yes.

Q And that mixture is then sprayed out of the nozzle under pressure?

C A Indeed.

Q Mr Chambers put it at about 30 PSI. Do you agree with that?

A I don't have that particular piece of information to hand. I don't know whether (inaudible).

Q Would I be right in thinking this is what I would call a non-ventilated machine?

A I believe so.

D Q I am taking that just for the avoidance of any doubt as to what I mean because I am just using this expression which I have taken from your report where you have identified that there are different types of machine. It is pp.294 and 295. 294 and 295 and you-- do you see how you have referenced a recommended code of practice for spraying?

E A Yes, I do.

Q You have flagged up at the bottom of 294 self-ventilating machines and, over the page, second bullet point down, non-ventilated machines and I think you agree with the question I was asking which is to the effect this was probably a non-ventilated machine?

F A It was certainly a machine without pre-treatment. I can be sure of that. Well, we can't be sure of that but I think-- I think on the balance of probabilities that was the case. I am not entirely sure whether it was a non-ventilated machine or a self-ventilating machine.

Q Okay. Not entirely sure but I think and I'm-- I'm not writing things down as we speak but I think you thought it was more likely than not to be a non-ventilated machine. Is that fair?

G A I think that's fair.

Q So the asbestos cement mixture is-- is pushed out under pressure from the nozzle and it's after it's pushed out from the nozzle it meets the water?

A Yes.

H Q Have I got that right?

A Yes. Again, I think if you refer to the Chief Inspector's guidance it gives you an indication of exactly how close to the surface to which the spray is being applied that contact occurs.

A Q Under sufficient pressure for it to be-- if I say "fired" but I don't know how one describes it but propelled-- propelled some distance when pointing upwards as well as pointing downwards. This is the actual spray gun or----

A Yes.

Q Is that a fair way of describing it?

B A I'm-- I'm sure my Lord has seen it but there's a photograph in both Mr Chambers' and my reports which indicates the method of application and how the-- the-- the material applies to the surface being sprayed.

C Q In your joint statement you have agreed that the spraying process was quote "a very dusty process." You will know this already but it is B421, para.26 if you want to check. You were-- I am going to guess you were in court yesterday.

A I beg your pardon?

Q I am going to guess you were in court yesterday.

A I was, indeed.

D Q And you will have heard me put to Mr Chambers, and I am just going to put it to you now, that part of Mr Chambers' report, if you go to p.38, at 2.102 he added to that. He said, "The dust levels"-- do you see that, 2.102? He said "The dust levels and asbestos dust concentrations associated with the spraying of asbestos are believed to be the highest encountered in the UK during the application of an asbestos material." Do you agree with that?

A I believe the spraying of un-- un-pre--

Q Un-pre----

F A Non-pre-wetted----

Q Yes?

A -- if I can use that expression----

Q Yes.

A -- asbestos was an exceptionally dusty process.

G Q You cannot think of a-- of a more dusty process?

A Other than the dry stripping of that material, I can't think of a more-- but during-- in terms of the application of an asbestos material, that is very likely to be the case.

H Q Mr Chambers set out and he started just a few-- a couple of pages over at about 117, so 2.117 p.40----

A I have it.

Q He made reference to a number of papers. Just first of all checking, that first paper, I think, is the JW Roberts paper that I have already taken you to in your report.

A It's the same paper----

Q It is the same paper.

A -- my Lord.

Q Yes. So the one-- the one with the spray operative shoulder, 1,500cc----

JUDGE COTTER: Sorry. Which page are we on now?

MR WEIR: My Lord, we are on p.40----

JUDGE COTTER: Yes.

MR WEIR: -- 2.117----

JUDGE COTTER: Yes. Got it. Sorry.

MR WEIR: Your Lordship will see that it is a JW Roberts assessment which Mr Chambers has been referring to as the Smithfield Market but it is the very same document that I took your Lordship or took Mr Stelling to----

JUDGE COTTER: Yes.

MR WEIR: -- in his report, so that is the same one. Hence we see the same figure of 1,500.

JUDGE COTTER: Yes.

MR WEIR: And he has also referenced a result taken from Manchester Central Library. Do you consider that he has fairly set out in his report his summary of the contents of those other reports, so starting with the Turner & Newell Manchester Central Library report?

A I would have to refer to the original text in order to be sure of that but I will-- I will take it that that is correct.

Q In your-- you know, obviously the considerable period of time we have had since obtaining a copy of this, and I appreciate they are lengthy reports as always (inaudible) the nature of-- the nature of this area, you have not had cause to be concerned that he has misrepresented the contents of these reports, these studies if we can call them that?

A I don't have reason to consider that would be the case, no.

Q And then over the page we come onto one in 1971. It is the Harries paper. I think the Harries paper is one that you yourself refer to at p.299 and then he refers to at 223 (inaudible) a paper by someone called Whitely(?)

A I have it, yes.

Q -- which says, "Atmosphere", under the table-- this is a railway carriage and we have heard it is right. I assume that counsel for the defendant has-- has been guided when putting in cross-examination that spraying started off in the railways. Is that right?

A

A Yes. It was, indeed, applied first in railway carriages in-- in the process of carriage construction.

Q And what is set out in this table by Mr Chambers is on the table, going across it looking at row 1, "Atmosphere inside wagon during spraying. Slide far too dense for counting. Count in the order of 50,000". Is that right?

B

A But I'm not seeing any units.

Q No. What would you-- what would you make of that figure of 50,000 in those circumstances

C

A I couldn't comment. I don't know what the units are.

Q Have you had a look at that paper?

A I haven't seen that paper.

Q What about the paper underneath it which is Goodall, a later visit by Goodall to the site related by Goodall----

D

A Oh, apologies. I have just noticed at the top of the page it says, "Total particles----

Q Yes. That is

in particles per cubic-- cubic centimetre per cubic centimetre.

E

A Well, the total count is too dense or the total density of the particles on the slide is too dense to count and it's not clear whether or not it's the total count of total particles or the count of asbestos fibres which that comment refers to.

Q If we go on we get to the 1971 Harries paper which starts at 2.131, p.42 and then at 2.138 you will see how Harries refers to-- so the quoted section in the first paragraph of the quoted section, 2.138, the last part of it, you see how he says, "It might be thought that this was not a dusty job because it was wet, but this is far from the truth. The fibre mixture was fed into a hopper and this created a local dust cloud." Would that accord with your understanding?

F

A I believe that when you added the asbestos to the hopper before you sprayed it, there would be some evolution of dust from that-- from that activity, my Lord.

Q And you will see it says in the third paragraph then or second paragraph down it says it was damped, so I think this is even dealing with pre-damped, it is not?

H

A Excuse me, my Lord. I'll just have a little read of it.

Q Of course.

A In-- it starts, the second paragraph, "In the hopper it was damped," so, clearly, the damping is going on in the hopper itself.

Q Which-- which we would otherwise call pre-damping.

A Yes, we would.

Q So this is a pre-damping scenario which is, as we have discussed, considerably less dusty than non-pre-damped spraying?

A But I think the point which I would make is is the material that's added to the hopper damp. It isn't. It's dry (inaudible).

Q All right. So the material when added to the hopper is dry?

A Yes.

Q And if it's pre-damped, it's damped in the hopper?

A It is indeed.

Q What we are looking at in this Harries report is a pre-damped spray.

A We are.

Q And even in a pre-damped spray do you see in the third paragraph it says, "Although most of the fibre was blue, amosite fibre was used occasionally and was disliked because it was more dusty than the blue," and in this case amosite was used, was it not?

A Yes, amosite was used at-- at this school.

Q And then it carries on, "Men are described as emerging from the compartments covered from head to foot in dust." Again, there is no reason to doubt that assessment, is there?

A No, this is-- there's no reason at all to doubt that.

Q Still sticking to the mechanics of spraying, I am going to suggest that you have (1) read-- well, I know you have read Mr Rowe's-- the transcript of Mr Rowe's evidence on commission and I guess you have already watched the DVD.

A I have not watched the DVD.

Q Well, he says it in the commission but he also uses his hands when he is saying it and he says on the commission that the steelwork is only so wide and that there is overspraying from the spray because it creates an arc which is wider than the steel that he is trying to spray. There is no reason to doubt that, is there, that that could happen?

A Overspray can occur.

Q And what is oversprayed is going to-- obviously, it is being propelled under pressure. We talked about 30 PSI. No reason to doubt that figure. It is being propelled under pressure, therefore, beyond the steel girder in question?

- A Onto the wall behind it if there is a wall behind it.
- A Q If there is a wall behind it, onto the wall behind it. If there is no wall behind it, it will presumably be sprayed over and land on whatever flooring there is?
- A A It depends on-- on the care of the sprayer. I think it would be very much dependent on how the spraying was-- was undertaken and the-- the angle of the sprayer to the beam but, yes, I take what you're saying in principle.
- B Q If you are standing in the path of the spray, then you could be further away and still affected by the spray than if you are-- than if you are not standing in the path of the spray?
- A A I'm sorry. I'm not quite sure why you would stand in the path of the spray.
- C Q Well, let us not ask-- not answer a different question. Let us just stick to that question. It may be so obvious to us that it barely merited an answer but if you are standing in the path of the spray, so for instance if I am the sprayer, if-- forgive me, my Lord, but if there is a steel girder here and there is overspray and my Lord is standing in the path of the spray----
- A A In the path of the overspray, do you mean or direct impact----
- Q Q Yes.
- A A -- of the spray itself?
- D Q The overspray is-- what we are calling overspray is a spray of part of the arc. It is the part of the arc that is not caught by the steel girder, so it may be called overspray because it is unintentional but it is the spray, is it not?
- A A Yes, it is. I see what you're saying now. I didn't understand quite the question before.
- E Q We can do this sort of-- I imagine we all have common experience in the summer of hosing the lawn and/or our children and/or other pets etc on a hot summer's day and if you take a garden hose and you put it into an arc and you then spray it so that there is a tall, thin beam in the way, part of it will not be deflected by the beam but will continue as a spray onwards.
- F A I would suggest though that it might well be worthwhile looking at the picture of the spraying process to see how wide that arc was.
- Q Q Yes. That is-- there are photographs in-- certainly on commission and I think also in one of your reports.
- A A Yes, there is a photograph in one of my reports. Let me find it.
- G Q A. In A they are at 209 208. 208 to 209, A.
- A A 320 I have it.
- Q Q I beg your pardon?
- A A 320.
- H Q 320.

JUDGE COTTER: 320 in your report?

MR WEIR: Yes. That is (inaudible) 208. There is another one at 209 which looks like that. It is A209.

A Yes. I have seen that photograph.

Q Now that-- that photograph for instance at A209 is showing you in two dimensions what is a three-dimensional sprayed material, is it not?

MR WILLIAMS: (inaudible).

MR WEIR: 209.

A I have that.

Q That is a-- that is a three-dimensional sprayed material, is it not, which is then just simply captures the (inaudible) two dimensional photograph? It has got depth.

A Yes. I-- I'll take that as correct.

Q I assume it is coming out of a nozzle and so----

A Yes, I presume so.

Q And back to the whether you welcome the analogy garden spray (inaudible) where (inaudible) where discussed the issue of overspraying (inaudible) where there is overspray you are more likely to be affected by the asbestos if you are standing in the path of the spray than if you are not standing in the path of the spray?

A Yes. I think I understand what you're saying. I'm afraid-- if you are spraying onto a beam and you-- and it misses the beam and you're standing behind it; is that the point you're making?

Q Yes.

A Yes.

Q If you are a set distance on a circumference of set distance from the spray, those-- those who are in line with the spray are more likely to be affected at that set distance than those who are not because the spray is moving towards them?

A Yes. I think that's right. I think there's a difference in the perspective, as you put it, between the two photographs with regards to how-- how close the-- the beam-- the surface they're spraying is to the-- to the spray.

Q Yes. Much will turn on the person conducting the spraying?

A I mean you cannot see the surface which is being sprayed in that photograph and that would suggest that it is a fair distance off or maybe even a large area being sprayed within that-- that photograph and it could be that they're spraying a wall. I think it says structural steelwork but I mean it does look from that photograph that there's-- that it's clearly

spraying quite a large area, whereas this one is spraying-- is closer to the beam and is-- and I believe is spraying a more focused point.

A Q But in the joint statement the agreement that has been reached is that if you are 20 to 30 feet from the source then you are going to be exposed to around 10 per cent of the concentrations at source. It is p.421, para.27.

A Yes, we agreed that.

B Q So if we take the figures from JW Roberts study, in 1970 of 1,500 fibres per ml, that would suggest that at around 20 to 30 feet you are agreeing there would be a tenth of that, which is about 150 fibres per ml CC

A I think what we agreed in the joint statement was, if I can find the-- the point at which we agreed it----

C Q Paragraph 27, p.421.

A I think the point-- I think the point I made was that I thought with the level of exposure that distance might be around 45 up to that level.

Q Well, I am just reading the joint statement. Have you got paragraph 27? Page 421?

A Yes, yes, yes.

D Q It says, "We agree that the spraying of asbestos is likely to have generated very high concentrations of asbestos dust at source," and just pausing there, I have taken you to the JW Roberts paper, the figures of 1,500 fibres per CC. I did not hear you demur from it.

A Yes, apologies.

E Q From that being a fair assessment. There is no reason to doubt the accuracy of the assessment in that study and then you have carried on, "Those indications are likely to reduce over distance with concentrations 20-30 ft from source being around 10% of those at source concentrations." I am just doing the arithmetic on 10 per cent, which even I can manage, of 1,500. It is 150.

F A In my report I refer to the real, live data which I believe was that the information from the JW Roberts report 1937.

G Q Yes, I can see that but I am just looking at the joint statement and on an ordinary reading of the joint statement I think you are agreeing - tell me if I have got this wrong - after you produced your report with full knowledge of all of the relevant papers which had been produced by both you and by Mr Chambers that the concentration 20 to 30 feet from the source would be in the order of a tenth of that they were at source.

A That is the information within (inaudible) TDN42 guidance which is----

H Q On the basis that----

A -- which is in the HM Factory Inspectorate .

Q Sorry.

A Sorry.

Q And on the basis that the source (inaudible) fibres but that is (inaudible) obviously, your evidence being at 20 to 30 feet away there are about 150 fibres per----

A That is one set of data. That is certainly one set of data. There is other data which suggests other-- other figures.

JUDGE COTTER: But I do not know what that means, that answer, I am afraid to say, and I-- I referred to it earlier on. I took this as an agreement as to what was likely. I am concerned with what is likely and I took this as a straightforward agreement of the type that I search for in all cases. What are-- are you unhappy with it? Are you seeking to resile from it or do you agree with this?

A No, I can't disagree with it, my Lord, because it-- that is the value which is quoted within HM----

Q Yes.

A -- Inspector guidance.

JUDGE COTTER: It is not my-- I am not going to go behind it, you see, otherwise. I am just going to take it as much as Mr Weir has taken it and then do the arithmetic which is much-- which, as Mr Weir, even I can get to 150.

A Yes, my Lord.

JUDGE COTTER: Yes. Okay.

MR WEIR: Just to put that figure into context I am just going to take you to Mr Chambers' evidence in relation to background levels if you could kindly go to page(inaudible) 52----

A One second. Page 52?

Q 52, my Lord, always in B (inaudible). Down at the bottom at 2.184-- 2.184, he has made reference to some publication in 1999 from the Department of Transport and Regions stating, "Background outdoor exposure levels are in the range of," and there are a lot of noughts. I am not going to read them out to get it accurate. We can see in the range of very small proportions of 1 fibre per ml. Is there any reason to again doubt that Mr Chambers has accurately recorded what is set out in the 1999 report?

A That is-- that information is based on a range of studies which provides environmental background levels over a period of time, not necessarily at the same time as we are talking here, so there would be-- the environmental background level at the 1950s during the use of

asbestos materials I believe would be somewhat higher but I cannot say how much higher because there is much more widespread use of asbestos.

A

Q Okay. Somewhat higher but not necessarily in the order of magnitude. You know what I mean by that? Ten times.

A It's very difficult to say. The-- the background levels have certainly decreased over time and by the time this data was compiled I suspect it was considerably lower than it was then but I-- I cannot tell you. I cannot quote in that-- a value.

B

Q Would you accept that it is likely-- are you not able to say but this being the evidence we have got because they were not recording asbestos back in the 1950s, the measure of the background was very similar. This being the evidence that we have got available to us, you are not able to say that the figure in the 1950s would be as much as an order of magnitude different from these?

C

A I-- I simply don't have the data to be able to-- to confirm that.

Q So that based upon what we have got here, the figure of 150-- I will just have to take my pen out and check I have got this right 1, 2, 3, 4, 5, 6, 7 or 1, 2,3-- so the order of 5 to 7, a couple of magnitudes greater?

D

A I haven't worked it out. I'll take your word for it. That sounds about right. That is the environmental background level not in association with any industrial practice. That is just-- that is-- that is both a combination of rural and urban background samples of a long-term average.

E

Q Background levels.

A Yes, indeed. Just for clarification.

Q *Vis-à-vis* the amount of dust that Mr Rowe may have been exposed to undertaking shuttering work, I have looked, I have not found it but tell me if I have got this wrong: I do not think you suggest in your report that he would have got dusty undertaking other work on site.

F

A In my report, no. I did not raise that issue.

Q I think that makes its first appearance in the joint statement. Is that right?

A It does.

G

Q And you have seen both Mr Chambers' evidence at p.424 and what he said in court I think today. If you go to B424 there is going to be a certain amount of dust as a result of building activities.

A I believe so.

H

Q Including, for instance, as he says, when kneeling down on the ground of a building site which traditionally is not clean.

A

A That would be one of the factors that might be-- might affect how dusty you got, yes.

Q As a-- I think he describes himself as a-- I do think a gofer. I think he was a dogsbody. As a dogsbody when he is performing tasks such as the carrying of tea and so forth then he is not liable to get particularly dusty during those activities, is he, absent the spraying which we will come to, from ordinary work-- working on a building site as a gofer or dogsbody?

B

A From making the tea, no, but the bill of quantities suggests that there are other materials that he-- fetched and carried is I believe the expression he used, which may have resulted in him being dusty when carrying them or when working with them personally, wood wool being one of them and there is mention of other types of boarding including asbestos products which he may or may not have handled personally but certainly may have been in the vicinity of people who did. It is-- the point is, I think, that he said at p.8 of his evidence on commission that bathing was a daily ritual and, obviously, if it was a daily ritual over the course of the contract that would include periods where there was no spraying going on.

C

Q I think we can all understand that there is going to be some dust on some parts of his clothing, for instance, when working on a building site.

D

A I believe so.

Q Dust from wood chips and so forth is dust which is readily identifiable as dust created by wood, as anyone who engages in any home carpentry would know.

E

A Cutting wood can create very fine dust.

Q Dust from woodwork comes out looking like wood, very fine wood dust.

A Indeed.

Q Readily identifiable as such to----

F

A It's dust at the end of the day. It may-- when mixed with other dusts on a construction site it may not be readily identifiable as wood dust. It would be dust.

Q If-- if somebody has a ordinary level of dust on his clothing as a result of working on a building site and describes dust coming to him from being very close to a spraying of asbestos producing itself clouds of asbestos dust I think you would credit that person, would you not, with being able recognise that he has become significantly more dusty as a result of that exposure?

G

A I-- I really can't say.

H

A Q You have certainly no reason not to credit, have you, Mr Rowe's evidence that he discovered that he was considerably more dusty when close to the spraying of the asbestos dust?

A He's-- that is his evidence.

Q You have no reason as an occupational hygienist to doubt it?

A I-- again, I have no reason to doubt it but I note that he says that bathing was a daily ritual and, therefore, there was exposure to dust.

B Q I understand that. In terms of the timing of asbestos spraying, it is agreed that asbestos was one of the first activities - asbestos spraying - undertaken after the steel frame was installed. Is that right?

A I understand that to be the case.

C Q So you-- you (inaudible) shuttering, you pour in the concrete, you let the concrete harden and the moulds dry. You remove and there is that word for it, for breaking off the shuttering.

JUDGE COTTER: Striking off.

A Striking off.

D MR WEIR: You strike-- you strike the shuttering. When you have done that, one of the very next tasks to perform would be spraying those parts of the steel columns or those steel columns that are not covered in concrete. Is that right?

E A Just-- when the spraying is done is-- is uncertain to me. It appeared from the deceased's evidence that he did not-- that the spraying was not done when he was in the same building.

F Q Can we just-- can we just go back to what I was asking you? I've got a-- I've got a steel frame that's just one-- one vertical stanchion in an area in this case a teaching block. The steps that need to be taken are, for instance, I am not going to put the electrics in at this point. I need-- I need to put up any concrete shuttering and any concrete that is going to go near that. Yes?

A It is clearly nowhere a first(inaudible)-- a first (inaudible).

G Q and once I have done and I am looking at this particular part of the building, not whether I would carry on and do the remainder of the building. I am not looking at that. So far as concerns this part of the building, the next thing I need to do is I need to make sure that steel stanchion that has not been covered in concrete is made fire retardant by being sprayed with asbestos.

A I-- I cannot comment on when the spraying was done. I-- I don't have the expertise to say.

Q Well, all right. Are you saying that in relation to the timing of construction works that you are simply not able to assist the court?

A I am not able to assist the court in saying when exactly the spraying was undertaken relative to the construction of the building. I've said in my report that it would appear to be logical that they would have sprayed the building at the time-- at the time when they could carry on and do the work in one continuous operation and I consider that is more likely on the balance of probabilities to be when the building was at-- at a reasonably advanced stage, probably complete-- completed to a-- in terms of the structural form of the building.

JUDGE COTTER: Yes. I am afraid I had rather got-- pictured that it was-- I mean essentially that Miss Adams' cross-examination of Mr Rowe was misconceived on the point was what I had got from it.

MR WEIR: They were, my Lord. But, Mr Stelling, I am just going to go back and what I am trying to ask you to give the evidence which I will come back to you have just given. Take that as read that you have produced that evidence before the court today. Okay? Rather than just going back to that. Please do not just give me that evidence again because I will ask (inaudible). I am not asking about in respect of the whole building would they likely have gone through and done all of the shuttering and then come and done other jobs. I am not asking that question. I am just asking---

JUDGE COTTER: I mean it is-- 4.21, para.23, "We agree that it is unlikely that the beams would have been sprayed with asbestos before they were later shuttered."

Q My Lord-- my Lord, yes. I am just-- just trying to explore with Mr Stelling a very-- very-- relatively simple question which is you have got a steel girder, , that needs some concrete to it. You put up the concrete first. Agreed?

A Yes.

Q Whenever you get to the next stage, whether it is the next day or months later because you have decided to do all of the concrete work on the entire building, it does not matter. So far as concerns this steel frame, the next thing that has to happen to this steel frame is for the asbestos spray to go on?

A I'm afraid I cannot give that evidence. I do not know the answer to that question.

Q If we go back to para.26 on p.421-- have you got that?

A Yes.

Q "We agree that the spraying of asbestos without pre-damping was a very dusty process and is likely to have... been one of the first activities undertaken after the steel frame was

installed.” Just pause there. Is that to say that you gave that evidence without any basis or expertise for doing so?

A It was my belief when I wrote-- when I agreed that with Mr Chambers that-- if you look at my report, that I considered that the building was likely to have been constructed at that time based on the deceased’s evidence that he didn’t work in the building at the same time as the sprayers.

Q What you are saying then is it is outwith your knowledge base as to the order of play in relation to the construction of the building? Is that right?

A It is outwith my-- it is outwith my knowledge base as to exactly when this spraying would have taken place but I based my-- my-- my belief, my opinion on the evidence on commission provided by the deceased.

Q And just a few minutes ago you said, “And it is my opinion that on the balance of probabilities that it’s probable that the work was done-- the shuttering work was done on all of the building block-- teaching block before the spraying was then done (inaudible).” I-- I am just quoting from what you said----

A Yes. I-- I believe----

Q -- (inaudible).

A -- that is the case. I believe it’s the case on the basis of the deceased’s evidence.

Q Page 423, 31(b), contrary to what you have just said, you did not go that far in the joint statement. Do you see what you chose to say at 31(b)? Fourth line down, “It is possible therefore that the construction of the blocks reached the stage of completion where spraying of the structural steelwork in the affected buildings was possible at roughly the same time.”

A Yes?

JUDGE COTTER: Sorry. I’ve lost this point.

A I do not----

JUDGE COTTER: 423. Which part of 423?

MR WEIR: 31(b), my Lord.

JUDGE COTTER: Sorry. Bear with me.

A I do not see exactly why that differs from what I have just said. I think that the building was-- was at a stage where all the spray could be undertaken in one go.

MR WEIR: So your evidence in relation to this is based upon your, if I can put it this way, non-expert assessment of the evidence that Mr Rowe gave on commission?

A Yes.

H

Q Because you are not able to assist the court with any expert evidence as to how a large, commercial, what would be a state-funded building would be set up?

A

A I cannot confirm that the spraying was applied to beams as the building was being constructed.

Q Confirm or deny?

A Confirm or deny.

B

JUDGE COTTER: Sorry. I just want to make this absolutely clear in my own mind. You have based this on an analysis of what Mr Rowe said?

A Yes, I did, your Lordship.

Q Which bit of what he said?

A Page 14 of his----

C

Q Just tell me roughly which bit. That he didn't work in the same building?

A Didn't work in the same building as the sprayers. He wasn't undertaking shuttering at the same time as the sprayers were-- were working in that-- in any given building.

Q Well, what about the rest of his evidence? Do you take that as well in your analysis?

A I do, your Lordship.

D

Q So he was working 30 feet away from them and at times 15 to 20 feet away from them?

A I do, your Lordship.

Q I see.

E

MR WEIR: In terms of all of the construction of the blocks reaching a stage of completion so that someone could come and spray everything on site at the same time did you note Mr Rowe's evidence at A190, line 34, if you read it out, when he was asked a question, "Thank you, and, presumably, the foundation was already up and running before you got there, the foundation work would already have been carried out. Is that," and he answers, "Some of it would. I don't think they did the whole foundation in one bit."

F

A Are we----

Q Mr Rowe did not think the foundation work had been done in one bit, which does not fit well, does it, with an analysis that somehow they got to the point in the construction of the entire site so that the sprayers could come in once and once only?

G

A But I did note what it said in the information provided in the directors' meetings that the buildings were all roughly being erected at the same stage.

Q I was asking about Mr Rowe's evidence. You said that you have made your assessment based upon Mr Rowe's evidence. I am just asking if you had taken into account Mr Rowe's evidence that I have just read out to you. Did you take that into account?

H

A I took Mr Rowe's evidence into account and I took in the directors-- defendant directors' meeting minutes----

A Q I will be more specific. Did you take specifically into account the sentence that I have just read out in which he said he did not think the whole foundation had been done in one bit?

A I think I-- I looked at it but that's not talking about the structure of the building above ground level, is it?

Q Did you think that was irrelevant to the assessment you made at 31(b)?

B A I believe that this information was of-- was of equal import.

Q Right. Not equal import. Did you think that the evidence that Mr Rowe gave that I have read out about the foundation not being done in one go was irrelevant to your assessment which was based upon his evidence as to when the works were done?

C A I did not consider it when making that observation.

Q Did not consider it meaning you did not take it into account or you did not consider it to be relevant?

A I didn't consider it to be relevant.

Q But you did take it into account?

D A I did take it into account because I make an assumption that your Lordship-- that the spraying was undertaken at a certain stage of completion of the buildings and if you consult the defendant directors' meeting minutes they say that the-- the various buildings were taking shape at roughly the same pace.

E Q Mr Rowe described witnessing the spraying and the tamping down. It was put to him that the spraying had occurred before the shuttering and he said that that was not right. I think you agree that the-- I have just taken you to that passage, that the shuttering occurred before the spraying. Yes?

F A Which section is this?

Q Paragraph 26, p.421.

A Yes.

Q Mr Rowe said it was fine to enclose the steelwork with concrete and not asbestos. He was right about that, was he not?

G A I believe so, yes.

Q That is, my Lord, at A192, line 27.

JUDGE COTTER: So what is the point, Mr Weir?

MR WEIR: The point is he was challenged on the basis he was wrong about that.

H JUDGE COTTER: Yes. I know that, yes.

A MR WEIR: It is the second thing was (inaudible), not just the timing but also that he had got it completely wrong because you do not go and spray-- you do not go and put concrete directly against the girder because it will not be fireproof. He explained that is not the position. Mr Stelling was just confirming that Mr Rowe's evidence is accurate in that regard.

B Do you agree with Mr Chambers' assessment that Mr Rowe would have had to have been in place in order to witness the work including tamping down? I can take you if it helps to where Mr Chambers goes through this in his report.

A Could you, sir, please?

Q Yes. If you go to B36-- p.36, 2.88 and 2.89.

C A I think we have to consider the issue of perspective because, clearly, if the sprayers are working on the ground floor, they would be far more visible given the structure of the building and no window frames or window structures than they would be if they were spraying on an upper level with the claimant-- sorry, if the deceased was at ground floor level (inaudible).

D Q Well, I am not entirely sure if that answers the question I was asking but do you agree with me that Mr Rowe would have had to have been close in order to describe that which he has in his evidence on commission?

E A He would have-- if he-- as I say, my Lord, I believe it's a matter of perspective. If he was standing further back from the building he could possibly see the spraying being undertaken on the upper floors but if he was standing relatively close he would probably see the spraying being undertaken on the ground floor just as easily.

F Q It is intended-- it is adversarial between the parties. It is intended for you to adduce your evidence in a way that is fair and taking account of all of the evidence. You appear remarkably reluctant to recognise the force of the point that Mr Chambers makes and recognise that it is overridingly likely that he was close to the works in order to describe it in the way he did.

G A I can't-- yes. I believe that to be the case. I think he-- he himself provides information on that distance.

H Q I am going to turn to what I have been calling knowledge of the risk to health. Okay? In the 1950s when this school was being constructed an employer, certainly one of the size of this defendant, would be expected to know that asbestos spraying was an activity which was dangerous. Do you agree with that?

A I certainly think they should have been aware of the guidance available at the time.

JUDGE COTTER: One second. The employer would be expected to know the asbestos spraying was hazardous?

MR WEIR: Was an activity that was dangerous.

JUDGE COTTER: Right. Activity Yes.

MR WEIR: You have again answered by sidestepping and gone to the literature. I am going to come to the literature. I was hoping to start with where the literature-- we end with rather than go-- and I will go through the present literature. I was hoping to get to the end point first of all. Do you agree that the defendant, as an employer the size it was to be able to take on the entire construction of these school buildings in the 1950s, would have been expected to know that asbestos spraying was an activity which was dangerous?

A Yes, I do.

Q One-- your-- your sidestep answer was to refer to the literature that the employer should have had regard to, I think may have been the description you used, and the literature that the employer should have had regard to is, I believe, at least the literature that you have referred to in your report up to 1955, obviously.

A That which was available to them, my Lord.

Q Not-- they were not so (inaudible) as to have (inaudible) literature that had not been produced at that time. The reason, as I understand it, that you have referred the court to various literature in your report is because that is literature up to the relevant date to which this defendant should have had regard at the beginning of this job?

A Yes. I was intending to provide an understanding to the court of the developing knowledge over the time that the-- that the works were undertaken and beyond.

Q I understand the description "developing knowledge" but I am asking more specifically for this defendant and I-- as I understand it, and tell me if I get this right, you were putting that evidence before the court on the basis that it was relevant literature because it was literature that this defendant should have had regard to?

A Yes.

Q And that includes, amongst other things, and we will go through it-- it is a bit of a list, I am afraid, but it includes the Merewether and Price report which you reference in your-- In your report?

A Yes.

Q We have got the report.

A Yes.

Q It includes all of the Factory Inspectorate Annual Reports, so, for instance, the 1939-1949 reports. 1938 I think is one of the ones which is referred to.

A

A Some of which are particularly relevant to this activity.

Q Some of which are, did you say?

A Readily identifiable, yes.

Q Yes, yes, and I think Mr Chambers made a point anyway that as a builder the-- the defendant would be expected to read these documents anyway, even before he has regard to the fact he is going to do some asbestos spraying.

B

A That is Mr Chambers' view.

Q Would you not agree with that?

A I wouldn't necessarily agree that a builder would necessarily review all of the guidance that Mr Chambers refers to.

C

Q Well, just on the Factory Inspectorate Annual Reports for the moment, chief-- Chief Inspector of Factory Annual Reports. That was-- that was the point that Mr Chambers was making as I understood it today. Do you agree with that?

D

A I think that there was certainly information within the Chief Inspector's Annual Reports which was applicable to the construction industry, much which was not.

Q As happens, but I think you have already agreed that is evidence which or those are documents that this defendant should have had regard to when starting out on this job.

E

A Yes. Certainly, given the information provided in the 1949 guidance regarding spraying, I think that that is-- is fair to say.

Q Given the size of this particular job is it not fair also to say that you would expect this employer to have had regard to, first of all, the 1949 book, Factory Well-being?

F

A I am not aware of the circulation of that book and I'm not aware of how widely it was read by organisations such as the defendant.

Q Okay. Is that to say that you are not in a position to assist the court?

A I am not in a position to assist the court as to how widely that book would have been read and how-- how widely it would have been regarded as essential reading to a company such as the defendant.

G

Q What about the 1953 National Trade Press book with the name Factory Health, Safety and Well-being Encyclopaedia?

A Well, it is by its very title factory guidance so this is a construction site.

H

A Q The evidence Mr Chambers has given us that this was a builder who also conducted building works in factories-- I think he described them as (inaudible) factories, are you able to----

A I'm not-- I'm unable to assist the court on that issue because I'm not aware of what other work the defendant has done.

B Q On the basis that the defendant was engaged in such work, factory work, am I right in thinking that you would expect the defendant to read such books as the 1953 Factory Health, Safety and Welfare Encyclopaedia?

A No, because they're constructing the factory.

C Q Do you say that no, you are clear about this or no, this is likely the(inaudible) position (inaudible) 1949 book, namely you do not know to what extent that book was disseminated, distributed, available and read?

A It seems to me that a book that addresses factory health and safety would not be directly relevant to a company who is constructing that factory.

D Q Again, that is not quite an answer to what I was asking. Are you saying you are giving positive evidence that you do not consider that is a book which the employer would be expected to have read - that is (a); or (b) you are not in a position to assist the court in relation to the extent to which a company such as the defendant would be expected to have had regard to this particular book?

E A May I ask you for the title of the book, please?

Q Yes. Go to B79. B79. A1.53. Do you have it?

A I do.

Q Take your time.

A I'm just----

F Q No, no, no.

A I'm just having a read of it.

Q Have a read. It's quite-- quite a bit that's quoted. It actually goes on all the way through to A1.63.

G A I mean it's a matter for the court but it seems to me that that document-- that-- the title of the booklet in the first paragraph which I've just quickly read suggests that it is to do with the functioning of the factory and the activities undertaken within the constructed factory and, therefore, I'm uncertain as to the relevance of that document to a company constructing that factory.

H

Q I think I can take this on the basis of the questioning that was put to Mr Chambers by counsel for the defendant. I think I can take it that you accept that the defendant should have had regard to the 1945 Garrett letter. Have I got that right?

A

A I do say that is the case, my Lord. I do believe they did.

JUDGE COTTER: Sorry, you do believe----

A They should have had----

Q Yes.

B

A -- reference to that, although I have to add that there is no evidence that it was ever issued to a-- construction industry overall.

MR WEIR: One of the mechanisms by which it could reach someone such as the defendant is if it was given to JW Roberts (inaudible).

C

A Indeed.

Q JW Roberts, as I think you have explained in your report, would have been expected to have given a course of training, should the defendant have wanted it, in the business of spraying asbestos.

A Indeed.

D

Q So the reasonable employer in the 1950s, such as the defendant should have been, would or should have appreciated (a) that the spraying activity gave rise to a real risk to the health of those engaged in the activity, engaged in the actual spraying----

A Yes.

E

Q -- such that it mandated active steps being taken in respect of those individuals----

A Yes.

Q -- active, protective steps which you----

A Yes, my Lord.

F

Q -- explained in your report would involve respiratory equipment-- in your joint statement.

A Yes, my Lord, and in-- I believe in my report.

Q And your report. And that would be the case even where the spraying was only temporary?

A Yes. I believe that temporary is not well defined in that-- in that context. I think that temporary means a-- a site to site process so that if a company was engaged in the activity of spraying, temporary means that they would undertake that work on one site and move on to another site so, if you like, it was a mobile process.

G

Q I think if we just stick to temporary meaning what it sounds like it means, I think you recognise that, as set out in the Garrett letter, steps should be taken-- just-- just for the

H

moment overlooking the person or the persons doing the spraying, steps should be taken to protect the persons spraying even if they are spraying for a temporary period of time

A Yes.

Q I am now going to turn to the appreciation of risk to the health of other workers, not just those who are engaged in the actual spraying. Now a reasonable employer in the 1950s would or should have known that the spraying of asbestos was a very dusty process.

A Yes.

B Q That there was no knowing how much asbestos was being disseminated. Correct?

A Yes.

Q Or for how long it would remain in the air?

A Yes.

C Q It was known that asbestos was harmful?

A Yes.

Q And it was not known how low the level of exposure could be without being harmful.

A Well, I think that there is some distinction required there. I believe that if-- the understanding of risk at the time was associated with the diseases which the exposures caused which were asbestosis and lung cancer at the time and that they were as identified by Merewether and Price associated with those with the longest employment in the most dusty processes and, therefore, it appears to me that there would be an understanding of risk on that basis.

E Q Well, if we look at-- back at, for instance, the factory well-being document, if you go to p.77, at the passages that I have read out earlier today, do you see at F, below-- near the second hole-punch, "(inaudible) dust is created even in small amounts for short periods precaution is needed," and then it says "Asbestosis though different from silicosis (inaudible) caused by inhalation of minute particles of asbestos precaution is the same and equally necessary. The dust was (inaudible) on no account be inhaled." There was not understood to be an amount of dust which they would clear was safe.

A Merewether and Price did in fact identify or Merewether certainly did identify a dust data (inaudible) level which he considered to be what he called a safe criterion.

G Q Well, Merewether and Price was in 1930 and the effect of these subsequent reports from the Chief Inspector of Factories, was it not, was to recognise that things had changed from 1930?

JUDGE COTTER: What I am going to do, Mr Weir, is I am going to stop you there for a twin reason: (1) because it is one; and (2) for an equally pressing reason that my pen has run out.

H

MR WEIR: I beg your pardon, my Lord?

JUDGE COTTER: My pen has run out. I want to take this carefully and it is helpful but I want to take it carefully and----

MR WEIR: Yes, of course.

JUDGE COTTER: -- I think if you do not mind putting a mark in your cross-examination----

MR WEIR: My Lord, yes.

JUDGE COTTER: -- and we will backtrack a little and we will resume at two o'clock. Okay. Usual rules apply about your evidence.

A Of course.

Q All right. Thank you very much.

(Adjourned for a short time)

JUDGE COTTER: Yes, Mr Weir?

MR WEIR: Mr Stelling, before the luncheon adjournment we were in the midst of questions and answers in relation to whether in the 1950s it was not known how low the level of exposure could be without being harmful. You, I believe, answered by reference to Merewether and Price's report, 1931----

A 1934, in fact. It is the-- it is a document that is not in the bundle which is the-- the item in |Terbacle (inaudible) which is the follow-up (inaudible) but I appreciate it is not in the bundle.

Q Well, that is okay. I think that Mr Chambers (inaudible) follow-up (inaudible) I think you are referring to the 1933----

A 1933. It is December 1933, yes.

Q -- paper, p.72. Page A72----

A Right.

Q -- (inaudible). A1.29.

A One sec.

Q Page 72, my Lord?

A Yes, got it. I just wanted to read it.

Q That is-- that is a document published in a journal unattractively named Tubercle which sets out, "Within certain high and low limits the concentration of dust in the air of workrooms, is the determining factor in the onset of disease, and also, within certain limits, concentration of dust and length of exposure determine the incident rates in different

processes in the industry.” It carries on at p.110, “The fact is that work in a dense concentration of asbestos dust over a comparatively short period will lead inevitably to the development of a profound fibrosis, provided that the worker lives long enough for it to develop.”

A Yes, indeed. That is referring to individuals working in textile mills who are obviously employed full-time in those employments.

Q Yes. Well, its words speak for itself, “over a comparatively short period.” But in any event that is in 1933. If you go over the page to p.73 we then see the 1938 annual report which is a report which we have already discussed and recognised this defendant should have had regard to and there is a passage in that. I have read it out already to the court this morning so I do not propose to read it out but can you see the latter part of what has been quoted?

A Yes, your Honour. Yes, your Lordship.

Q That is a recognition that is what thought to be and (inaudible) may not be and today asbestos-- today in 1938 is recognised as highly dangerous and I have already gone to the 1949 factory well-being document which starts at p.75 and I took you to the p.77 reference.

JUDGE COTTER: Sorry. Which is the reference again, please?

MR WEIR: Page 77 at (inaudible) F referencing silicosis or silica dust, saying even in small amounts or for short periods precautions are needed. Then I read out asbestosis, though different from silicosis, medically is very similar in general terms. It is caused by inhalation of minute particles of asbestos. Precautions are the same and equally necessary. The dust must on no account be inhaled. So that does not recommend, does it, that there is a-- a low level which is tolerable?

A No, it does not.

Q Then in 1949 if we go over the page again to p.A1-- sorry, to p.78, A1.50, there is the 1949 Chief Inspector of Factories’ Annual Report and, again, that is a report that you have recognised already that the defendant should have had regard to and I can read-- I think I read this out earlier today. If you like I can read it out again. I am going to pick it up towards the end of that passage, “It is then very necessary to keep an ever watchful eye on new use of asbestos in some manufacturing or other processes, for example on ships or buildings where the work may be undertaken by someone not fully realising the necessity of preventing as far as possible the inhalation of asbestos fibre and dust.” So the emphasis through those further post-1933 documents was on preventing inhalation of asbestos dust as far as possible. Is that fair?

A As far as reasonably practical, yes. That’s indeed the case, your Lordship.

A Q And I am just about to quote from a Deputy High Court Judge in a case I have referenced yesterday which we will put up before the court in due course, of *Hawkes v Warmex*. That must be at para.95 in which the judge said in relation to the defendant in that case that that defendant ought to have been aware of the publication of the annual reports of the Chief Inspector of Factories prior to 1952 as a minimum. By 1938 asbestos was referred to as highly dangerous. That is the reference that we have seen in the Factories Inspector report and in 1949 reference is made to preventing inhalation as far as possible and he has continued, "This is a development from the 1931 position of not being so sure about the danger of lower level exposure." That is from the Deputy High Court Judge. Do you accept that as a fair and accurate description?

A That is the ruling that was made at the time.

C Q But do you accept that as fair and accurate?

A I believe that certainly that can't be overlooked. I think that there's also-- you have to consider the guidance that was provided at the time.

D JUDGE COTTER: Well, I think-- I think really what has happened is that Mr Weir has just taken you to the relevant documents and guidance sequentially. He has rounded it up in a quote. The two elide. I suspect the Deputy High Court Judge probably had the same documents taken through in the same fashion I have just done. Can I ask this simple question: why should I not reach exactly the same conclusion?

E A It doesn't quite sit with the guidance provided by the Garrett letter. It doesn't-- it doesn't talk specifically about low level exposures to bystanders in-- in the Garrett information.

Q Bear with me.

F MR WEIR: I-- I did not go through the Garrett letter because at that-- for this purpose I was keen to take you to the Factory Inspectorate's Annual Reports. Are you saying that the Garrett letter serves to downgrade the duty which would otherwise be applicable in light of the Factory Inspector Annual Reports?

A It provides guidance specifically for the processes which we're concerned with here and doesn't provide quite the same level of concern with regard to low level exposure as-- as that guidance to which you've referred.

G Q Just-- just so I can understand this, asbestos spraying, which at the time the letter was written in 1945, the Garrett letter, was not pre-damped-- correct?

A It was not.

Q Created as much asbestos dust as it was possible to create in the application of asbestos.

H Yes? So in relation to such an activity, the guidance that we see from the Chief Inspector of

Factories in 1938 and 1949 would apply, we lawyers would say, *a fortiori*. It would apply all the more, would it not, to an activity which itself is the most dust producing application of asbestos?

A

A Yes, but it appears to me that the guidance that Garrett has provided does not reflect the level of risk to a bystander.

Q Let us-- let us go back to the Garrett letter. We have got the actual letter. Although it has been effectively transcribed by Mr Chambers, I do not mind going back to the actual letter. Do you have bundle H? I think you may do because I think (inaudible).

B

A (inaudible).Its on the top.

Q Right. Can you kindly go to p.1138? It is at the beginning. So H1138. It is very near the beginning. I am not for present purposes going to read through the whole-- whole letter. I take it you have had ample time to read through the whole letter. Yes?

C

A Yes.

Q I am just going to go for these purposes to 1138, so the first page of the letter, second paragraph. I am going to pick it up in the middle, "I would however emphasise that while asbestos dust may not have any apparent effects at first experience shows that particularly if the worker is exposed to the dust in substantial concentrations serious results are apt to develop later. It is therefore important that even if the work would only be temporary all reasonably practical steps should be taken to reduce the risk to a minimum." Is that not in line with the Factory Inspectorate recommendation that you should prevent as far as possible the inhalation of asbestos dust?

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A I consider that the-- the word "risk" is clearly important here because the risk of harm is demonstrated by the potential for the-- for development of a disease which is dose related. It is asbestosis and-- and after 1954 lung cancer and therefore the risk of harm is associated with a dose-- dose related illness.

F

Q We have already-- I have already asked you questions in relation to the word "temporary" and you had agreed that even if the work is temporary, as indeed it says in this letter, active steps need to be taken to protect, if I can put it this way.

A All reasonably practicable steps.

G

Q Yes. Even if the work is temporary, all reasonably practicable steps need to be taken to in this situation to reduce the risk to a minimum to protect for these purposes. Yes?

A Yes.

Q Happy with that?

H

A Yes.

Q That is of a piece, is it not, with the description by the Factory Chief Inspector of Factories the necessity of preventing as far as possible the inhalation of asbestos fibres? That is after all the aim of the game.

A Yes.

JUDGE COTTER: Can you help me with over the page? I am not quite sure I follow this. This is a letter which in my view-- I expressed it yesterday and I appreciate the context, I think, but I am keen that we are all on the same hymn sheet. This is headed, "Asbestos insulation aboard ships"----

A It is.

Q -- and it would have given warning. Now, as I said, ships have engine rooms and boiler rooms and if we have a look at subsection 4 which we have concentrated on, it basically, summarising it down, says no other persons should be in a confined compartment without a respirator. You should not be in-- anywhere near spraying in a confined space without a respirator. Yes?

A Indeed.

Q Have a look at 2, "On board ship steps should be taken in accordance with the spirit of the regulations to prevent unnecessary concentrations or accumulations of asbestos dust, for instance by having good ventilation, arrangements in confined spaces, damping down dust, clearing up debris and accumulation of dust as soon as practicable." Now, that is not talking about confined spaces. That is talking about on ships generally. Is that not in line with the spirit of what you have been taken to by Mr Weir that, effectively, you should do what you can to prevent any unnecessary concentrations or accumulations, to any unnecessary concentrations of dust?

A Yes, your Lordship.

Q It does not except any unacceptable or-- or-- do you follow? I am rather struggling with why that would not be directly in line with the idea that you should just prevent so far as is reasonably practicable people inhaling asbestos dust.

A It would-- well, it should, your Lordship. That is-- that is clear from 2.

Q So if I am a builder-- if I am in the building business-- I do not necessarily have in mind a particular job but I am thinking in terms of my general approach, my systemic approach to asbestos. I am going to look at 2 and 4 together, am I not, and I am going to think, "Well, it is not just the compartment but just generally I should be avoiding"-- "preventing," rather, "any unnecessary concentrations of dust"?

A Yes, your Lordship.

A Q So that being so, why is the analysis that you have been taken to of the documents and the summary that Mr Weir has taken you to in the case-- I cannot say I have read it yet. Again, going back to it, why is that not something I should take as a proper analysis? Why does this letter, having gone through what we have just gone-- where do you get the comfort from? I do not understand where the comfort comes from that there is, as it were, an acceptable amount of dust. I did not put that very well. I hope you got my thrust.

A I did, your Lordship.

B Q Can you help me?

A I believe that in regard to the-- the activity that was being performed by the defendant, i.e. spraying of asbestos, there is no evidence that I've seen about their-- their activities regarding the-- their ability-- their cleaning of the accumulations of dust on the site. They did not provide extract or exhaust ventilation----

C Q Yes.

A -- but that is probably because under the circumstances in which the work was done it was not possible at that time to have done so in an open building, an open-sided building. There were no portable air movers that could have been used to have applied extraction ventilation on an enclosure and, therefore, they I will not say relied but there was a level of natural ventilation open to them which I believe would have reduced the exposures of the sprayers undertaking the work in conjunction with the use of a respirator within-- for everybody that was working within the compartment itself or the area of the-- of the school in which the work was being undertaken, in addition to which all other people as far as I can see from the evidence were excluded from the work area. Those are the control measures that were-- those are the control measures I believe should have been applied and I see-- I don't read anything in the evidence to suggest that they necessarily weren't.

F Q One second. So far I have got, and help me because I have got to get it down and understand it and they are two separate things: control measures that should have been applied by this defendant were using the natural ventilation available on site and exclusion of people from the area in which people were working----

G A And-- and including providing respirators to all persons undertaking the work or ancillary thereto.

Q Respirators for-- so----

A I don't think it was a reasonably practicable measure, your Lordship, to have enclosed the-- the area.

A Q All right. What does the “area of spraying” mean in that answer? What I have had, so I understand the difference between yourself and Mr Chambers, Mr Chambers’ evidence, and I-- I hope I was careful to ensure that I got it right, effectively was, as far as he was concerned, if you are within the area of dust and you can see clouds of dust, you are in the area. Would you agree with that?

B A I would agree with that but I think that such levels of exposure that are just merely visible are not necessarily harmful in the longer term with regard to the risks that are associated or were associated with asbestos at that time. The understanding of risk at that time was of asbestosis from longer term, prolonged, high level exposures and, therefore, that was the understanding of risk at that time.

C Q Yes. You had better go on, Mr Weir. You had better-- you had better go on.

D MR WEIR: My Lord, yes. Mr Stelling, before we get to controls which you moved into, I am going to go back to the area of questioning I was pursuing which was-- which was the-- what it is the reasonable employer should have known or understood at the time and you have just said in relation to asbestosis what was understood was that the level of exposure needed to be substantial and, at the risk of rehearsing the same points, if we just go back to p.73----

A Of bundle A?

E Q Bundle B, not H. (inaudible). The 1938 annual report specifically recognised, lower part of A1.36, “The dust that is thought today to be harmless following research may be viewed in another light tomorrow,” so it was being flagged up, was it not, to an employer that whilst at the moment it may be understood that the risk is of asbestosis and by 1955 of lung cancer, the emphasis of the guidance from the Factory Inspectorate, see the 1938 report, see the 1949 report, was avoid inhalation period. Do you agree with that?

F A I do agree with that.

Q No responsible employer in the 1950s could have known how low the level of exposure could be without being vulnerable. Do you agree?

G A I-- I remain of the view that the understanding at that time was the risk was associated-- of the asbestosis was dose related and attributable to prolonged, lifetime exposures within occupation in industries where the exposures were—was usually significant .

H Q I have taken you to those passages which make clear that it was recognised that they did not know other than that the asbestos was harmful and asbestos should not be inhaled from which it inevitably follows, does it not, that they could not know at that stage how low the level was which would not be harmful? They did not know.

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A Well, I am-- I consider there are-- is a-- you can take a nuanced view on this and I think that the-- there is other guidance which suggests that there is a dose-- there was an understanding of the dose response relationship with regard to the harm that was known about at that time.

Q What was it known just how much exposure someone working or passing near to spraying would be exposed to in 1955 when they were not measuring?

A No. That's certainly the case.

Q What they would have known is that if no steps were taken to contain the asbestos, it was liable to affect other workers on site.

A And yet that's not reflected in the guidance which was available.

Q Well, just straight up do you agree that in 1955 a responsible employer such as the defendant would or should have appreciated that if no steps were taken to contain the asbestos it was liable to affect other workers on site?

A If-- if no steps were taken in accordance with the Garrett guidance I agree with that, yes.

Q It could not even be ascertained how far away those other workers would have to be before they were not at risk of harm themselves?

A It was not recognised, I don't think, my Lordship, that that was a risk or I think it would have been reflected in the guidance that was available.

Q Well, they did not know, did they? They had no means of measuring. They did not know how far away a worker had to be in order not to be at risk of harm themselves?

A But yet it doesn't appear in the guidance that that would be attributable to a risk.

Q I am asking-- I am not asking a question what does the guidance say. I am asking a question what would or should a reasonable employer such as the defendant in the 1950s, 1955-1958, have understood and am I right in saying that that reasonable employer should have understood that it, the employer, could not ascertain how far away other workers would have to be before they were not themselves at risk?

A I don't believe they-- they would necessarily have understood that risk.

Q I think you recognise that other workers, by which I mean workers not actively engaged in the spraying, but other workers working, and we will come back to what we mean by this because if I just use this expression "the same area"-- that other workers working in the same area as the spraying at the same time merited protection?

A Yes, they did.

Q And the protection those other workers merited (at the least) was respiratory---- respiratory-

Q Respiratory protection.

A respiratory protection .

A

Q And it did not matter what those other workers were doing. It is their proximity to the spraying that puts them at risk, not the task that they are undertaking?

A Yes.

Q So two workers an equal distance from the asbestos both merit protection if they are within "the same area" which we will come back to?

B

A Within a compartment, which I believe is----

Q All right, your language. Now "compartment" I think in the joint statement, if we have a look-- if we go to B, p.419-- it is 419 near if you go towards the top of the second paragraph under (b) you said, "Mr Stelling agrees that the defendant should have taken sensible steps to prevent or reduce exposure to asbestos but considers that at the time such considerations are likely to have been seen as applicable only to those undertaking the task itself and those working in the same areas at the same time." That is where I have got "areas" from.

C

A That's fine. Yes, yes, areas.

D

Q "Compartments" readily fits, as I think we are all agreed, with a ship which has compartments or a railway carriage has compartments.

A Okay. You could argue the shell of a building has compartments. It has----

Q Well, can we----

A -- limited----

E

Q Can I park that and come to it?

A Okay.

Q I will come to it. You will have your opportunity to say your evidence on that but I am using your-- adopting your language at the moment, "same areas." Now, where-- if I call that an area or a working area, where the working area is a confined space, that translates into excluding others from the confined space.

F

A Yes.

Q Hence in a compartment in a ship, see the Garrett letter, exclude other workers from the compartment.

G

A And the same could be said of any reasonably large work area where a similar activity was performed.

Q Just-- have I got that right? Would I-- because you answered again by saying something slightly different. Do you agree with me that we can take, for instance, a compartment of a ship as a confined space and that, were the spraying occurring in a compartment of a ship, it

H

would be mandatory for the employer to keep - to exclude - all other workers (who were not wearing respiratory equipment) from that compartment?

A

A Yes.

Q And where there is a compartment the asbestos will be contained within the compartment, see by way of example a compartment in a ship.

B

A Yes. Not all ships have very compartmentalised areas. There are-- I think Mr Chambers alluded to it yesterday, that there are parts of a ship that are not as well contained. But, yes, the principle is correct.

Q Well, if I could add-- add this to it then: where spray work is taking place in a confined space, no doubt there is a door or suchlike to it because people have accessed it, the door should be closed?

C

A Yes. If there is a door to shut----

Q Yes?

A -- then it should be shut.

D

Q Right. Just taking real life here, not imaginary life. We have got railway compartments we know are sprayed. You have explained to us that that is standard. We have got ship compartments. All these compartments have doors, means of access. Yes?

A Yes.

Q (inaudible).

A Yes.

E

Q We are getting into the boiler room, where they have to get into the railway compartment and it must follow that those doors should be shut during the spraying?

A Well, yes, that-- the guidance doesn't state that but yes.

Q Yes, but I think adopting Mr Chambers language-- I think the application of common sense?

F

A Yes. No, I'm-- I understand the point.

Q The purpose of shutting the door being to contain the asbestos in the confined space?

A Yes.

G

Q And thereby to prevent it spreading and being at risk of being inhaled by people outside of the confined space?

A Yes. It does rather run the risk though if you generate a confined space and then spray asbestos within it that you're placing an increased burden on the protective equipment of the people working within that environment.

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Q Well, I think-- I think we see that by the remarkable figures that came up with the railway carriage of over 5,000 or 50,000 fibres per ml. That is a feature of spraying inside a compartment. It is not an inducement to allow those outside the compartment also to be affected by the asbestos, is it?

A But if there are opportunities for natural ventilation as a control measure, I think that they should not necessarily be overlooked.

Q Okay. Can I-- can I just sidestep or leave for the moment control measures - all right - of those sorts because we have got-- we can talk later about exhaust ventilation and so forth, your description of natural ventilation. That work then having been conducted in this confined space, the obligation on the employer would then be to clear up the asbestos dust which has been created in a confined space. Yes? That fits with what his Lordship has referenced at-- in the Garrett letter, for instance, at subparagraph 2 of taking steps to prevent unnecessary concentrations or accumulations of asbestos dust?

A Yes, your Lordship.

Q So you confine the asbestos and then you clear it?

A Yes. That would-- that would be the practical approach.

Q And although you reference confining-- limiting those working during the time of the spraying, again, common sense would dictate, would it not, that you would want to limit people's access to that area for a period of time following the spraying, not just during the spraying?

A That is how the guidance evolved at the time of the Asbestosis Research Council Guidance Notes in the late-- later part of the 1960s/early '70s. Certainly, they realised that there is a residual risk of exposure to individuals entering the workplace where the spraying had taken place and they recommended what would be seen now as a clearance time, an opportunity for natural ventilation to reduce the concentration of dust in the air so that it would then be safer to enter the environment where the spraying had undertaken after some time had elapsed. That became guidance at a later time.

Q Even in the 1950s the responsible employer surely would have been able to work out it would be sensible to limit those accessing-- here I am talking about a confined space-- accessing a confined space for a period of time after the spraying. That is certainly common sense because no doubt the asbestos dust which has built up in that confined space would be readily visible as such for a period of time after the spraying?

A For about thirty minutes is what the-- the guidance-- the ARC recommended.

Q In which case even in the 1950s for about thirty minutes you would expect a responsible employer to ensure that other workers did not enter that confined space.

A Well, that would be an approach which certainly was adopted later. If it was recognised at the time as being an approach that should have been taken it is not identified within the guidance that I have seen.

Q Right. You-- I ask you a question and you go to the guidance. I am asking you a question about a reasonable employer. It may be that you are saying you are not in a position to assist the court further in relation to the activities of the reasonable employer. You are in a position simply to reference the guidance. Is that what you are saying?

A I think a reasonable employer has-- has a reason to-- to look at the guidance and look at what the guidance suggests to them and if the guidance is not saying to them that there is a necessity for them to have a period after the spraying which-- for which they should not allow their staff to enter it, then that is not-- it is not obvious to me why they should have done that work, that action necessarily off their own back.

Q Well, by way of reference that to the guidance. The guidance has indicated, and I will not rehearse it now by taking you back to the 1938 and 1949 annual reports and so forth, the message-- you agree with me. The message was: prevent your workers from inhaling the asbestos dust?

A Yes.

Q You agreed with that earlier. If the asbestos dust is visible in the air for a period of time after spraying, then it would follow by application of (a) that guidance and (b) common sense that you would want to exclude your employees from that environment?

A I-- I agree. I'm-- but the point I would make is that the-- the amount of time that the dust would be seen as visible, it would-- or certainly the fine respiratory dust would not be visible for very long. The coarse dust would settle out quite quickly. I think we've had a discussion about this with Mr Chambers already.

Q Well, you said-- you said thirty minutes.

A That is the clearance time that was recommended by later guidance.

Q I understand that.

A At a time when the control limits in place were much lower.

Q Well, let me just put it this-- put it this way. Are you prepared to recognise that so long as there is visible dust in the air even after spraying a responsible employer in the 1950s should prevent his workers from accessing that confined space?

A If the dust was visible, yes.

- A Q And so far I have been talking about a confined space. There is a problem that a working area is not (inaudible), in other words is not a confined space contained because the asbestos dust created can then not be confined to a given area. Agree?
- A I do agree.
- Q But asbestos dust on a construction site can, for instance, shift with the wind?
- A Yes, I agree.
- B Q Such that that would fit that for workers who are downwind of a given activity creating asbestos dust?
- A Yes, on-- yes, indeed, if they-- if they are directly downwind and staying there for some period of time I believe that they would-- they would receive an exposure and some level of exposure is what I certainly agreed with Mr Chambers.
- C Q And the level of exposure will be variable?
- A It will be variable.
- Q And a reasonable employer understanding this, that the level of exposure to those around the work on an uncontained site is variable, should operate on the premise of maximum rather than minimum exposure to those employees? You would agree with that?
- D A I would-- I would benefit from you explaining that in more detail.
- Q If the amount of exposure is variable, so it can be just colloquially described as a lot or a little, then a prudent employer should operate on the basis that it is always a lot, not that it is always a little?
- E A I think that requires an element of-- of subjective assessment of what those levels would be before you make the decision that it would be such that it would be harmful.
- Q What I am really focusing in on at the moment is the reasonable employer cannot measure with equipment or has not measured with equipment the amount of actual exposure to given workers.
- F A Agreed.
- Q If you create asbestos dust on an open site as opposed to in a contained space, the amount of asbestos dust to which those who are working around the spraying will be exposed will be variable?
- G A It will be variable. I would suggest that this was semi-enclosed because certainly some of the-- the work which was done would have been relatively well contained by the structure of the building, so, therefore, an open site is perhaps not the description I would use.
- Q Okay, but the exposure is still variable?

H

- A The exposure, as we touched on earlier, if you were working very close to the periphery of the building and you are-- and there was some overspray which left the building as a consequence of the spraying activities, then, yes, there could be some exposure which entered the ambient environment, some dust, some overspray which entered the ambient environment.
- A
- Q And I think you yourself at p.325, 9.2.6 say, "For the benefit of the court my best estimate of his overall exposures would be that on a daily shift average basis they would have been slight, but when walking about the site he could have received sporadic and highly variable exposures of somewhere in the region of 10-40 fibres/ml depending on the environmental conditions... if he was ever simultaneously close by and downwind of the spraying process."
- B
- A Yes.
- C
- Q What you are recognising there, as I say, is if it is variable, you-- we have had a discussion about the levels but just for the moment working with your figures because it is the principle I am looking at, not the figures, if you are saying there that he could be exposed to between 10 and 40 fibres per ml, the reasonable employer has to assume he is going to be exposed to 40 fibres per ml and take precautions accordingly, not to 10.
- D
- A I can-- I accept that, yes.
- Q So the natural ventilation a principle and concept that has been referenced quite a few times can be very unhelpful in this context because it broadcasts the dust further afield.
- A It does but it also subjects it to natural dilution over a period of time and a period of distance.
- E
- Q If-- if a sprayer sprays on site and no one else is present and the sprayer has respiratory equipment and he does that on a Friday evening, by Monday morning you are saying it would be okay for workers to attend that site because natural ventilation would have removed-- that back in the 1950s . It would be reasonable then for workers to come back on the site because the asbestos dust would be believed to have dissipated by natural ventilation. Is that right?
- F
- A It's certainly true that it would be satisfactory on the standards of the day to have attended on Monday morning if they're working on a Friday night. I believe it may have happened a lot quicker than that in fact.
- G
- Q Even in that case - even in that case - in light of what we have discussed in relation to a confined space would it not be incumbent on the employer to look at all the surfaces where dust may have accumulated and to ensure that those dusts were cleared up safely?
- H
- A By means of surfaces you are talking about outside of the-- the work area or----

- A** Q By way of-- by way of example we are here in the teaching block which by this stage has a concrete floor and let us just imagine in one part of the teaching block there has been spraying which has gone on in there. Natural ventilation is not going to leave a-- a surface of the floor of the teaching block untouched by asbestos.
- A No, absolutely not, and provision 2 of the-- the Garrett letter suggests that you should undertake all reasonable and practical measures to clean that up.
- B** Q So even natural ventilation over the period of a weekend of itself is not sufficient?
- A No, it is not sufficient for that but it will dilute considerably the airborne concentrations of fine respiratoral dust.
- Q So natural ventilation can help if no one else is around and sufficient time is left but natural ventilation if there are people around in general though - I am not trying to capture what is meant by "around" yet - the natural ventilation if there are people around has a contrary effect, namely of spreading or broadcasting the dust, depending on the wind, the way of the wind, the eddies in a building, are moving and so forth of broadcasting dust so that other workers are then at risk of inhaling it?
- C**
- A Spreading and diluting, I would say. It would certainly spread it but as by-- by spreading it, it would dilute it too.
- D** Q I understand that but I think you accept that it would put other workers nearby at risk of inhaling dust.
- A It would-- the-- the-- well, I think we may be conflicting two things here. If you're talking about the-- the heavy material which has gone to ground, certainly, that material can be spread again if-- if re-disturbed. A lot of it, the respiral fibres which are produced by the spraying fibres, would be-- would be long gone because they-- if they were being spread into the environment, they would-- on a typically-- on a typical day with a 2 metre per second wind speed they would be taken away from the work area and diluted over a very wide area so there is a-- there is an element of natural ventilation will dilute the concentration of fine respiratoral fibres relatively quickly.
- E**
- F** Q Well, it is variable, is it not, and this is your own evidence? If you are downwind, you might not be so lucky. It might be diluted for other people but you might be the one that receives it.
- G** A In extremely benign conditions I can-- this is why I-- I chose a figure of 40 fibres per ml because that reflects the values that were put or were measured by the-- by the Roberts spraying trial in 1970.
- H** Q Well----

A And, therefore, if someone is-- is-- is in the unfortunate situation where they are downwind of a situation where spraying is undertaken, they can experience a concentration of that order of magnitude in my opinion.

A

Q We have your evidence today which you confirmed for the judge that on average 20 or 30 feet away it would be one-tenth of the concentration at source. That was on average. If you are downwind, it follows, does it not, you are going to have more than the average because you will have factored in your assessment that average means including downwind and including upwind?

B

A Well, I-- I estimated that my-- that the maximum exposure would be about 40 fibres per ml under-- under those benign conditions. Under-- under more active wind pressure I think that the level of exposure would be lower.

C

Q For those who are downwind?

A For those that were downwind because you are-- you are diluting the air. You're diluting the fibre concentration within the air between the source and the recipient.

Q Is the thrust of the evidence that you give at 9.2.6, p.325 that being downwind-- see p.325-- that being downwind increases, not decreases, the individual's exposure to asbestos?

D

A No. I consider that if you're downwind but under relatively benign conditions, so a lower wind speed, your exposure would be of that order of magnitude. If-- an intensely windy day, you would not receive that level of exposure.

Q You set out here he could have received sporadic and highly variable exposures of somewhere in the region of 10 to 40 fibres per ml depending on the environmental conditions if he was simultaneously close by and downwind of the spraying process, from which I infer, do I not, that you recognise a person downwind would be at risk of higher rather than lower exposure?

E

A Someone downwind on a-- on a day when the wind-- the wind speed was relatively low would receive a level of exposure of around 40 fibres per ml in my view.

F

Q That is a persistent refusal to answer the question.

A Someone downwind would receive more exposure than someone upwind. I believe that's the question you're asking me.

G

Q You introduced a paper from Skidmore and Jones which was a 1975 paper at p.303.

JUDGE COTTER: Are you going to go back or are you still on the subject of 10 to 40 fibres?

MR WEIR: My Lord, I was-- I was not going to repute the case that I have already put which was already accepted.

H

JUDGE COTTER: Well, can I-- well, I am sorry. I will. Where does this come from, 10 to 40 fibres? I understand-- previously, an analysis was put to you by Mr Weir that I understood.

MR WEIR: My Lord, yes.

JUDGE COTTER: Where does this come from?

A The 10 to 40 was-- comes from the-- the information within the-- the Newall's assessment of levels of exposure at the Smithfield Market, my Lordship.

Q Newall's exposure at Smithfield Market?

A Yes.

MR WEIR: If you give me a second. If I could show your Lordship. If I just leap across to Mr Chambers' report at-- it is p.40, my Lord, 2.2.9 17. The Smithfield Market assessment gave a figure of 1,500 fibres per CC at source, if I can call it that, over the shoulder and 19 to 37 fibres per CC 30 foot from the spray.

A And-- and if I might add at 60-- 60 feet.

Q And the other figures which I am not hiding. The other figures are set out in the table. The evidence from the joint statement as your Lordship has already noted is to the effect it was 10 per cent.

JUDGE COTTER: Yes.

MR WEIR: Through the 1,500----

JUDGE COTTER: Yes.

MR WEIR: -- You did the arithmetic and we have gone through the evidence. I was not proposing to rehearse that all over again.

JUDGE COTTER: Well, you have explained it to me. I have got it for my note now. Thank you.

MR WEIR: Rather than keep putting my case----

JUDGE COTTER: No, no, no.

MR WEIR: -- (inaudible) necessary at this point.

JUDGE COTTER: I have got it.

MR WEIR: Can I take you to the Skidmore and Jones paper at p.303 which you introduced into your evidence? Seven 7.12 (inaudible), my Lord. Do you have that?

A I have it. Thank you.

JUDGE COTTER: I am sorry. I do apologise. Which page?

MR WEIR: My Lord, it is 303.

JUDGE COTTER: Page?

MR WEIR: 303. 303.

JUDGE COTTER: 303.

MR WEIR: Now, this is information to pre-dampening so this is about levels of asbestos when there was a pre-dampening stage----

A

A Yes.

Q -- which, as we know, produces an awful lot less dust.

A Yes.

B

Q And even in relation to a pre-dampened asbestos spraying activity you have put in bold, "Criticisms of this process have been expressed because of the potential dust contamination of operatives of other workers on the construction site and if the process is carried out in the open the liability to cause widespread dispersal of asbestos dust thereby adding to urban contamination."

C

A Yes.

Q So even if you pre-damp, and I appreciate this is a paper from 1975, it is a paper you have chosen to introduce on the basis, presumably, that it is relevant-- even in relation to pre-dampening, it has been recognised in 1975 that there was a very real concern that ventilation - natural ventilation as you are calling it-- natural ventilation linked to the widespread dispersal of asbestos dust so as to affect those around the spraying?

D

A Yes.

Q *A fortiori* with non-pre-dampened asbestos (inaudible)? If dust is visibly settling on a worker or surface where the worker is whilst asbestos spraying is going on or after asbestos spraying has happened, then that worker is too close and should be excluded?

E

A Yes.

JUDGE COTTER: If dust is visibly settling on a worker----

MR WEIR: Or on surfaces next to the worker, the worker is too close and should be excluded.

F

JUDGE COTTER: Yes.

MR WEIR: So intimations that 30 feet away would be okay or 60 feet away or some such does not really grasp the nature of the problem. 30 feet, and I may not be brilliant at this but I am going to guess, is something like the distance between you and the wall over there. Does that feel right to you?

G

A Yes. That's not far off.

Q That is sort of 30 feet-ish, four or five of me, something like that. I do not think even in 1955 you are saying, are you, that an employer should allow someone to stand over there if you were holding a-- an asbestos spraying machine or the nozzle and using it?

H

A And pointing it in my direction?

Q Wherever. We can start with and pointing it in that direction.

A If the site was open and there was a flow of air towards them, I think that's-- there's definitely every chance that the exposure would be unacceptable.

A

JUDGE COTTER: Sorry, if site open and?

A There was natural ventilation coming towards that individual, then that would be unacceptable.

B

MR WEIR: You have used different descriptions of this site. You have said it was open and you have said it was semi-closed. Are you including with your description of open this construction site?

C

A Well, if the-- say, for example, the-- the spraying was only being undertaken at the far side of that particular building, but if it was 20 feet away and they are spraying into-- into the building itself and there was-- there were no open-- there was an open window structure there i.e. before the windows had been put in, I think that would be semi-open. There would be a through flow of air coming towards the----

D

Q I was just trying-- because you have used-- because you resisted my description of open before and said it was a semi-closed construction site - all right----

A Yes.

E

Q -- I was just trying to understand. Can you-- can I substitute the word "this site" for your use of the word "open"? Are you recognising that at this site it would have been unacceptable for a worker to be 30 feet away from an individual such as yourself pointing a nozzle in their direction?

A Pointing a nozzle in their direction would have caused them to have a level-- a high level of exposure.

F

Q And given, as we have discussed, the variable nature of the exposure at certain distances depending on, as we discussed, where you are pointing the nozzle, the wind, the eddies and so forth, that would be unacceptable 30-- 30 feet all round. You would not take a-- a shape other than a circle around the sprayer?

A But there is-- there's an element of-- of sense about this, as you said, is that would an individual choose to stand 30 feet downwind of someone who is spraying directly in their direction?

G

Q Well, forgive me, but that is coming back with a different-- an answer to a question I have not asked. Can we just stay with this question? We talked about the variable nature of exposure and you have agreed that exposure will vary at a certain distance.

H

A Yes.

Q If at any stage a person is at risk at 30 feet, nobody should be within 30 feet of the sprayer full stop?

A No.

Q Do you agree with that?

A I agree with that.

Q And 30 feet is not-- is too close. We have just established that.

A 30 feet is too close certainly if you're spraying towards them, yes.

Q Forgive me. I just asked you an additional question with which you agreed, which was if it is too close if you are spraying towards them, it is too close full stop.

A Yes, okay.

Q So 30 feet is too close. 60 feet is too close, is it not? Just because someone would be - I don't know - double the distance within a confined space like the courtroom-- you can imagine twice the distance. You can use that wall. 60 feet is too close.

A I think you-- you have to make a subjective assessment of the level of exposure. I mean an individual who is-- if the spraying is undertaken and you're-- you're standing 60 feet away, I think there would be a-- and it was-- again, it was-- there was a-- a distance between you and that activity and it is open air, I think that there is-- there is significant likelihood that there will be a-- a substantial amount of dilution between you and that process.

Q Are you not a bit concerned that nobody should be inhaling dust. Is it not a case not of saying, "Oh, well, I am pretty hopeful that person is not going to be exposed"? Do you not want to simply increase rather than decrease the distance (inaudible)?

A I've said in my report or in the joint statement that a cordon sanitaire to keep people further away would be a-- would be a sensible approach to have adopted.

Q But if you do not know quite what distance you should make it. You should err on the side of caution as a reasonable employer. Is that not fair?

A That does seem fair.

Q Ideally, you should follow the hierarchy which was set out in the Merewether and Price report I think you were-- hopefully, you had access to the documents in time so I would like to take you to the page that I took Mr Chambers to.

A Please do. Which bundle is it in?

Q It is in the bundle H. It is p.1607 and it is under the heading "Summary and recommendations." Do you have it? Halfway down it says "Summary and recommendations"----

A Yes, yes.

A Q -- and at the bottom do you see it says, "The principal methods for the control of dust are (a) application of exhaust draught at dust - producing points; (b) substitution of enclosed mechanical methods for hand conveyance and for dusty work generally; (c) effective enclosure of dust producing machines and plant." That goes back to the discussion we have had in relation to the 1945 letter and under containment . If possible it makes sense to contain the asbestos dust. That is-- do you agree with that?

A I agree with that.

B Q The language used is quite graphic at p.79 in the 1953 National Trade Press Factory, Health, Safety and Welfare Encyclopaedia if you go to page-- back out of H, please. Back to B, please.

A Page number?

C Q Page 79. Page 79.

JUDGE COTTER: 71 or 9?

MR WEIR: 79, my Lord. A1.54. This is-- as you can see from A1.53 we are in **Factory Health, Safety and Welfare Encyclopaedia** and do you see in the middle of A1.54 it says:

D "Any contact at all can be avoided either by using a harmless substitute for the poison, or by completely boxing it up in such a way that not even the finest dust and no fumes or gas from it can enter the space where the workers live. A similar control can be applied to radiation activity. Until these two possibilities have been studied and used to the utmost limit the third line of defence - defence in detail - should not even be considered. This defence in detail by local exhaust ventilation, protective clothing and so on, forms much of the subject-matter of these pages, but such a mass of material should never deflect one from the better line of action."

Sensible advice?

F A Sensible advice for a manufacturing process, certainly.

Q Mr Chambers has given evidence that what could have been achieved here to limit, not resolve but to limit, the dispersal opportunity of the dust would be to have polythene which you would staple into a simple wooden frame and to place that wooden frame behind the stanchion that you are seeking to spray so as at least to capture the overspray.

G A Well, that would-- that would capture the overspray and it would also result in an elevation of the airborne concentrations within the working environment for the-- for the sprayers themselves. You would be putting them at a greater risk.

H Q Right. Well, that-- that is a rehearsal of the general point you have made before. Do you recognise that that would have been reasonably practicable a step to take?

A If I may say that that is the guidance that certainly came along in 1970 at some later time. Whether or not it was recognised-- it should have been recognised at the time is a matter for the court but it certainly isn't mentioned at all in the guidance which I've seen.

Q Well, on the premise that the employer's obligations go somewhat further than, "If there is no guidance I don't have to do anything," to the-- in the sense of specific guidance, "This step must be taken," after all the guidance does say words to the effect of the necessity of preventing as far as possible the inhalation of dust - we have got the Garrett letter which uses the description I took you to of all reasonably practicable steps should be taken to reduce the risk to a minimum. Shouldn't a reasonable employer in the 1950s exercise its own free will in understanding that it could take a reasonably practicable step by, for instance, attaching some polythene to a simple wooden frame and placing that behind the stanchion that is being sprayed?

A All I can say is that that is-- that is not the guidance which-- which I've seen which-- and none of the guidance and certainly Garrett's does not recommend that. Neither does the-- the annual report, the Inspectorate of Factories, 1949.

Q Well, the Garrett report recommends keeping everyone outside of the container in which the asbestos spraying was taking place. As we have discussed, if you are working on whether you call it an open or a semi-open site such as this site, you do not have that benefit and what Mr Chambers is recommending is good sense to create to a limited degree at least such a confinement by using something as simple and straightforward for a builder as polythene attached to a wooden frame. Are you prepared to recognise that that is a reasonable step to expect of an employer in the 1950s?

A My-- my answer to that, my Lord, is that, yes, I would have expected it of a reasonable, well informed employer to have followed the guidance that was available to them and I don't-- without meaning to sound repetitive, I don't think that-- that that was-- as a simple step which could have been reflected in the guidance simply was not.

JUDGE COTTER: But what-- I mean the-- Garrett is not going to help me. It is a letter about ships. It is-- it is a letter about ships and what happens on ships. I mean the spirit of it I think is what is being asked about. If you thought the spirit of it and you are a builder, would you not be able, it is suggested, to have erected something to reduce the dispersal of the dust? That is all the question is, I think.

A In which case, then it-- if the court finds that that is a reasonable and practicable measure in the vacuum of-- in the vacuum of the-- of an absence of guidance, then-- then that is the case but----

A Q But it is not a vacuum of an absence of guidance. It is an absence of-- what I am struggling with, you seem to be taking the guidance as requiring to descend into a level of detail that cuts across a whole range of industries. Do you follow me?

A I do.

B Q It just did not at that stage. I am not necessarily certain it does now. You have got to apply your own-- Mr Weir calls it free will but Mr Chambers perhaps common sense, but you have got to apply your own mind to the evil that there is and how you address it I think is the question that is being put and what is suggested is that this was a pretty straightforward thing to do. That is the context in which the question is being put. What do you say about that?

C A In which case then if, as you say, my Lord, the requirement was to take the common sense approach, then the containment of dust in that manner would have been a common sense approach.

Q Yes.

D MR WEIR: Would it also be a common sense approach as Mr Chambers has indicated to have this work undertaken at times when the other workers were not on site, for instance in the evenings or at the weekend?

A That might well be an activity which you could do as you described out of working hours.

Q Not least if the work is temporary, as in it is not going on for the whole-- whole period, spraying?

E A Yes. I-- I can't comment to be honest with you because it would seem to me that, you know, if the primary concern was to-- was to maintain an or to contain the spread of the contamination, then, you know, the-- the erection of sheeting, although, as I say, I believe would have created more of a problem to those undertaking the work, if it is a common sense approach to-- to adopt that in the view of the court, then-- then perhaps working out-of-hours could be too.

F G JUDGE COTTER: Well, I think what-- what - your job as an expert witness is to help me in the context of the 1950s and, really, as to what was practicable having regard to the evidence that you have as well about individual sites. Do I-- do I get from that there is nothing that I know about this site that would have prevented some or all of the spraying having been conducted at times when other workers were not on site in the sense of the whole site?

H A Well, it would certainly suggest that if the building was in a position where-- at a stage where it could all be sprayed out-of-hours, you know, relatively quickly, without obviously incurring considerably greater cost - I presume that must be an issue which would be taken

into account - then-- then it must have been-- it should have been a consideration but it's a matter for the court, I believe.

A MR WEIR: In the joint statement at p.427 you have referenced advice which was given as late as 1972. Do you have that?

A I do. Thank you.

Q Just to give that its context, by 1972 the asbestos spraying would have been pre-damped asbestos spray.

B A It would have been pre-damped asbestos spraying and it would have been under the control of the Asbestos Regulations 1969 as well at the time.

Q And as we saw from the figures in the 1970 paper which I took you to I think right at the beginning of my questioning, the order of difference between damping-- pre-damped and non-pre-damped was 1,500 fibres per ml at source down to 4 fibres per ml at source?

C A Yes. According to that-- to that paper, yes.

Q My Lord, I have no further questions.

D JUDGE COTTER: Okay. Just so I have this, going-- going to where we are, 1955, on that site spraying is going to take place and I am in charge of health and safety on the site. Yes? I understand your evidence to be that as a reasonable employer taking appropriate care for the safety of my employees I should be saying nobody should be within 30 feet of anybody who is spraying that asbestos and we should consider how we can confine it by means of a simple wooden frame or to make sure it is not sprayed all over the place and, potentially, also to consider working outside hours. Those were all measures that from your expertise should have been in my mind? Is that right?

E A I think that the-- the level of exposure, as I said in my report, would be highly variable. It would be whether or not it would be considered to be a risk at that time. Those are precautions which Mr Chambers has mentioned within his report which I have looked at and have considered that there-- I couldn't see anything in the guidance of the time which would suggest to me that that was information that was being put out to companies undertaking this work as recommended practice.

F Q But in relation to the first one of those I thought you agreed that regardless, having regard to what we knew, no one should be within 30 feet of this stuff being sprayed would have been what I would have said to the workforce.

G A Certainly, with that first one----

Q Yes?

H

A -- an individual undertaking the spraying, I would not want to see somebody-- somebody being sprayed at within-- within a range of-- of 30 feet because that could be considered to be akin to the same problem that was identified by Garrett which required the provision of respirators within the same enclosure. If you're spraying directly at someone you are clearly putting them at risk of exposure.

Q Thank you very much. Yes, Mr Williams? Sorry.

MR WEIR: Sorry. If I could just-- it's just Mr-- whilst Mr Stelling is here, as your Lordship has sought to summarise the way in which Mr Stelling has given his evidence, just for the avoidance of doubt I have a note of exactly what Mr Stelling said. Mr Stelling has gone much further than saying 30 feet. But lest that needed to be cleared up.

JUDGE COTTER: No. I was summarising it down to some very basic propositions.

MR WEIR: My Lord, yes.

JUDGE COTTER: Yes, Mr Williams?

Re-examined by MR WILLIAMS

Q Mr Stelling, can I see if I can clarify your evidence about the-- forgive me, the JW Roberts report? Can you go to p.301 of your report, please?

JUDGE COTTER: Sorry, which page?

MR WILLIAMS: Page 301, my Lord.

JUDGE COTTER: Thank you.

MR WILLIAMS: You're-- in para.7.5 you are setting out the JW Roberts report measurements or-- sorry, the measurements as they appeared in that report which was published in February 1970. Yes?

A Yes.

Q Is this the Smithfield Market or is this----

A This is-- this is the Smithfield Market.

Q This is the Smithfield Market and you note that these samples were obtained by a Factory Inspector, Mr Wilkie. I think that is in your third line. Is that right?

A Yes.

Q And what we have got is the thing we have looked at, 1,500 fibre per ml. Is this a-- what type of measurement is that? Is that a----

A That type would be a membrane filter sample.

Q A membrane filter sample over what period of time? Do we know?

A It's not known.

Q We do not know. And then 30 feet from the sprayer two samples were taken, 19 and 37. Yes?

A Yes.

Q And at 60 feet 12 fibre ml Yes?

A Yes, my Lord.

Q Now, I think my Lord's query earlier was how we can if possible fit that with the evidence you then give at p.303 where towards the top of the page you are referencing a Factory Inspectorate Guidance Note, Technical Data Note 42, which was published the following year. Yes?

A Yes, my Lord.

Q And in para.7.11 you note that the same publication noted that measurements taken 20 to 30 feet away from the process were roughly one-tenth of the above, i.e. for undampened spraying dust concentrations greater than 10 fibre per ml were likely, and that references back to the table which they had included that without the use of this equipment over 100 fibre/ml was recordable for or recorded for asbestos spraying. Do we know whether this was dampened or pre-dampened or not-- sorry, not pre-dampened or pre-dampened?

A I would suggest that this was not pre-dampened given that the----

JUDGE COTTER: Sorry, using recommended pre-dampening equipments?

A Yes. It is recommended pre-damping without use (inaudible) over 100.

MR WILLIAMS: Yes, without the use of this equipment. Thank you. Forgive me. My Lord, that is my mistake. I did not spot that in the table. Can you then help me with the point that was troubling my Lord earlier which is, well, if you take 10 per cent of 1,500 you get 150 but then back on p.301 we have a measurements-- two measurements, two samples taken at 30 feet which are 19 and 37?

A This is the-- the crux of the point I was making about the exposures being highly variable and-- and also that there is a number of different sources of this information. Measurements were taken from different-- at different times and at different sites and there is limited information but variable information on the range of data available.

Q Yes.

JUDGE COTTER: You see I have not done the maths, of course, but if you-- this is 30 feet whereas what you said in the joint statement was 20 to 30 feet. I have not done the mathematical extrapolation of how you get down to 20 feet if you start off at 1,500. Do you follow me?

- A It's a greater dilution, my Lord. I----
- Q Yes.
- A I see what you're saying.
- Q So, inevitably, the readings at 20 feet were you to try and replicate (inaudible) would be higher than 19 and 37, very significantly higher than 19 and 37 if it is a straightforward mathematical explanation. In fact, what you said-- again, I am-- was that concentrations at 20 to 30 feet from source being around 10 per cent of those at source.
- A That was the HSE's view in the-- in the guidance TDN 42 but that is not borne out by the data.
- Q It is not. It is not. Do you know where it comes from? Well, your joint agreement is where it comes from.
- A Where the data comes from?
- Q No, no, what I have just said comes from. I have been at pains to stress this. I am taking it from your joint agreement. The problem about this is I read joint agreements and I sort of say, "Well, that is great news for me. They have agreed that. I do not have to apply my very small mind to the detail behind it," and I had rather taken it. Now, what I do not know, and I have said it earlier on once, is the extent to which, putting it very brutally, you are trying to resile from it. Do I take that as the agreement that binds you or not?
- A It-- on the basis of the data available to us, my Lord, TDN 42 paper indicates that exposures roughly 20 to 30 feet away will be one-tenth of the-- of the above i.e. 100 fibres per ml, but the level of exposure which was measured within the JW Roberts would look to be considerably lower than that. There is clearly a range of exposures and what Mr Chambers and I settled on was a level that was in agreement with HSE guidance, which was that exposures would be roughly one-tenth of the value of the undamped fibre.
- Q Within in a sort of binary response that seems to say to me, "Yes, I do stick with what is at para.27."
- A If I may add, my Lord, in the joint statement I agreed to that point but in my report I said that I believed that the level of exposure would be up to around 40 fibres per ml but I did not----
- Q Yes, but that is what I said to you. I am afraid to say once I got this I do not go back to your report. I stick with that, you see. I hope that what happens is, put in your confined space without any ventilation-- what happens is you manage to come up with an agreement and that agreement is what I take. Otherwise, I have to go back into the detail of it and start doing my own calculations and hear both of you, which I have not on this subject, by the

way, heard both of you. Do you understand? I am not trying to be difficult on this. I just want to know whether or not I take that paragraph as right or not.

A Well, I-- I took this as real-- real life data and used this as the basis for my estimations, my Lord.

MR WILLIAMS: To answer my Lord's question, are you resiling from it in any way, what you have said in para.26?

JUDGE COTTER: 27.

B A I would like-- I would have liked in the joint statement to have made the additional point that I-- my view as-- in-- to agree with what I've said in my report is that the level of exposure based on real-time data rather than an estimate based on a-- on a-- on TDN 42 would have been to use the JW Roberts data as an indication of the level of exposure at a distance of 30 feet.

C Q Oh got that.

A I apologise for the misunderstanding, my Lord.

Q Yes. Sorry.

MR WILLIAMS: I have no further questions, my Lord.

D JUDGE COTTER: Okay. All right. Thank you. That is it. Thank you very much. The ordeal is over.

(End of witness' evidence)

E

(3.26 p.m.)

F

G

H

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