

1 Wednesday, 13 November 2024
 2 (10.00 am)
 3 LORD HUGHES: Yes, Mr O'Connor.
 4 MR O'CONNOR: Sir, the witness today is MK26. May
 5 the witness be sworn?
 6 LORD HUGHES: Please.
 7 MK26 (sworn)
 8 Please sit down, speak to the microphones. Thank
 9 you very much.
 10 Questioned by MR O'CONNOR
 11 MR O'CONNOR: Good morning, MK26. I'm not going to
 12 ask you to give your name. You have provided your name
 13 to the Inquiry, but earlier this year the Chair made an
 14 order granting you anonymity and, sir, you will recall
 15 that that order is to be found within your ruling --
 16 LORD HUGHES: Yes, thank you.
 17 MR O'CONNOR: -- dated 10 July of this year which
 18 is available on the Inquiry website.
 19 Accordingly, documents that bear your name have
 20 been replaced with the cipher MK26 and that is how we
 21 will address you today.
 22 Further, the record of your evidence that will be
 23 streamed to the media annex and also published on the
 24 Inquiry website will be limited to a transcript. In
 25 other words -- and in keeping with the Chair's order --

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1 INQ005132. MK26, is this one of your earlier witness
 2 statements that we have just been mentioning?
 3 A. Yes, it is.
 4 Q. We can see fairly obviously that some of the
 5 material has been redacted and that is because, is it
 6 not, the material underneath that redaction is covered
 7 by a restriction order?
 8 A. Yes.
 9 Q. In fact, for what it's worth, this statement
 10 is all about Nick Bailey's blood samples, I think, one
 11 of the disparate issues that you were asked to produce
 12 a statement on by the police?
 13 A. Yes, there are a lot.
 14 Q. Sorry?
 15 A. There are a lot.
 16 Q. There are a lot, it's true. For that reason,
 17 is it right that, as part of the preparation for this
 18 Inquiry, you were asked to and have prepared a new
 19 single open statement in which you have attempted to put
 20 into one place everything that you can say in open about
 21 these matters; in other words trying to draw the open
 22 aspects from all of those other earlier statements?
 23 A. Yes, I have.
 24 Q. Thank you. Let's call that up on screen,
 25 please. That is INQ005923. Is this the statement to

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1 the Inquiry will not publish either your appearance or
 2 your voice. Do you understand?
 3 A. Yes.
 4 Q. Thank you. MK26, in 2018 you were the lead
 5 DSTL scientific advisor to the police investigations
 6 into the Salisbury and Amesbury poisonings; is that
 7 right?
 8 A. That's correct.
 9 Q. For the rest of the day, or much of it, we
 10 will ask you about the advice that you gave to
 11 the police and the conclusions that were drawn at the
 12 time and any that you have drawn since.
 13 Since 2018 you have made a number of police witness
 14 statements, I think.
 15 A. Yes.
 16 Q. In the normal way they dealt with disparate
 17 issues as they arose in the course of the investigation.
 18 A. That's correct.
 19 Q. It's right, I think, that some of those
 20 witness statements included information which
 21 subsequently, since the Inquiry has started its
 22 processes, have become the subject of restriction orders
 23 made by the Chair.
 24 A. Yes.
 25 Q. If we could just call up on screen, please

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1 which you have just referred?
 2 A. Yes, it is.
 3 Q. We can see that it is -- it bears your cipher,
 4 MK26. The date at the top there -- can you see the date
 5 of 29 July?
 6 A. Yes.
 7 Q. That's not actually the date on which the
 8 statement was signed, is it?
 9 A. No, it was later.
 10 Q. I will show you in a moment, just we will note
 11 that that date is not helpful.
 12 If we could go to the last page of the statement,
 13 please, which is page 25, do we see there first of all
 14 a statement of truth?
 15 A. Yes.
 16 Q. Then below the redaction did you, in fact,
 17 sign that statement?
 18 A. Yes, I did.
 19 Q. We see the date -- as you say, it was later --
 20 it was 4 October this year?
 21 A. Yes.
 22 Q. MK26, I'm going to be asking you much about
 23 the contents of this statement, but before we start, may
 24 I ask you whether you have had an opportunity to read
 25 through this statement before giving evidence today?

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1 **A.** Yes, I have.
 2 **Q.** Are its contents true to the best of your
 3 knowledge and belief?
 4 **A.** Yes, they are.
 5 **Q.** Thank you.
 6 **LORD HUGHES:** Now, what will probably happen is
 7 that bits of various statements may pop up on the screen
 8 from time to time and that will no doubt be helpful to
 9 us as well as to you. Have you got hard copies in case
 10 you need them?
 11 **A.** Just of my main statement.
 12 **LORD HUGHES:** Of the main statement, all right. If
 13 you need anything else, you have only to ask.
 14 **A.** Thank you.
 15 **LORD HUGHES:** What I need is the evidence that you
 16 can give. You're not bound by your statement, but by
 17 all means use it to refresh your recollection, or for
 18 detail if you need to.
 19 **A.** Okay, thank you.
 20 **MR O'CONNOR:** Sir, may I invite you to adduce that
 21 statement, that is the 4 October statement, into
 22 evidence?
 23 **LORD HUGHES:** Certainly.
 24 **MR O'CONNOR:** Thank you. Now, as we have already
 25 agreed, MK26, this statement does not contain everything

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1 that field for more than 20 years?
 2 **A.** Yes, that's correct.
 3 **Q.** In 2018, you were a senior scientific advisor
 4 at DSTL for chemical and biological matters; is that
 5 right?
 6 **A.** Yes, that's correct.
 7 **Q.** Is that a role that you still hold today?
 8 **A.** Yes, it is.
 9 **Q.** Within DSTL -- and I shall ask you a few more
 10 questions about that organisation in a moment -- is it
 11 right that in 2018 and still now you are involved in
 12 DSTL's CBAAC capability -- again we will hear more about
 13 that particular capability shortly?
 14 **A.** Yes, I am.
 15 **Q.** In summary, though, is it right that that
 16 capability is the UK's capability for high confidence
 17 analysis and identification of hazardous chemical and
 18 biological materials that have been or could be used
 19 against the UK?
 20 **A.** That's correct.
 21 **Q.** Now, you are not the first witness to give
 22 evidence to the Inquiry from DSTL. The Inquiry has also
 23 heard from FT49. Were you able to see a transcript or
 24 to follow that witness' evidence?
 25 **A.** Yes, I was.

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1 that you can say about these matters because there are
 2 some further issues, further material that is covered by
 3 the restriction orders.
 4 **A.** Yes, that's correct.
 5 **Q.** As a result, it's right, is it not, that you
 6 will be coming back when the Inquiry sits in its closed
 7 sessions to give further evidence and on that occasion
 8 you will be able to provide the Chair with the
 9 information which you cannot provide today?
 10 **A.** Yes.
 11 **Q.** It is important to acknowledge that there may
 12 be times during my questions or other questions today,
 13 either when you are not able to provide a full answer to
 14 a question, so you can answer it in part but not
 15 totally, or perhaps that you can't answer a question at
 16 all and please then simply indicate the situation and we
 17 will be able to come back to those matters in closed.
 18 Do you understand?
 19 **A.** Yes, thank you.
 20 **Q.** I would like to start then with just a few
 21 questions about your professional qualifications and
 22 your career. I think it's right to say that you hold
 23 both a degree and a PhD in biological sciences?
 24 **A.** Yes, I do.
 25 **Q.** You have worked as a research scientist in

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1 **Q.** He is a colleague of yours?
 2 **A.** He is.
 3 **Q.** As with the evidence that you will give us
 4 today, he gave expert evidence about the properties of
 5 Novichok.
 6 **A.** (Nods)
 7 **Q.** But there is a difference in your respective
 8 areas of expertise; is that right?
 9 **A.** Yes, that's correct.
 10 **Q.** We heard that he is a medical doctor as well
 11 as having other scientific qualifications and expertise.
 12 Can you explain in your own words what the difference in
 13 your expertise is, in particular with regard to helping
 14 us understand Novichok?
 15 **A.** Yes. FT49 is medically qualified and also
 16 supports our research programmes. I'm a purely research
 17 scientist, originally at least, and don't have a medical
 18 qualification, and so I have been a research scientist
 19 and also have supported our operational work in support
 20 of the Police and other government departments.
 21 **Q.** As we will see, in terms of, for example,
 22 analysing particular objects or materials and getting
 23 a sort of scientific answer to whether or not it
 24 contains Novichok, that would be something more towards
 25 your area of competence, but if, for example, one wanted

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1 to explain the effect of Novichok in the body, that
 2 would be more a matter for FT49. Is that a high level
 3 summary?
 4 **A.** Absolutely.
 5 **Q.** Could I ask you a more general question about
 6 your approach to giving evidence today and in order to
 7 do that, could we have on screen, please, INQ005541.
 8 Yes, if we could just scroll up a little, please. This
 9 is a different but another example of one of those
 10 earlier witness statements you provided, MK26.
 11 **A.** Yes.
 12 **Q.** We can see just the first couple of
 13 paragraphs. On this statement it indicates that you say
 14 you:
 15 "... have complied with and will continue to comply
 16 with [your] duty to the court to provide independent
 17 assistance by way of objective, unbiased opinion in
 18 relation to matters within my expertise".
 19 And you will:
 20 "... inform all parties and where appropriate
 21 the court in the event that [your] opinion changes on
 22 any material issues."
 23 ^ doc check 5
 24 You also confirm that you have not entered into any
 25 arrangement where the amount or payment of your fees is

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1 **A.** Yes, absolutely.
 2 **Q.** In particular, can you confirm or tell us
 3 otherwise that neither DSTL nor the Government more
 4 generally have sought to impose any obstacle or
 5 financial penalty in the way of you giving your full and
 6 honest evidence to this Inquiry?
 7 **A.** I can confirm that.
 8 **Q.** Thank you. Let me move on, please, as I said
 9 earlier, to the role of DSTL, its functions and in
 10 particular its role in this case or these cases.
 11 I think you will agree that DSTL, which is of
 12 course the Defence Science and Technology Laboratory,
 13 it's an enormous organisation?
 14 **A.** Yes.
 15 **Q.** It fulfils a whole range of different
 16 functions available on -- one can find it available,
 17 a list, on the internet. They all have in common that
 18 they are in general to do with providing the Government
 19 with science and technology expert advice in the fields
 20 of defence and security, but they range far wider than
 21 your particular role.
 22 **A.** Absolutely.
 23 **Q.** For our purposes is it right that we can focus
 24 on two particular areas of expertise and capability
 25 within DSTL? Inevitably they have acronyms: CBAAC,

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1 in any way dependent on the outcome of the case.
 2 This is no criticism, but there isn't a similar
 3 passage in your new statement, so I just wanted to ask
 4 you about this. It is right, you have already
 5 indicated, you are a government employee?
 6 **A.** Yes, that's right.
 7 **Q.** But may I ask you whether you have approached
 8 your task so far and whether you will continue to
 9 approach your task today of giving evidence to this
 10 Inquiry in the spirit of independence which is reflected
 11 in that paragraph of your earlier witness statement?
 12 **A.** Absolutely. This was in a -- this was
 13 a witness statement for a criminal case and we use those
 14 words routinely in those sorts of statements, but the
 15 same sentiment and rules apply in this Inquiry from our
 16 perspective.
 17 **LORD HUGHES:** Does that mean you have come across
 18 the rules before?
 19 **A.** Yes.
 20 **MR O'CONNOR:** I don't want to get tied up in the
 21 language or the protocol, MK26. What is important for
 22 us is the question of your approach to this task of
 23 giving evidence. Are you committed to providing your
 24 own understanding independently of anything that the
 25 Government may think?

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1 which I mentioned earlier, and>NNL.
 2 **A.** Mm-hm.
 3 **Q.** As far as CBAAC is concerned, does that stand
 4 for Chemical and Biological Analysis and Attribution
 5 Capability?
 6 **A.** It does.
 7 **Q.** Let's look at your witness statement, please,
 8 so that's INQ005923, page 2. The first sentence of that
 9 paragraph which -- we, in fact, already covered this,
 10 but you indicate there that:
 11 "CBAAC is the UK sovereign capability for the high
 12 confidence analysis and identification of hazardous
 13 chemical and biological materials that have been used
 14 (or have the potential to be used) against the UK or the
 15 UK's interests overseas."
 16 Are you able to tell us a little bit more then
 17 about this capability, its sort of international aspects
 18 to it and in practice the functions that you perform
 19 within this capability?
 20 **A.** Yes. Really our capability at CBAAC, the
 21 Chemical and Biological Analysis and Attribution
 22 Capability, really grew from the over 100 years now
 23 history of Porton Down supporting chemical and
 24 biological defence in the UK, and we take our research
 25 scientists and we engage them in looking for really

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1 reliable, high confidence methods to identify chemical
2 and biological materials. This supports both UK law
3 enforcement and HMG as a whole in understanding what
4 other countries may do, or the use or development of
5 these materials overseas, and it supports both our
6 support for the Chemical Weapons Convention, which I'm
7 sure we will talk some more about, and the Biological
8 and Toxin Weapons Convention.

9 **Q.** You say that the capability has developed over
10 a hundred years or so, in other words all the time that
11 chemical weapons have existed?

12 **A.** Absolutely.

13 **Q.** If we could go over to the next page of your
14 statement, please. If we look at paragraph 6 and this
15 is something -- well, sorry, paragraph 5 and 6. In
16 these paragraphs you refer to, shall I say,
17 international accreditation and links to the Chemical
18 Weapons Convention and its structures that CBAAC
19 entails. Can you put that into your own words, please?

20 **A.** Yes. The international standard that you see
21 there at the top of paragraph 5 is ISO17025: 2017 which
22 is the standard that's been adopted internationally for
23 the accreditation of forensic laboratories.
24 A fingerprint or a DNA laboratory would also be
25 accredited to the same standard. What it does is it

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1 biomedical samples. It's probably important to say that
2 our lab is one of only a very small number worldwide,
3 three or four, handful, who have remained accredited
4 throughout that period and in order to maintain that
5 accreditation there's a really stringent proficiency
6 test/system in place where blinded samples are sent out
7 by the laboratory on an annual basis and it's --

8 **Q.** Sorry, just to interrupt you for a moment, you
9 say -- partly so you can take a breath, but also you say
10 blind examples are sent out by the laboratory. You
11 don't mean by DSTL?

12 **A.** No, by the OPCW.

13 **Q.** They're sent to DSTL?

14 **A.** Yes, and the other designated laboratories.
15 In order to test their competence -- and it is essential
16 to maintain designated lab status -- each laboratory
17 must score at least two As and a B in any three
18 consecutive tests. If you score lower than that, you
19 lose your designated lab status and have to regain it
20 through a process, but we have maintained ours
21 continuously since 1998.

22 **Q.** All right. As you say, from everything that
23 you have said, it's fair to draw the conclusion that on
24 a worldwide basis the DSTL laboratory is a leader
25 amongst those labs?

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1 provides independent audit and assurance that we are
2 operating in a manner that is as robust and reliable as
3 possible and so that's the foundation of our capability,
4 is that quality assurance.

5 **Q.** Yes. Then you go on in paragraph 6 to say
6 that the CBAAC laboratory is designated by the OPCW.
7 What does that entail?

8 **A.** Okay, so when the Chemical Weapons Convention
9 came into force in the late 1990s, the Organisation for
10 the Prohibition of Chemical Weapons was set up, and it
11 was set up really to ensure that the now 193 state
12 parties who are signed up to the Chemical Weapons
13 Convention were able to verify that they had destroyed
14 their chemical weapon stockpiles.

15 It's an international body, linked to the United
16 Nations, that draws its scientists and engineers and
17 legal teams from all of the countries that are
18 signatories to the Chemical Weapons Convention and it
19 also operates a designated laboratory system.

20 This was set up, first of all, in the late 1990s.
21 1998 the first labs were designated. From a UK
22 perspective, the lab at DSTL is the only laboratory in
23 the UK that is designated by the OPCW for the
24 identification of chemical warfare agents, breakdown
25 products and precursors in both environmental and

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1 **A.** I think so.

2 **Q.** That explains this CBAAC capability and you
3 have explained both that it is the only lab in the UK
4 that performs this function, but also the international
5 aspect of the capability.

6 Let me move to the NNL function. Does that acronym
7 stand for the National Network of Laboratories, which is
8 a Home Office function?

9 **A.** Yes.

10 **Q.** Is it right that we now need to think about
11 a purely domestic function?

12 **A.** Yes.

13 **Q.** The NNL function.

14 **A.** Yes.

15 **Q.** Perhaps you can tell us a little about that.
16 This is no criticism, but if you can try and just slow
17 down a little bit so the stenographer can keep up.

18 **A.** Sorry, okay.

19 **Q.** Or just take pauses from time to time to allow
20 her to catch up.

21 **A.** Okay. The National Network of Laboratories
22 was set up by the Home Office almost 20 years ago in
23 order to ensure that UK police forces were able to
24 access rapid analysis of materials that may be hazardous
25 to the public. So if you think perhaps back to the

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1 Amerithrax letters in the US in 2001, that required the
2 laboratory to be able to analyse large numbers of
3 samples in order to be able to see whether or not they
4 did contain anything that was hazardous, so that was the
5 genesis of it.

6 Its initial intention is to provide information as
7 rapidly as possible for the management of the incident,
8 so perhaps informing police officers or first responders
9 whether they need to be in personal protective
10 equipment, whether or not members of the public need to
11 be decontaminated, and the idea is that the samples are
12 brought to us as rapidly as possible, we undertake
13 analysis on an on-call basis, so we're obligated to be
14 up and running very rapidly to receive these samples on
15 a 24/7 basis in order to be able to deliver the best
16 information that we can.

17 **Q.** As we have said, the CBAAC capability we
18 think -- and as we will see, we think about the
19 international aspects, but this is very much a domestic
20 role that you perform, liaising with/assisting domestic
21 police forces?

22 **A.** Yes.

23 **Q.** We have heard something about this in the
24 evidence from other witnesses, in particular we have
25 heard that when the police wanted to send samples in the

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1 **A.** Yes.

2 **Q.** -- you will remember Superintendent Corner
3 saying that he then had a whole range of scientific
4 advice which came from the CBRN centre, but also that
5 VN005 himself, who was a CBRN advisor, contacted DSTL to
6 find out who the point of contact on-call at DSTL that
7 night was. Does that evidence a sort of normal
8 relationship between CBRN specialists and DSTL?

9 **A.** Yes, I mean, the routine process is that
10 a police officer in a regional force would contact the
11 National CBRN Centre, but, as you can imagine, over
12 a period of time, relationships build up, particularly
13 with people like CBRN tactical advisors, and so
14 sometimes direct contact is made. What we tend to do,
15 always do, is direct them back to the National CBRN
16 Centre because we are not able to accept activation by
17 a force, it has to be done via that National CBRN
18 Centre. When we do get direct contact, which does
19 happen fairly routinely, we always redirect them back
20 through that route.

21 **Q.** But it's right, isn't it -- so there is an
22 on-call SSA -- is it a special scientific advisor, is
23 that what --

24 **A.** Senior scientific advisor.

25 **Q.** A senior scientific advisor, thank you. At

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1 Skripal and I think the Dawn Sturgess case too, they
2 explained that they couldn't simply send samples
3 straight to DSTL, they liaised with you via a different
4 organisation we have heard something about which is the
5 National CBRN Centre. Is it right that within this NNL
6 function the CBRN centre acts as a sort of conduit
7 between you and the Police Forces that you are
8 assisting?

9 **A.** Yes, so if a regional force or the Met Police
10 in London believed that they had an incident that
11 perhaps had some hazardous chemical or biological
12 materials associated with it, they would contact the
13 National CBRN Centre who also run a 24/7 on-call system
14 and provide initial advice and screening of the calls,
15 and then if they agree that there's a need to activate
16 the National Network of Laboratories, they would contact
17 DSTL in order to be able to activate our laboratory for
18 us to prepare to receive samples.

19 **Q.** Yes. In fact, as a sort of practical example
20 of that system in operation, I don't know if you were
21 able to see the evidence that VN005 gave yesterday, but
22 first of all -- and indeed we heard from him and others
23 that Wiltshire Police on the night of 4 March were told
24 to contact the CBRN centre to pursue their queries about
25 what might have happened and --

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1 DSTL and I think the evidence we heard was that that
2 night it was someone called GW66.

3 **A.** That's correct.

4 **Q.** But I think what you're saying is that the way
5 in which they communicate with the police is, as we have
6 heard, via the CBRN centre, at least perhaps initially?

7 **A.** At least initially, until at the point where
8 we are being activated to respond, then there is direct
9 contact because I think what we have learned from
10 experience is that the best information is passed
11 directly at that point and you don't want a third person
12 in that loop unnecessarily.

13 **Q.** Yes.

14 **LORD HUGHES:** The CBRN centre needs, as it were, to
15 be kept in the loop?

16 **A.** Absolutely.

17 **LORD HUGHES:** But once they have said "Yes, we need
18 you", you can deal directly with the police?

19 **A.** Yes, it's much more efficient.

20 **LORD HUGHES:** All right.

21 **MR O'CONNOR:** Now so far, MK26, we have been
22 talking in generalities about the structures and about,
23 if one could call it that, the normal ways of working at
24 DSTL, relationships with the police, CBRN centre and so
25 on, but would it be right to say that the scale of

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1 DSTL's involvement in the incidents that we're concerned
2 with, the Salisbury and Amesbury poisonings, were
3 anything but usual?

4 **A.** Absolutely. Would it help if I talked about
5 what routine looks like in terms of numbers of calls and
6 numbers of people involved?

7 **Q.** Well, I don't want to press you if it's
8 sensitive, but --

9 **A.** No.

10 **Q.** -- if you can give us a very high level
11 understanding first of all of the sort of normal working
12 rate and then I can ask you about these events.

13 **A.** Yes. In a normal week, we do a week on call
14 at a time and our senior scientific advisors would
15 probably get two or three calls perhaps in a week, most
16 of which are about advice, advice to someone who has
17 seen something, advice about perhaps some bottles of
18 chemicals that have been seen on a house search, and
19 most of those are dealt with without the need for
20 samples to be brought to DSTL.

21 There are odd weeks where we don't get any calls,
22 but generally on average I would say around sort of
23 three a week.

24 When 2018 happened, we obviously were activated for
25 a very long period of time, both in our ability to send

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1 working shifts, people coming in the middle of the
2 night. A lot of activity in and around the site. A lot
3 of staff supporting, a lot of flood lights, a lot of
4 staff moving around. We stopped doing some things to
5 support Salisbury and Amesbury."

6 We don't need all the detail, MK26, but what I'm
7 trying to ask you about is quite how exceptional the
8 events of 2018 were from the perspective of DSTL and its
9 staff?

10 **A.** They were exceptional. You highlighted in
11 your introduction that I had more than 20 years
12 experience. I haven't seen this level of activity at
13 any time before that or since. I hope I never do again.
14 We were very committed to supporting the safety of the
15 public primarily, but also the police with the
16 investigation that followed, and I would also say that
17 it felt very personal. It was obviously very close to
18 Porton Down. Many of our staff were living in and
19 around Salisbury or Amesbury, when it came to Amesbury,
20 and it couldn't have had more of an impact on the people
21 involved than it did actually, and obviously then, when
22 Dawn Sturgess sadly passed away, it highlighted for us
23 how dreadful it had been and we were all really sorry
24 that that had happened.

25 **Q.** Thank you. Just one last point on this

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1 senior scientific advisors to all of the different
2 levels of command and control that were operating, as
3 well as obviously you have highlighted my role in
4 supporting CT Policing's investigation into the events
5 and so there was a large commitment of DSTL staff, many
6 hundreds actually, for a long period of time throughout
7 2018 and even into 2019 as we supported the recovery.

8 **Q.** Yes, thank you. Just sticking with the sort
9 of context, as it were, I would like to show you
10 a document, please. This is a -- I'm not quite sure how
11 to describe it. It's a document which itself contains
12 extracts perhaps from a BBC documentary, or at least the
13 early preparation for a BBC documentary. It's
14 INQ005703, please, and if we can go to page 6 within
15 that document, can you see -- and this is, I think, one
16 of your colleagues -- a sort of question and answer to
17 one of your colleagues --

18 **A.** Yes.

19 **Q.** -- who was asked the question "What was DSTL's
20 involvement?" and you can see he said:

21 "We had scientific support staff in a number of
22 locations. Scientists were supporting on the ground.
23 DSTL had a number of staff in the field. And we had
24 a lot of staff here offering technical support. Our
25 operations room was running 24/7, very busy. People

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1 general area of DSTL's functions and so on. Is it any
2 part of DSTL's function to try and identify or log
3 individuals in the UK who might be targets of any future
4 biological or chemical attack?

5 **A.** Not at all.

6 **Q.** Was DSTL aware of Mr Skripal's presence in
7 Salisbury for that or any other reason?

8 **A.** I can't speak for DSTL as a whole, but
9 certainly from my perspective, as one of the senior
10 scientific advisors who, if they were going to tell
11 anyone, you would imagine it would be the senior
12 scientific advisors, no, I was not aware.

13 **Q.** Thank you. I want to move on now, MK26, and
14 ask you a series of questions about Novichok, its
15 properties, how it's made, where it's made and so on.
16 You will recall what I said at the start of your
17 evidence and to note that it may well be the case that
18 there will be some of the questions I ask you that
19 either you can't answer at all, or that you can only
20 provide a very high level answer to and if you can -- if
21 it is the situation that you're only able to answer in
22 a general level and there's more you could say in
23 closed, please do make that clear and then we will know
24 that we can come back to you in another session.

25 **A.** I will, thank you.

24

1 **Q.** First of all, just to mention briefly the
2 question of the history of Novichoks. I think you have
3 said that you have read or seen the evidence that FT49
4 gave. You will remember that he gave some explanation
5 about the emerging evidence from the 1990s of what was
6 known as the Foliant programme in Russia, a new
7 generation of organophosphate nerve agents, and the
8 public disclosures of a number of Russian scientists,
9 including Mirzayanov. Is there anything that you can
10 add to what he said about the history, or do you think
11 we have captured it with him?

12 **A.** I think we have covered it.

13 **Q.** Let me move on then to just a little bit more
14 about exactly what Novichoks are. We have heard -- and
15 that's why I keep saying "Novichoks" plural -- that they
16 are a class of agents rather than one particular
17 chemical; is that right?

18 **A.** Yes, that's correct.

19 **Q.** We have also heard that the Novichoks as
20 a class can be classified as a group of organophosphate
21 nerve agents within cholinesterase inhibitors, so they
22 fit within that -- a sort of wider class of nerve agents
23 that work in that way.

24 **A.** Yes, that's correct.

25 **Q.** Are you able to say anything in open about

25

1 particular then, are you able to say anything in open
2 first of all about how many different Novichoks there
3 are within that class of Novichoks and secondly, within
4 that class what differentiates one Novichok from another
5 Novichok?

6 **A.** There are many hundreds of chemicals that
7 could fit into those classes of materials. In terms of
8 how we identify them, we identify them by very sensitive
9 analytical chemistry techniques. In particular, I have
10 listed in the witness statement that we used
11 a combination of liquid chromatography-tandem mass
12 spectrometry.

13 Basically, in a kind of simplistic way, if you were
14 to recall very basic science lessons at school where
15 perhaps you separated ink on -- by putting ink onto
16 a filter paper and dipping it into a solvent and you see
17 different colours emerging, that would be
18 chromatography.

19 Then mass spectrometry is really acutely sensitive
20 at being able to determine the mass of the different
21 fragments that have been separated out by that
22 chromatography process and it's that that enables us to
23 identify the specific chemical, in this case the
24 specific Novichok, that we have identified.

25 **Q.** What differentiates one Novichok from another,

27

1 what distinguishes Novichoks from other chemical agents
2 within that class? Taken as a whole, in general terms,
3 what is it that distinguishes Novichoks from other
4 chemical agents within the organophosphate class?

5 **A.** Just for clarification, do you mean how do we
6 identify them, or do you mean -- or how would we
7 identify chemicals generally or ...?

8 **Q.** Well, we are all -- we have all been on
9 a journey in terms of understanding nerve agents and we
10 have understood that organophosphate nerve agents work
11 in a particular way, in general terms the suppression of
12 cholinesterase, but we also know that VX is one thing
13 but the Novichoks generally are another. At this point,
14 I'm just asking if you can say anything about what's
15 different about Novichoks from, for example, VX or the
16 other organophosphate agents?

17 **A.** I would probably go back to some of the things
18 that FT49 said in his statement -- in his evidence
19 around the potency of the Novichok class of agents, of
20 the fact that they bind irreversibly to
21 acetylcholinesterase and butyrylcholinesterase and that
22 distinguishes them from some of those other classes of
23 materials, but they are all organophosphate chemicals
24 and they all act fundamentally in the same way.

25 **Q.** Right. Then moving on to slightly more

26

1 part of the answer at least is the absolutely -- the
2 very combination or the type of chemical contained
3 within one or on the other?

4 **A.** Yes, and the accurate weight of each of those
5 fragments that you get provides a unique signature that
6 enables us to identify which exact chemical it is.

7 **Q.** We will come later to look at some documents
8 which talk about different Novichoks and identify them
9 and one word which is used is biomarkers.

10 **A.** Yes.

11 **Q.** Are we in that territory at the moment?

12 **A.** I said at the beginning that we are
13 a designated laboratory for both environmental and
14 biomedical samples. If I take the biomedical samples
15 first, if a human being is exposed to a chemical -- and
16 the ones that we're concerned about in our support to
17 the OPCW are exposures to nerve agents and exposure to
18 blister agents, such as sulphur mustard which was used
19 in the First World War -- there are unique biomarkers
20 that form in the human body by the interaction of that
21 chemical with components of blood primarily, because we
22 tend to take blood samples, but you can also look for
23 unique biomarkers in urine samples that enable us to
24 identify what someone may have been exposed to.

25 **Q.** I see. I think we will come later to the

28

1 distinction between environmental samples and clinical
2 biological samples, but I think from what you have said
3 biomarkers is relevant to the clinical samples, but not
4 to environmental samples?

5 **A.** Absolutely.

6 **Q.** All right. Let me just, if I may, take you to
7 your witness statement and if we could go back to 5923 ,
8 please, and page -- I think it's probably the bottom of
9 page 7. Thank you. Paragraph 19. I'm not so much
10 interested in the content of this paragraph at the
11 moment, MK26, we will come back to it, but can you see
12 that -- if we pick it up sort of three lines down, it is
13 just some of the language you use in this paragraph
14 I want to ask you about. You say:

15 "The samples were positive for the presence of
16 a Novichok-butyrylcholinesterase ..."

17 Then I'm afraid I can't read the next word?

18 **A.** Nonapeptide.

19 **Q.** Then reading on:

20 "... a characteristic marker for exposure to
21 a particular nerve agent of the Novichok class."

22 Then, if we cast our eyes down to the bottom of
23 that paragraph, you refer to a specific Novichok agent.
24 Are these -- is this different words used to describe
25 what we have just been discussing, which is particular

29

1 **Q.** So I hope I'm not pushing my luck too far, but
2 what you have described there, would that fall into the
3 category of a biomarker for the presence of Novichok?

4 **A.** Yes, it would.

5 **Q.** All right, thank you. Just moving on very
6 slightly, you have -- you have explained how there are
7 hundreds of different Novichoks within the class. Is it
8 right that different Novichoks are sometimes referred to
9 by identifying designations?

10 **A.** Yes, they are.

11 **Q.** Let me ask you a couple of questions about
12 rarity. In the widest sense I suppose it must be right
13 that Novichoks are very rare. We don't come across them
14 in our everyday life, we hope.

15 **A.** No, no, I think -- so I would start from the
16 position that thankfully chemical weapons as a whole are
17 very rare and certainly up until the events of 2018, as
18 far as I'm aware, this -- we had never seen the use of
19 Novichok or the appearance of Novichok. I would add
20 that there is no reason for these chemicals to be
21 present anywhere other than that they have been made
22 deliberately to cause harm.

23 **Q.** Are you able to say anything about whether
24 certain Novichoks are rarer than others, or is that
25 almost a sort of concept which doesn't make any sense to

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1 members of the Novichok class of nerve agents?

2 **A.** Yes, so a specific Novichok bound in this case
3 to a small protein fragment, nonapeptide, from the
4 butyrylcholinesterase enzyme. We have heard a lot about
5 nerve agents acting by binding to butyl and
6 acetylcholinesterase. We look for butyrylcholinesterase
7 because it's easier to access in the blood and we look
8 for the Novichok bound to it by pulling out this small
9 fragment, this small protein fragment with the Novichok
10 bound to it. Then we analyse it with the technique
11 I talked about, the liquid chromatography-tandem mass
12 spectrometry.

13 **LORD HUGHES:** You can find it if you know where to
14 look?

15 **A.** Yes, by understanding how it works.

16 **LORD HUGHES:** You find it because it is bound or
17 linked or attached to a particular component --

18 **A.** Bit of protein.

19 **LORD HUGHES:** -- bit of protein, thank you.

20 **MR O'CONNOR:** As it happens, the example I have
21 chosen for this paragraph you are addressing here
22 a biomedical sample --

23 **A.** Yes.

24 **Q.** -- rather than an environmental sample?

25 **A.** Yes.

30

1 you?

2 **A.** I suppose I would say that, as I said, until
3 2018 we had never seen the use of Novichok. I'm sure we
4 will come to later on the OPCW investigation into the
5 poisoning of Alexei Navalny in 2020 which was also from
6 a related chemical, a related Novichok. As far as I'm
7 aware, those are the only two instances of Novichoks use
8 or appearance.

9 **Q.** Let me move on to a different but related
10 subject which is about potency of Novichok. Now, we
11 heard some evidence from FT49 on this subject. He drew
12 a parallel with the potency of VX and there was evidence
13 that he gave about grains of sand, a small number of
14 grains of sand being the type of quantity that in the
15 case of Novichok is fatal.

16 You make a couple of similar references in your
17 statement which I would like to just take you to. First
18 of all, if we can go to page 10, please, paragraph 24,
19 and can you -- here you are describing the perfume
20 bottle found in Muggleton Road and can you see about
21 four or five lines down, you say:

22 "The quantity of liquid remaining in the bottle is
23 estimated to be sufficient to provide thousands of
24 lethal doses in humans."

25 Now, of course, the exact quantity of liquid that

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1 was left in the bottle is sensitive, so we can't do
 2 a sort of precise mathematical sum, but we have all seen
 3 pictures of the bottle.
 4 **A.** Yes.
 5 **Q.** Does that provide us with some sort of
 6 illustration of just how lethal Novichok is, quite how
 7 small the amounts of a lethal dose are?
 8 **A.** Yes, and for it to be perfectly feasible that
 9 you wouldn't notice that it was present.
 10 **Q.** Because there was --
 11 **A.** It's such a small amount.
 12 **Q.** Just one more reference there, if we could go
 13 on to page 15, please, just starting with the second --
 14 the very top line, second word, you say:
 15 "While we do not have specific data on the human
 16 lethal dose of the specific Novichok ..."
 17 Again, "The specific Novichok", is that a reference
 18 to the sort of sub-class?
 19 **A.** Yes.
 20 **Q.** Yes:
 21 "... following exposure via the percutaneous route
 22 (through the skin), for estimation purposes we therefore
 23 considered it to be similar to that of the nerve agent
 24 VX ..."
 25 That is also the approach adopted by FT49:

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1 that it was applied to we believe in the case of the
 2 Skripals was the door handle, and so then them touching
 3 it means that they were exposed by the skin -- through
 4 the skin, by the percutaneous route. But as FT49 talked
 5 about quite extensively, as an aerosol being inhaled
 6 into the lungs it probably acts much more quickly and
 7 probably takes an even smaller amount to have the
 8 effect.
 9 **Q.** Finally on this, for obvious reasons the
 10 conversation so far has been within the context of
 11 someone being attacked with Novichok --
 12 **A.** Yes.
 13 **Q.** Someone being a victim of it and how, as you
 14 say, the questions of delivery and so on. We're going
 15 to come on in a moment to talk about production of
 16 Novichok. Everything we have said so far, is this fair,
 17 also illustrates how difficult it is, how dangerous it
 18 is to handle by people who have made it or who are
 19 carrying it deliberately?
 20 **A.** Yes, absolutely. I can only talk about
 21 western UK safety -- laboratory safety and processes,
 22 but it would be at the very high end of all the process
 23 and safety procedures and protective measures that you
 24 would want to put in place.
 25 **Q.** We have heard from Commander Murphy about in

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1 "... following extrapolation from animal
 2 experimental data. This level is best described as
 3 minuscule and is approximated to a third to a sixth of
 4 a grain of salt, and could well be invisible to the
 5 naked eye."
 6 That's the point you have just made.
 7 **A.** Absolutely.
 8 **Q.** A different way of describing the extremely
 9 small amounts of Novichok that can be fatal.
 10 **A.** Yes.
 11 **Q.** Just to finish off, you go on to say:
 12 "It is also possible that this figure may be even
 13 lower if skin is moist as this could aid the penetration
 14 of the nerve agent."
 15 **A.** Yes.
 16 **Q.** Is it also right -- so these references have
 17 illustrated in quantitative terms the tiny amount of
 18 Novichok that can be fatal. Is it made even more
 19 dangerous by the fact that it -- that an individual can
 20 be poisoned by it both by inhalation and by ingestion,
 21 or, as we have seen here, simply by skin contact?
 22 **A.** Yes, and so while we talk about many thousands
 23 of people could have been exposed, you know, that is
 24 also dependent on the successful delivery of it, so you
 25 have to get it to those people. Obviously the surface

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1 general terms all of the procedures that had to be
 2 followed in the investigation process, knowing that it
 3 was Novichok that was being dealt with?
 4 **A.** Yes.
 5 **Q.** Still on the sort of properties and general
 6 discussion about Novichok, may I ask you about purity,
 7 which again is something we're going to come to when we
 8 look at some of the documents. I think this is a point
 9 you have already made, but Novichok doesn't exist on its
 10 own in nature, does it?
 11 **A.** No. It is a synthetic chemical that can only
 12 have been made in a laboratory. Both from our analysis
 13 at Porton Down and from the independent analysis carried
 14 out by the OPCW, once the perfume bottle had been
 15 recovered from Muggleton Road, we were able to determine
 16 that the Novichok was at a very high level of purity.
 17 This is important because it indicates that whoever made
 18 it was very sophisticated and was able not just to make
 19 it safely but also to purify it so that it was an almost
 20 pure compound with very small amounts of contaminating
 21 chemicals.
 22 **Q.** Yes. Is this right, it follows -- I mean,
 23 first of all, it has to be synthesised or made, one
 24 doesn't just dig it up or extract it from somewhere?
 25 **A.** No.

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1 Q. It has to be made in a laboratory clearly?
 2 A. Yes.
 3 Q. Does it follow that in principle it can be
 4 made to be entirely pure?
 5 A. Almost.
 6 Q. A dangerous question to ask a scientist.
 7 A. Yes.
 8 Q. But it can be made at very high levels of
 9 purity?
 10 A. Yes.
 11 Q. Impurities reflect some defect in the
 12 manufacturing process or perhaps it has just been
 13 diluted or affected after it was made?
 14 A. Yes. More likely that the manufacturing
 15 process hasn't been as good as it might be.
 16 Q. Again, just going back to our discussion about
 17 the different types of Novichok, any of those types of
 18 Novichok can be made to be pure or almost pure? It's
 19 not the case that some Novichoks are purer than others ;
 20 is that right?
 21 A. No, it will entirely be down to the methods
 22 that were used to purify it after it had been
 23 synthesised.
 24 Q. In general terms, is the purity of the
 25 Novichok an indicator of how competently or efficiently

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1 you're ahead of me -- and look at paragraph 10, this is
 2 the report, isn't it, of the OPCW relating to the sample
 3 they took from the bottle?
 4 A. Absolutely.
 5 Q. This picks up on the conversation we were
 6 having, they describe it as being a toxic chemical at
 7 a concentration of 97-98 per cent and they then say it
 8 is:
 9 "... therefore considered a neat agent of high
 10 purity."
 11 With impurities constituting 2-3 per cent of the
 12 sample. Can you just tell us what the significance of
 13 that finding is in this context of purity?
 14 A. So "neat agent" means that it hasn't been
 15 diluted in any solvent, it hasn't been mixed with some
 16 other material at all, so it is essentially just the
 17 Novichok -- "just" is probably really inappropriate --
 18 but the OPCW lab identified there were a very small
 19 number of impurities, so it tells me that the laboratory
 20 that made this, that synthesised it, was really
 21 competent and was able to make it at a very high level
 22 of purity.
 23 Q. Thank you. Let me move on to another subject
 24 which is related, which is what can testing a sample of
 25 Novichok tell us about the history of that particular

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1 it's been made?
 2 A. I would say so, yes.
 3 Q. Let's just look -- we will come back to this
 4 document, but let's just look at the OPCW report, the
 5 second of the OPCW reports, please. This is INQ002993.
 6 It's right, isn't it, MK26, that there were two OPCW
 7 visits to the UK during 2018, or possibly more than two,
 8 but we see two reports, don't we?
 9 A. I think there were three, but yes -- two
 10 reports, but three visits.
 11 Q. Sorry, that's why I corrected myself because
 12 I think we will see in -- it's actually this one, the
 13 second report, it reports on more than one visit.
 14 A. Yes.
 15 Q. But this is the -- the two reports basically
 16 reflect the Salisbury incident and the Amesbury
 17 incident.
 18 A. Yes.
 19 Q. This is the report into the Amesbury incident
 20 and it was obviously on this occasion that the OPCW had
 21 the opportunity to take a sample from the bottle itself,
 22 yes?
 23 A. Yes.
 24 Q. We will look at this in more detail later, but
 25 if we just look on to the second page -- thank you,

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1 liquid. First of all, it's a point we have just been
 2 on, testing the Novichok we can see how pure it is and
 3 you have just given some evidence about what that -- if
 4 it is high purity -- tells us about the type of
 5 laboratory where it was synthesised.
 6 A. Yes.
 7 Q. Secondly, let me ask you: can testing a sample
 8 like this tell us anything about the date or the -- the
 9 date of manufacture, or even generally how long ago in
 10 general terms the Novichok was manufactured?
 11 Before you answer, let me provide some context
 12 because you may be aware that in the Litvinenko case,
 13 where obviously we're dealing with a completely
 14 different poison, radio active polonium, because
 15 polonium has a half life and is in a sort of constant
 16 state of decay, there was quite a lot of evidence about
 17 how ex post facto testing could, in fact, provide quite
 18 a detailed indication as to when it had originally been
 19 made.
 20 Noting that this is a completely different type of
 21 poison, is there anything similar here? Can a test tell
 22 us when the Novichok was made?
 23 A. In principle, for some chemicals that may be
 24 possible, so I'm thinking perhaps of legacy Second World
 25 War chemical munitions. We would expect, if they were

40

1 recovered, to see that the chemical within them had
2 broken down and that might give an indication that it
3 was an old chemical.

4 In this instance there is nothing in the analysis
5 that we have undertaken that enables us to say when the
6 material was synthesised.

7 **Q.** Thank you. Then just one more question around
8 this. We do have some indication from the purity as to
9 the type of laboratory it was made in. We can't have
10 any indication as to when it was made. If we look at
11 two different samples of Novichok -- and let's assume --
12 and of course we're going to come onto the facts, but if
13 it is determined that it's the same sort of Novichok,
14 can the tests provide an indication of whether they were
15 made in the same place at the same time, in other words
16 in the same batch?

17 **A.** I will be quite careful what I say, but if
18 I was to perhaps point you at illicit drug laboratories,
19 there's well-established techniques for taking different
20 samples of street drugs and being able to determine
21 whether or not they are from the same source, so from
22 the same laboratory.

23 We have looked to apply similar techniques to the
24 Novichok samples that we have had and, as is in my
25 witness statement, have reached a conclusion on the

41

1 sentence of that paragraph:

2 "It is unlikely that Novichoks could be made and
3 deployed by non-state actors (eg a criminal or terrorist
4 group)."

5 Do you see that?

6 **A.** Yes.

7 **Q.** That is one sentiment. Before I ask you about
8 it, can I show you a different document, please, and
9 this is the Russian Embassy document that we have seen
10 before, so this is INQ004576, please, and it's page 21.
11 Can you see in bold at the bottom of the paragraph
12 starting "Meanwhile, in a 2007 ... handbook ..."; can
13 you see that, MK26?

14 **A.** Yes.

15 **Q.** There is another statement. It says:

16 "... it is safe to say that any modern chemical
17 laboratory is capable of synthesising 'Novichok'."

18 Two different statements: one expressing a rather
19 different view about how easy and where it can be made.

20 **A.** Yes.

21 **Q.** Help us with your view on this issue.

22 **A.** Again, I will be quite careful because as
23 a defence scientist I'm committed to not releasing
24 information that would aid in the proliferation of these
25 materials, but what I would say is that if you were to

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1 material from the two incidents.

2 **Q.** All right. I don't want -- we will come back
3 to the detail of it, but is it fair then that your
4 answer is it's not like the date --

5 **A.** No.

6 **Q.** -- in the sense you just say "It can't be
7 done"; there are tests that can be done to enable you to
8 reach some sort of conclusion about the batch?

9 **A.** Yes.

10 **Q.** All right. We will come back to the detail.

11 Sticking with the general questions, I want to ask
12 you about the ease with which Novichok can be produced.
13 We have already touched on this. May I ask you just to
14 look at two documents where rather different views are
15 expressed on this subject.

16 First of all, the letter that we have looked at now
17 several times, the Sedwill letter, so it's INQ003070
18 please, and it is on the second page. I'm afraid
19 I can't at the moment find my marked copy, so I'm
20 looking down -- it may be scrolling down. It's that
21 paragraph, you see the paragraph starting "Russia's
22 chemical weapons programme ...", MK26?

23 **A.** Yes.

24 **Q.** There's a description there, some of the
25 history that we heard from FT49, and do you see the last

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1 take that sentence from the Russian document, what is
2 missing from it for me is the word "safely". You know,
3 I think it probably is safe to say that a modern
4 chemical laboratory would be capable of synthesising it,
5 but there are very few perhaps who would be capable of
6 doing so safely because the chemicals that we're talking
7 about are so highly hazardous in such small quantities,
8 as we have already talked about, and the process of
9 procedural controls and the competence of the scientists
10 working within them would need to be extremely advanced.

11 **Q.** Thank you. One qualification you have added
12 is whether it could be made safely or not?

13 **A.** Yes.

14 **Q.** Let me add another aspect -- again, it's
15 something we have talked about, let's move from the
16 general to the particular. We know that in this case we
17 are talking not only about Novichok but Novichok which
18 was found to be at extremely high levels of purity.

19 **A.** Yes.

20 **Q.** We will come back to more on that later --
21 sorry, could we keep the Russian document on the screen ,
22 please. I think you have agreed in the most general
23 terms with the idea that any modern laboratory might be
24 capable of synthesising Novichok. Is that also the case
25 for synthesising Novichok at extremely high levels of

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1 purity?
 2 **A.** I would suggest no. I would suggest -- as
 3 I said actually, you know, when we saw the level of
 4 purity of the Novichok and again when the OPCW confirmed
 5 it, it was clear that whichever laboratory had made it
 6 had not only made it but synthesised it, which adds an
 7 added layer of complexity, an added layer of
 8 sophistication and an added layer of hazard to the
 9 operators who are undertaking that procedure.
 10 **Q.** I won't ask -- in fact, I would like to keep
 11 this document on the screen because we will look at
 12 another part of it in a moment, but we will recall what
 13 Sir Mark Sedwill said in his letter, which is it's
 14 "Unlikely that Novichoks could be made and deployed" and
 15 perhaps the word "deployed" sort of summons up some of
 16 the safety aspects you have mentioned, "by non-state
 17 actors".
 18 If I were to ask you the question -- your view as
 19 to whether Novichok at those high levels of purity could
 20 be made by non-state actors, what would your view about
 21 that be?
 22 **A.** I would say I don't believe so and that I am
 23 happy to provide some more detail on that in closed.
 24 **Q.** Thank you.
 25 **LORD HUGHES:** Just before you move on, don't tell

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1 MK26, you will be aware that in other publications
 2 and other places on the internet, an even more
 3 straightforward allegation has been made that Porton
 4 Down did, in fact, make Novichok, did, in fact, perhaps
 5 make the Novichok that was involved in this case.
 6 From that paragraph and those other references,
 7 there are obvious questions that arise, including, for
 8 example, did DSTL have the capacity in 2018 to
 9 synthesise Novichok; if so, had it in fact produced
 10 Novichok at that time and in what quantities; and also
 11 is there any possibility at all that any Novichok
 12 produced at Porton Down could have been involved in
 13 either the Salisbury or the Amesbury poisonings? Those
 14 and other questions arise, MK26, but is there anything
 15 you can say about those issues today in open, or do we
 16 need to explore them in closed?
 17 **A.** No, there is nothing I can say in open.
 18 **Q.** Thank you. I just have two more general areas
 19 about Novichok and its properties and so on. The first
 20 of those two is a question about how Novichok could be
 21 stored or transported, and this is something that you do
 22 address briefly in your statement, so if we could go,
 23 please, in it.
 24 It's 005923, starting on page 18. It's
 25 paragraph 37. This is a paragraph that we looked at

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1 us anything that we ought not to know and still less
 2 that other hostile people of any kind ought not to know,
 3 but it sounded as if you made a slight distinction
 4 between "making" and "synthesising". Is there or is
 5 it --
 6 **A.** Not really, sorry.
 7 **LORD HUGHES:** That's all right. That's what
 8 I thought.
 9 **MR O'CONNOR:** Thank you. I want to move from the
 10 sort of theoretical questions about production to actual
 11 production and to stick with this document, if we could
 12 just look a little bit further down the page from the
 13 paragraph we were looking at, do you see a paragraph
 14 starting with the words "Contrary to", MK26?
 15 **A.** Yes.
 16 **Q.** Let me read it, it says:
 17 "Contrary to official statements, Mark Urban claims
 18 in his book 'The Skripal files ...' that in the 1990s
 19 the UK obtained samples of certain types of chemical
 20 agents allegedly developed in the Soviet Union,
 21 including the one connected with the Salisbury incident,
 22 and the Porton Down secret laboratory got the chance to
 23 study it. This means that British chemical weapons
 24 experts could easily synthesise the agent in virtually
 25 any amounts."

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1 with Commander Murphy yesterday and you describe there
 2 sort of using your general knowledge of nerve agents to
 3 think about, first of all, the type of container that
 4 might be used to store it, you make first of all the
 5 obvious point perhaps that given the quantity -- the
 6 discussion we have had about lethal quantities, it could
 7 be small, possibly able to contain a very small quantity
 8 of material and then you say:
 9 "... likely to be made of glass or PTFE ..."
 10 Which is a form of plastic, is it not?
 11 **A.** Yes, it is.
 12 **Q.** But a particular form of plastic obviously
 13 because you go on to say:
 14 "... as other plastics could have compatibility
 15 issues with chemicals resulting in leakage."
 16 **A.** That's correct. It's really common for lots
 17 of chemicals, not even toxic chemicals necessarily, but
 18 just chemicals generally, to even dissolve plastics.
 19 Lots of them dissolve quite readily and, therefore, if
 20 you were going to use a plastic, you would want to use
 21 PTFE, which is an opaque white plastic that's really
 22 chemically resistant.
 23 **Q.** Yes. Moving on, you make the point that the
 24 risk of breakage with a glass container is greater.
 25 That's not necessarily an expert opinion.

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1 **A.** No.
 2 **Q.** But you say it would perhaps have been easier
 3 to disguise as an everyday product.
 4 Then coming to the transport issue you say:
 5 "While consideration was given to how this
 6 container may have been transported to and within
 7 the UK, my knowledge is limited to our practices for the
 8 safe transport of hazardous materials which are mandated
 9 in the UK ..."
 10 You have already mentioned the various no doubt
 11 lengthy protocols and rules that you have to follow if
 12 you're moving hazardous materials around. Is that what
 13 you are referring to here?
 14 **A.** Yes, so the -- in the UK dangerous goods
 15 regulations for the movement of hazardous materials by
 16 road, if you are moving materials internationally by air
 17 there are a whole different set of international air
 18 transport regulations that we would adhere to if we were
 19 moving them. Also it would be very rare for us to move
 20 an agent that was as toxic as this material, but yes.
 21 **Q.** Yes. That is obviously a completely different
 22 exercise to illicit, clandestine movement of agents like
 23 this.
 24 **A.** Yes.
 25 **Q.** Is it fair to say that you have no experience

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1 **A.** I don't think I can address that in open.
 2 **Q.** Thank you. We will come back to that issue in
 3 closed.
 4 Then finally, the last of the issues about Novichok
 5 in general terms is about persistency and may I address
 6 that by referring you to one of the slides produced by
 7 your colleague FT49. I think we have looked at these
 8 slides with a number of witnesses and we will recall
 9 FT49's evidence that although, as we see on the front
 10 page, it bears his name, or in this case his cipher, he
 11 wasn't the author of all of them, all of the slides that
 12 is. If we could look at page 9 within this document,
 13 please, and if we can expand it. Can we see there that
 14 the general issue being discussed is the persistence
 15 properties. What do we mean by "persistence
 16 properties"?
 17 **A.** How long it will survive in the environment,
 18 how stable it is in that environment.
 19 **Q.** This is obviously going to be relevant to the
 20 testing that was undertaken, in some cases testing some
 21 time after initial contamination?
 22 **A.** Yes.
 23 **Q.** We see the slide says that this issue is
 24 dependent on several factors: agent volatility -- is
 25 that about the volatility of the agent itself or can it

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1 of that at all?
 2 **A.** No experience of that, but you wouldn't --
 3 it's really difficult, as I think I have said, but it's
 4 difficult to make any judgment about it without
 5 understanding the level of risk of the people that are
 6 undertaking the task.
 7 **Q.** Yes. We can see what you say in your
 8 statement, but basically you just say you would want to
 9 look after it.
 10 **A.** Well, yes.
 11 **Q.** You would want it to be in a robust container,
 12 you wouldn't want to spill it?
 13 **A.** And try not to poison yourself in the process
 14 presumably, but ...
 15 **Q.** Perhaps not much more we can take that
 16 particular issue with you.
 17 Next week the Inquiry will be hearing detailed
 18 evidence about the movement of Petrov and Boshirov into
 19 the country and around the country, and one issue that
 20 will no doubt arise is the question of how the Novichok
 21 was brought into this country. Since you are giving
 22 evidence today, let me ask you whether there's anything
 23 that you can say in open about whether Novichok is
 24 likely to be picked up by routine airport detection
 25 systems, checks and so on?

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1 vary or is there anything you can say about that in
 2 open?
 3 **A.** It's about how -- how readily the material
 4 evaporates is volatility. So petrol, for example, very
 5 volatile, a puddle of petrol would disappear very
 6 quickly. Diesel would stay on the ground for a long
 7 time.
 8 **Q.** Is there anything you can say in open about
 9 where on the scale Novichok falls in terms of
 10 volatility?
 11 **A.** Only in as much as is already on the slide
 12 actually, that it's listed alongside VX as a persistent
 13 agent, so you would expect it not to evaporate readily.
 14 **Q.** Thank you. Then also, then looking at that
 15 higher bullet point, other factors listed, wind and
 16 temperature, perhaps obvious?
 17 **A.** I would take you back to petrol and diesel,
 18 I think, and the obvious effects that higher
 19 temperatures would make petrol evaporate more quickly,
 20 lower temperatures would make it likely to stay around
 21 for much longer.
 22 **Q.** Yes. Then agent surface interactions, is that
 23 simply the more you rub it, the more it disappears?
 24 **A.** Partly and partly it's about the type of
 25 surface and whether or not material is absorbed into

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1 a surface. This isn't peculiar for Novichok, this would
2 be true for anything.

3 **Q.** Can you give us some more examples that we may
4 come to of -- because I think the term -- we may see the
5 term "porous surface" is used?

6 **A.** Yes, so we will see lots -- there will be
7 lots, I'm sure, when we get to the spreadsheets, of
8 examples perhaps of the car door handle which is
9 obviously a painted metal surface that you wouldn't
10 expect the -- any chemical or the Novichok to have sunk
11 into, to have penetrated into it necessarily; whereas,
12 for example, the bench, maybe, that the Skripals had
13 collapsed on, which is a wooden -- predominantly wooden
14 bench, you would expect that it's possible that some of
15 the material had penetrated into that wood and while
16 that may mean it takes it away from the surface in the
17 short-term, it would mean that it could come back out of
18 that wood at some point in the future, which ultimately
19 was why the bench was removed.

20 **Q.** Just to be clear, I think what you're telling
21 us is the more porous the surface in general terms, the
22 more persistent the agent is likely to be on it?

23 **A.** Yes.

24 **Q.** There's obviously much more detail than
25 that --

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1 certainly to some of the precursor materials that you
2 would use to make the more toxic chemical weapons, and
3 so it took a lot of negotiation to get to the stage of
4 there being a treaty.

5 It then entered into force with the aim of
6 ridding -- getting rid of chemical weapons from the
7 state parties that were signatories to it and indeed
8 throughout all the world -- throughout the world in its
9 entirety.

10 Within that there are schedules of chemicals and at
11 a kind of as simplistic as possible level, schedule 1
12 chemicals are the chemicals that are chemical warfare
13 agents, they are prohibited under that convention.

14 Schedule 2 chemicals are immediate precursors that
15 there is a lot of control around, but they may in some
16 cases have an industrial use and so there may be a need
17 for countries to purchase them to make something else
18 that's not related to a chemical warfare agent.

19 Schedule 3 chemicals that are again a bit further
20 removed or have a much bigger industrial use.

21 **Q.** All right, that's helpful. You have explained
22 that the annexes to the convention list, if you like,
23 prohibited chemicals --

24 **A.** Yes.

25 **Q.** -- whether they are nerve agents themselves or

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1 **A.** Yes.

2 **Q.** -- but if it helps, it's that way round?

3 **A.** Yes.

4 **Q.** Let me -- sir, I notice the time. There's one
5 more short issue I was going to deal with and then
6 perhaps I will suggest we have a break.

7 You have mentioned a number of times, MK26, the
8 Chemical Weapons Convention and we think with that,
9 don't we, of the OPCW which is the administrative body
10 associated with that convention. I just want to ask
11 you, again by way of introduction, in the most general
12 terms how that convention is structured and how it
13 works. We know that in the most general terms the
14 convention is all about trying to eliminate, or at least
15 control/minimise the existence and certainly the use of
16 chemical weapons?

17 **A.** I would agree "eliminate" actually.

18 **Q.** All right. How does the convention go about
19 trying to promote that objective?

20 **A.** I guess, going back to its genesis, I suppose,
21 for want of a better word, it obviously took a lot of
22 negotiation across a lot of countries in order to be
23 able to develop the treaty in the first place. There's
24 obviously a concern from the chemical and pharmaceutical
25 industries who, for very legitimate reasons, need access

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1 precursor agents.

2 Is it right that, separately from that, the
3 convention itself has a general -- has general wording
4 prohibiting holding, manufacture, use of nerve agents?

5 **A.** Yes.

6 **Q.** And chemical weapons more generally?

7 **A.** Yes, and equally, even if a material isn't
8 listed in those annexes, those schedules -- and the best
9 example is chlorine, which isn't a scheduled chemical
10 because of its huge industrial uses, the use of chlorine
11 as a chemical weapon is prohibited by the Chemical
12 Weapons Convention and indeed by the Chemical Weapons
13 Act in the UK.

14 **Q.** That's useful because what I wanted really to
15 ask you and try and understand is that there are, as it
16 were, two separate methods by which the convention
17 addresses the ultimate objective of eliminating chemical
18 weapons: one is by that very general prohibition --

19 **A.** Yes.

20 **Q.** -- and the other is by the lists of annexed
21 chemicals?

22 **A.** Yes.

23 **Q.** Is this fair -- and I think you have explained
24 this -- that one reason why that dual approach is needed
25 is because it isn't possible to list all of the

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1 chemicals that might ever be used to make a chemical
2 weapon in the annexes. You have given the example of
3 chlorine. It would be simply impractical to ban that
4 chemical from ever being held?

5 **A.** Yes.

6 **Q.** Is there quite a lively debate about when it
7 is suggested that there is, for example, a new nerve
8 agent that people think might be in play, whether the
9 right approach is to list either the agent itself or its
10 precursors on the annexes, or to simply rely on
11 enforcing the general prohibition in the convention?

12 **A.** Yes, and I think -- I think this is really
13 reflected in what followed the events in Salisbury and
14 Amesbury in 2018. The content of the schedules to the
15 Chemical Weapons Convention had remained the same since
16 the Chemical Weapons Convention came into force in the
17 late 1990s and it took a lot of diplomacy and a lot of
18 effort to work out the best way of adding those
19 materials to that list, and I'm probably at the edge of
20 my expertise there because I'm not a policy expert, so
21 I should stop.

22 **Q.** No, I don't want to push you except just to be
23 clear and I think the effect of this is something you
24 have already said, but since the events of 2018, is this
25 right, some further chemical compounds associated with

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1 the field, or were you simply receiving the samples back
2 at Porton Down and analysing them?

3 **A.** We were doing both. We have teams of our
4 scientists who have been trained to wear personal
5 protective equipment and work alongside police officers
6 and forensic scientists, scenes of crimes officers, in
7 order to be able to collect samples in a hazardous
8 environment.

9 Obviously, in this case it was more important than
10 ever that we kept everyone safe, so our teams were there
11 to provide scientific advice, to physically do a lot of
12 the sampling that was done, under the guidance in that
13 case of the forensic expertise of the police officers
14 who also then ensured the chain of custody of the
15 samples and returned them to DSTL. So two quite -- two
16 very closely related but separate roles, both of which
17 fulfilled by our scientists who have come from our
18 research programme and therefore are able to have the
19 skills and expertise needed to work safely.

20 **Q.** Just for completeness, I imagine you would say
21 it would be wrong to think of the exercise as simply
22 being sort of turning up at locations and taking samples
23 and then taking them back to DSTL? There must have been
24 a lot of planning and preparation, both in terms of
25 thinking through where the sampling should be done and

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1 Novichok have been added to the annex?

2 **A.** Yes, yes.

3 **Q.** Thank you. Sir, that is the end of that
4 aspect and perhaps that would be a convenient moment for
5 a break.

6 **LORD HUGHES:** Yes, it would. Could you be back,
7 please, at 11.35. 11.35 everybody, please.

8 **(11.17 am)**

9 **(Short Break)**

10 **(11.35 am)**

11 **LORD HUGHES:** Yes.

12 **MR O'CONNOR:** MK26, I have been promising to come
13 to the details of these particular cases and we are
14 getting closer to that.

15 **A.** Okay.

16 **Q.** But before I ask you about the individual
17 samples that were taken and the results that you found,
18 I would like to just ask you a few questions about the
19 process for submitting samples and analysing them.

20 We heard evidence from Commander Murphy yesterday
21 about that general exercise, in the case of his evidence
22 yesterday following the Skripal poisoning, and we saw
23 documents describing teams being sent to particular
24 locations to undertake sampling. Were DSTL staff
25 actually assigned to that process routinely going out in

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1 also how it should be done. Were your staff involved in
2 that exercise as well?

3 **A.** Yes, and I should probably touch on something
4 else, which was the health screening that we put in
5 place to ensure that all the staff who crossed into
6 those contaminated areas were kept safe. We have talked
7 a lot about nerve agent inhibiting the enzymes -- the
8 cholinesterase enzymes. We provided a service, both for
9 our own staff and any police officer or other scientist
10 who crossed into those areas that were contaminated,
11 where we took blood samples before and after they went
12 in to ensure they were safe and that was a service that
13 we ramped up very, very rapidly in order to support
14 that, but it added a -- it gave an extra layer of
15 complexity and time to each of those procedures, but it
16 was important that we could ensure that everyone was as
17 safe as possible.

18 **Q.** Yes. Apart from anything else, that must just
19 have been a very resource intensive --

20 **A.** Very.

21 **Q.** -- additional task. Can I ask you to go to
22 your witness statement, so it's 005923, at page 4,
23 please. I would like to ask you about paragraph 11 and
24 then we will come on to the next page after that, but at
25 paragraph 11, you say:

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1 "Exhibits are received at DSTL within a purpose
2 built secure facility reserved for the receipt of
3 unknown samples. Within this facility, screening,
4 examination, sub-sampling and (in some cases) initial
5 analysis is undertaken."

6 Then we will go to it, but the subsequent paragraph
7 you talk about, I think this is right, analysis itself.

8 **A.** Yes.

9 **Q.** Before we come to the formal analysis process,
10 it looks like in paragraph 11 you're describing a sort
11 of preliminary exercise or exercises which take place in
12 a separate place. Can you please expand on all of that?

13 **A.** It may be helpful if I kind of give an outline
14 of what that facility looks like. It's been
15 specifically designed for the receipt of samples that
16 could contain chemical or biological materials that are
17 hazardous and even at a site like Porton Down, which is
18 dedicated to chemical and biological defence, it's
19 unique in that respect, in that it has been constructed
20 specifically to be safe for both types of agent.

21 **Q.** Just let me interrupt you, recollecting what
22 you said earlier about your normal work in comparison to
23 this, is it right that this facility you're describing
24 in fact was there before 2018 --

25 **A.** Yes.

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1 exhibits, some of which we received to see whether they
2 were evidentially important and had become contaminated
3 with Novichok; others that we received because they
4 perhaps were -- well, there was the possibility that
5 they were contaminated and therefore in order to gain --
6 for example, a mobile phone that we thought might be
7 contaminated, we would need to be able to download the
8 information from that phone safely.

9 In a normal case, police officers would take that
10 to either within their own laboratory or to a forensic
11 laboratory to do that. If there's the possibility that
12 it's contaminated with hazardous materials, that can't
13 happen there, so that comes to us at DSTL, and they are
14 exploited alongside police partners actually, CT
15 Policing, who we have worked with for many years to
16 develop this capability.

17 **Q.** Yes. Perhaps I can ask you just on this, you
18 talk about sub-sampling here, we will see when we come
19 to the schedules quite frequently reference to
20 a sub-sample. Can you explain what that means?

21 **A.** It means a multitude of things. At its purest
22 it means that the bottle came to us, that was the
23 sample. At the point where we removed the liquid from
24 the bottle, each of the individual samples that we took
25 from that bottle we classed as sub-samples, but it could

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1 **Q.** -- and is part of your normal work, albeit
2 that probably it was used more frequently once we got
3 into 2018?

4 **A.** Yes, so it has been there for many years for
5 the safe receipt of unknown samples. The important
6 thing about it is that it's there really both to receive
7 samples safely, but to maintain the forensic integrity
8 of them. So for us to work in such a manner that
9 ensures that we don't put anything into the sample that
10 wasn't there in the first place. So it's not used for
11 much of the research that we do, for any of the research
12 that we do; it's used solely for receipt of samples for
13 the criminal justice system, or to support allegations
14 of use internationally that we're helping to
15 investigate.

16 **Q.** That's the facility. Just in a little detail,
17 not too much, what is it that takes place there prior to
18 the analysis proper?

19 **A.** So I have referred to exhibits at the start of
20 that sentence and I suppose it's worth saying that in
21 all incidents that we support, but particularly in this
22 one, that could be just about anything. So we talk
23 a lot about swabs and I'm sure we will talk a lot about
24 swabs later and the process that we put in place to deal
25 with those, but we also receipted a huge number of

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1 also mean if an exhibit had come into us and we wanted
2 to find out if it was contaminated with Novichok, we
3 might swab it in the laboratory and that swab would
4 become the sub-sample from that exhibit.

5 **Q.** I see, right. I think that's helpful, that
6 explains all those sort of different preliminary
7 exercises that you might, depending on the particular
8 case, undertake in relation to what you have described
9 as an exhibit.

10 If we could then go on to the next page, please.
11 If we could just zoom out briefly and see the whole
12 page, it may be helpful to note that what you have --
13 that's enough, in fact, because we can see that there
14 are two sub-titles. You have described in outline the
15 process for the chemical analysis of, first of all,
16 biomedical samples and, secondly, what you describe as
17 environmental samples. We have mentioned this
18 distinction before and it is an important one for the
19 facts of this case, is it not?

20 **A.** Yes.

21 **Q.** We will come to the different processes.
22 First of all, can you just remind us what is a -- what
23 is a biomedical sample as opposed to an environmental
24 sample?

25 **A.** In our case, we're not a clinical laboratory,

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1 so we don't receive samples routinely from patients who
2 are admitted to hospital and we're not -- so we're not
3 that type of laboratory at all. But in a limited
4 capacity, as part of our role as an OPCW designated
5 laboratory, we do have the capability to receive
6 evidential samples in order to see whether or not there
7 is evidence of exposure to a chemical agent and in this
8 case to a nerve agent. So while it's not routine
9 business for us in support of UK operations, inasmuch as
10 when I talked about the National Network of Laboratories
11 earlier I said that the initial purpose of that
12 capability was to support the management of an incident,
13 it's hard to envisage that a biomedical sample would be
14 the only sample you could get in that scenario. But as
15 we learned from this, and I suppose, you know, we have
16 learned so much from this, the ability to be able to
17 receive those samples and deal with them rapidly is now
18 part of our capability, but it's not -- I would still
19 not say it was a routine.

20 **Q.** Yes. In terms of -- you have made the point
21 biomedical samples are not your usual business.

22 **A.** Yes.

23 **Q.** What we mean by biomedical samples, we see in
24 the sub-title, blood, urine --

25 **A.** Blood and urine.

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1 **Q.** Yes, all right. If we go further down the
2 page, you see the sub-title -- separate sub-title, the
3 process of the analysis of environmental samples. That
4 is your normal business?

5 **A.** Yes.

6 **Q.** What you describe in that paragraph, I think
7 it's fair to say, is a routine way of -- that you used
8 in this case of analysing environmental samples. I will
9 ask you about it in a moment, but is it, in fact, the
10 routine way that you would analyse environmental samples
11 from any case, or is that too simple?

12 **A.** Environmental samples could mean absolutely
13 anything, to be honest. It could mean a sample of soil
14 collected from an area close to where a chemical weapon
15 may have been believed to have been used. It could be
16 a water sample that is believed to have been
17 contaminated. It could be an item that's believed to
18 have been contaminated with a chemical or a biological
19 agent. Indeed, in many cases, certainly after 2001, it
20 was a letter that may contain a powder that might be
21 a biological agent. Those are all what we would call
22 environmental samples.

23 In this case the predominant type of samples that
24 we analysed, certainly that we determined levels of
25 Novichok on, were taken as 10 by 10 cotton swabs, so

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1 **Q.** Then, we can read the paragraph, the processes
2 that you adopted, but in particular the final sentence
3 you say:

4 "Method selection is determined by the information
5 provided on the signs and symptoms shown or reported by
6 the casualties."

7 Is it fair to say there wasn't one single method of
8 analysing biomedical samples?

9 **A.** No, and it's very -- because the methods are
10 so selective and specific, it has to be driven by what's
11 reported to us as the symptoms of the person, so any
12 clinical signs, and in this case we were given an
13 indication that suggested nerve agent.

14 **Q.** Just last question on this. We will come to
15 see that there are some -- there were samples of blood
16 and urine that you tested. There are also some swabs
17 that were taken on the skin of individuals. Do those
18 count as biomedical samples or environmental samples, or
19 does it not matter?

20 **A.** It doesn't really matter. I suppose I would
21 say that they are environmental samples really. As much
22 as they were derived from a person, but for me they're
23 not -- they're not biomedical samples in the true sense
24 where we're talking about blood or urine, or even hair,
25 something that is removed from the body.

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1 literally pieces of fabric, 10 by 10 centimetres square
2 that were wetted in a solvent, in this case isopropanol,
3 and used to wipe a surface.

4 They were then put into a glass jar and sealed and
5 brought to the laboratory where they were extracted and
6 analysed, and I suppose I would say what that brought us
7 was the ability to have exquisitely sensitive analysis,
8 to be sure that if there was Novichok present we would
9 find it, and also to be able to use the most robust
10 techniques to be able to identify that Novichok.

11 **Q.** Now, looking at the last three or four lines
12 of that paragraph, you do say something there about the
13 process, the swabs -- presumably "swatches" and "swabs"
14 are interchangeable?

15 **A.** Same thing.

16 **Q.** Being extracted from the jars you have
17 described and being put into ultra high purity water and
18 then analysing using liquid chromatography and mass
19 spectrometry. I don't want to get caught up in the fine
20 detail, but can you give us, in a few sentences, how the
21 process worked?

22 **A.** Once the sample was submitted as an exhibit it
23 was taken into our reception laboratory initially and
24 unpacked. It was then taken to our analytical chemistry
25 laboratories where this ultra high purity water, so

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1 water that is as pure as it can be, was added to the
 2 cotton swab.
 3 The swab in its glass container was then placed
 4 onto a shaker, so a large -- I wish I had put
 5 photographs into this statement, I'm so sorry -- into
 6 a large piece of instrumentation in a lab that has
 7 clamps on it that the jars can fit into. Those samples
 8 were then shaken for a period of time to allow any
 9 chemical that was present in them to extract into the
 10 liquid, into the water. That water then became the
 11 sample.
 12 **Q.** Just pause for a moment.
 13 **A.** Sorry.
 14 **Q.** They're shaken?
 15 **A.** Yes.
 16 **Q.** This may be important later, but what's put
 17 into the shaker is the glass jar itself?
 18 **A.** Yes, sealed.
 19 **Q.** Sealed, so there's no contact, for example,
 20 between either the swab or the water and the shaker?
 21 **A.** No.
 22 **Q.** The shaker does its business and shakes the
 23 jars?
 24 **A.** Yes.
 25 **Q.** The purpose being to -- so that anything on

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1 hands inside through very long gauntlets, enabling them
 2 to be able to manipulate what's inside whilst keeping
 3 them safe because there's an engineering control in
 4 place that enables them to be safe.
 5 **Q.** Just pause there then, so would I be right in
 6 thinking that the shaker is inside the cabinet?
 7 **A.** Yes.
 8 **Q.** Right. Do go on.
 9 **A.** There's obviously engineering controls that
 10 enable material not to leak, as well as the physical
 11 barrier that's in place by the gloves -- by the operator
 12 touching the sample only through gloves. I suppose what
 13 it does is ensures that our operators and the
 14 environment is safe, but it also greatly -- it adds
 15 a lot of time and effort and logistics to being able to
 16 process things and in some cases reduces the size of
 17 item that we might be able to deal with and there's some
 18 examples of that that we may come to later.
 19 **Q.** Yes. The fume cupboard, is that part of this
 20 process or is that special?
 21 **A.** Fume cupboards we tend to use where we're more
 22 sure that it's a chemical hazard, just a chemical
 23 hazard, that we're dealing with and it's a more
 24 controlled process, so where we're less likely to
 25 generate aerosols -- they're more traditionally used

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1 the swab is extracted into the water?
 2 **A.** Yes.
 3 **Q.** Do carry on.
 4 **A.** Then the sample becomes the liquid that
 5 remains once that shaking process has completed. It
 6 then goes -- depending on the level of contamination
 7 that we're expecting, we may concentrate it at that
 8 point in order to be able to better detect it. In a lot
 9 of cases we wouldn't do that and we would just analyse
 10 the water sample as it came off the shaker, and that
 11 would go onto then, as you said, the liquid
 12 chromatography-tandem mass spectrometry, which
 13 I explained in quite simplistic terms earlier as first
 14 of all separating into fragments by chromatography and
 15 then accurate mass determination of each of those
 16 fragments that builds up that picture.
 17 **Q.** We may -- well, we will, I think, later come
 18 to hear about cabinets and fume cupboards. Are they
 19 part of the process you have just described?
 20 **A.** Yes. If I could start with cabinets, again
 21 I wish I had put photographs in, because of the
 22 hazardous material that we're dealing with, we work
 23 entirely within what would be perhaps more
 24 understandably called a glove box, so a large contained
 25 box where the operator stands outside it and puts their

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1 just for chemicals, whereas the glove boxes are safe for
 2 chemical or biological materials. So we used,
 3 throughout this case, a combination of both.
 4 **Q.** Right, so if you were using a fume cupboard,
 5 would the shaker go inside the fume cupboard?
 6 **A.** It may do, in some cases.
 7 **Q.** We will come back to all of that?
 8 **LORD HUGHES:** Should we be picturing the sort of
 9 thing which we may have seen from time to time on films,
 10 fixed gloves built into a screen, as it were?
 11 **A.** Yes, absolutely, sir.
 12 **MR O'CONNOR:** Last general point. Of course what
 13 you have explained so far is the mechanisms -- the
 14 procedures you used in order to get a result.
 15 **A.** Yes.
 16 **Q.** But is this right, that you also would have
 17 had in mind while you were doing this the risk of some
 18 sort of cross-contamination --
 19 **A.** Yes.
 20 **Q.** -- which could have affected adversely the
 21 accuracy of your result?
 22 **A.** Yes.
 23 **Q.** Would that be both with an eye, of course, to
 24 getting the right answer, but also, as you have
 25 mentioned, this function you are performing is

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1 absolutely part of the criminal investigative process,
 2 you talked about continuity and so on?
 3 **A.** Yes.
 4 **Q.** Would that be another reason why you would be
 5 very conscious of the risk of cross contamination?
 6 **A.** Yes, and I would say there are layers of
 7 process control in order to achieve that aim. It starts
 8 with, as I said initially when we started talking about
 9 the purpose built laboratory, using a lab that's not
 10 used routinely for handling chemical and biological
 11 materials. That enables us to be as sure as we can be
 12 that it is clean.
 13 But even within that we would clean our cabinets,
 14 clean our laboratory before we received samples. We
 15 would take an extensive cleaning process, particularly
 16 between unrelated cases because obviously the worst case
 17 scenario is that we contaminate from one case to
 18 another, but in the situation that we were in in 2018 ,
 19 where there were a large number of scenes that were
 20 being exploited simultaneously, we still maintained the
 21 levels of confidence -- the highest levels of confidence
 22 by cleaning as robustly -- and this was multiple levels
 23 of cleaning of the cabinets using different
 24 decontaminants in order to ensure that we had removed
 25 any contamination that may have resulted.

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1 of these investigations?
 2 **A.** No.
 3 **Q.** It's just the ones we are likely to be
 4 interested in?
 5 **A.** Yes.
 6 **Q.** I think we probably are on page 17 of this
 7 schedule, which -- yes, I asked to go to mainly because
 8 it was a page we looked at yesterday. I just want to
 9 ask you just some general questions to start with.
 10 We heard about what we might call the traffic light
 11 system. It's a device to assist us, because the
 12 absolute figures are sensitive and therefore not
 13 available in this open session, and we heard that, is
 14 this right, that that calibration is accurate throughout
 15 this document, but we have to be a bit careful with
 16 looking at other similar traffic light calibrations in
 17 other documents?
 18 **A.** Yes. I mean, as Commander Murphy explained
 19 yesterday actually, I first decided that it would be
 20 useful to have a colour coding visual aid when we were
 21 looking at scenes and being able to identify relative
 22 levels of contamination, quite early on in the incident
 23 actually.
 24 However, to be perfectly honest, when I first set
 25 up that colour coding scheme, I didn't think through

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1 Within that an important aspect is taking control
 2 swabs from the cabinet, so before we unpacked any new
 3 batch of samples and after we cleaned from the last time
 4 we would take swabs, again those 10 by 10 centimetre
 5 wetted swabs, and we would swab the surfaces of the
 6 cabinet. Those swabs would be extracted in the same way
 7 as ones from the scene and analysed to check that there
 8 wasn't contamination in the laboratory.
 9 **Q.** Yes, okay, thank you. Well, we will look at
 10 some of those factors in the context of particular
 11 results.
 12 Speaking of results, could I ask you to go -- could
 13 we have on screen, please, INQ006050. MK26, this is
 14 a schedule we were looking at yesterday with Commander
 15 Murphy and I'm sure a schedule with which you're
 16 familiar. I think we agreed with Commander Murphy that
 17 it was -- not a final schedule, but the -- a much more
 18 comprehensive schedule than some of the sort of
 19 piecemeal schedules prepared during the course of the
 20 investigation that we have also seen.
 21 **A.** Yes.
 22 **Q.** I'm sure -- although it's many pages long and
 23 has, I would say, thousands of entries on it, I suspect
 24 you will tell us that it doesn't contain anything like
 25 all of the results that were generated during the course

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1 fully the levels that we might encounter as we proceeded
 2 through the investigation, so the errors in colours, or
 3 the inconsistencies in colours are entirely mine and are
 4 a learning point actually about how I would present data
 5 in the future, but what I would say is that in the
 6 spreadsheets that we're looking at now those colours are
 7 consistent and the relative levels are rational.
 8 I can't promise that that's necessarily the case in some
 9 of the diagrams that we may look at as we continue.
 10 **Q.** Thank you. Just looking then at the grid
 11 itself, the far left-hand column is headed "LSN". Are
 12 these unique references for each of the samples?
 13 **A.** Yes, so laboratory sample number, "LSN".
 14 "PTN", Porton, "18" is the year and then unique numbers
 15 for each sample that then followed.
 16 **Q.** "Date of receipt" perhaps stands for itself
 17 although, as we discussed with Commander Murphy, one
 18 doesn't necessarily assume perhaps that it was received
 19 into Porton Down on the same day that it was taken, but
 20 likely within a day or so?
 21 **A.** Particularly in the early days of the
 22 operation actually I would say our laboratory operated
 23 24 hours a day and certainly the police officers were
 24 working 24 hours a day and so there are definitely --
 25 there will definitely have been instances where a sample

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1 was perhaps collected on the 7th and then receipted into
2 the laboratory after midnight and so it became the 8th.
3 I completely agree with Commander Murphy, we weren't
4 storing samples anywhere else, they were coming directly
5 to Porton Down throughout the operation.

6 **Q.** Next column "Type". We have talked about
7 swabs.

8 **A.** Yes.

9 **Q.** And you have mentioned sub-samples. We often
10 see the word "exhibit"?

11 **A.** Yes.

12 **Q.** Which obviously has a meaning which we're all
13 familiar with. Is it as simple as saying that an
14 exhibit is something that wasn't going to be tested?

15 **A.** Not necessarily. Let me find a good example.
16 Porton 18/0081 was the diabetes monitor. In the next
17 column along it says "Analysis required",
18 "Quantification", which means that we received that
19 diabetes monitor as the exhibit and we would then have
20 taken a swab from it to look for Novichok contamination
21 of it, and then in the next column along we've got
22 "Analytical result" which in this case was not detected.

23 **Q.** That leads me slightly to my next questions,
24 which is about that -- the next -- well, I think we
25 can -- the brief description really does stand for

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1 from Mr Asman, who I believe is here tomorrow.

2 **Q.** Thank you. Last point about this. Looking at
3 this page we can see there was -- it records, amongst
4 other things, a large number of those quantification
5 pieces of analysis, you told us how it is done with
6 a shaker and so on and we see the results. One assumes
7 from what you have said that alongside that work there
8 was also swabbing going on to check for cross
9 contamination before, after, during those samples.

10 **A.** Yes.

11 **Q.** They're not recorded on this sheet, so would
12 they be amongst those results which we agreed earlier
13 haven't been included here?

14 **A.** Many of them are here actually. I can't
15 actually see any on this page, but there are definitely
16 on some of the pages -- ah, there is one here. Towards
17 the bottom --

18 **Q.** There's a control swab?

19 **A.** There's a control swab there, but there are
20 also cabinet swabs in various pages of this document.

21 **Q.** We will certainly come to some pages where
22 there are rather more of those control swabs listed, but
23 is it right, then, that we shouldn't assume that just
24 because they're not mentioned here, they didn't happen?

25 **A.** Absolutely not. They will have happened.

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1 itself, but the "Analysis required" column,
2 "Quantification" that is the process you have just
3 described, is it, of doing the assessment of
4 understanding how much, if any, Novichok was present ?

5 **A.** Yes.

6 **Q.** What about -- perhaps "No analysis" also
7 speaks for itself. What about "High tech"?

8 **A.** So those are what we would call digital
9 exhibits, so a mobile phone, a laptop computer, which in
10 partnership with CT Policing we would assist them in
11 recovering the digital information from those devices.
12 Because we couldn't exclude the possibility that there
13 was Novichok on those devices, that was all done in our
14 laboratory for safety reasons.

15 **Q.** Could I ask you about the very last entry on
16 this page. It's a little bit different from the others.
17 Can you see it is described in the left-hand column as
18 a DNA swab and then we see in the type it says "DNA
19 Apple iPad" and in the analysis required it says
20 "Storage only". Was Porton Down involved in DNA testing
21 in this case?

22 **A.** We were involved in assisting CT Policing with
23 swabbing some items for the presence of human DNA, and
24 we assisted with the storage and transport of those
25 samples. It's probably best if you get further detail

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1 **Q.** Thank you. Well, last question on that.
2 They're not mentioned here. Is it safe to infer from
3 that that they're not remarkable?

4 **A.** Yes.

5 **Q.** They came as negative, they didn't suggest
6 there was any contamination?

7 **A.** Yes.

8 **Q.** Cross contamination.

9 **A.** Yes.

10 **Q.** Thank you. Let's move on, if we may then, to
11 in fact the samples that you received and the testing
12 that you did following the Skripal poisoning. If we can
13 go in your statement to page 11, so it's INQ005923,
14 page 11. We see paragraph 27, the blood sample testing
15 undertaken on the samples of blood from Sergei and Yulia
16 Skripal.

17 Now, we have heard from other witnesses who were
18 involved at other points in the process about these
19 samples and is it -- is it a fair summary to say that
20 what you describe in this paragraph is two sets of tests
21 being done on the blood samples --

22 **A.** Yes.

23 **Q.** -- first of all to look for inhibition of the
24 cholinesterase enzymes, so would this be right just
25 establishing the presence or potential presence of an

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1 organophosphate?
 2 **A.** Yes, that's correct, and it's a relatively
 3 quick test, so in this instance it was the -- it was the
 4 first test that we did and enabled us to at least see if
 5 there was a cholinesterase inhibition before we
 6 proceeded with the more lengthy test.
 7 **Q.** Yes. We have actually heard that machines
 8 that were capable of doing that sort of test were
 9 actually available in Salisbury hospital, not routinely
 10 but that they had them later on in the process,
 11 certainly there was a -- the text messages between
 12 I think it was FT49 and Dr Jukes at the time of the
 13 Amesbury poisoning, they were looking to see if they
 14 still had those machines. It may well be that your
 15 machines were rather more sophisticated?
 16 **A.** I guess, for clarification, cholinesterase
 17 testing routinely is undertaken by the National Poisons
 18 Information Service, who I think we heard some of the
 19 hospital doctors refer to earlier in the hearings, but
 20 that involves taking a sample from the patient and
 21 sending it to their laboratories in Birmingham. I think
 22 it takes around 48 hours for a result to come back.
 23 We received the Skripal samples and undertook the
 24 cholinesterase inhibition test that evening. We then
 25 facilitated Salisbury District Hospital getting a small

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1 were being done in parallel, but the results of the
 2 cholinesterase tests showed that there had been
 3 inhibition --
 4 **A.** Yes.
 5 **Q.** -- in both cases?
 6 **A.** Yes.
 7 **Q.** We could see running, I think, just a few
 8 hours behind the tests that you describe towards the
 9 bottom of this paragraph, you say four lines up from the
 10 bottom:
 11 "In addition, samples were screen for both
 12 well-known nerve agent biomarkers and other more unusual
 13 nerve agents/toxic chemicals."
 14 We talked about the biomarkers already.
 15 **A.** Yes.
 16 **Q.** Was this a more detailed analysis trying to
 17 identify precisely which chemical was involved?
 18 **A.** Exactly that, so it would enable us to
 19 identify if a nerve agent was present, which one it was.
 20 **Q.** If we just read the bottom line of this page,
 21 going over to the next, it says:
 22 "Samples from both Yulia Skripal and Sergei Skripal
 23 were positive for the presence of
 24 a Novichok-butyrylcholinesterase nonapeptide,
 25 a characteristic marker for exposure to a particular

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1 device that they were able to have at the hospital,
 2 which is the one that is referred to in the doctor's
 3 statement and the text messages. At this time of the
 4 Skripals, it was Birmingham or the samples coming to us.
 5 **Q.** I'm sorry, I certainly didn't mean to mislead.
 6 There's no question that the hospital had that machine
 7 at this early stage.
 8 **A.** Ah, no.
 9 **Q.** They had it --
 10 **A.** Later on, yes.
 11 **Q.** But I think we have agreed broadly speaking it
 12 served the same purpose?
 13 **A.** Yes.
 14 **Q.** That was, if you like, a screening test?
 15 **A.** Yes.
 16 **Q.** Presumably, if you hadn't found cholinesterase
 17 inhibition at that first stage, you wouldn't have gone
 18 on to check for organophosphate nerve agents?
 19 **A.** We may have anyway, I think, given the --
 20 given the seriousness of what we had heard and the
 21 information that had been given to us from the police,
 22 we may have continued with that anyway at that point.
 23 We had probably started -- we had started that process
 24 so ...
 25 **Q.** In any event, it may well be, as you say, they

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1 nerve agent of the Novichok class."
 2 This is very much the territory we were discussing
 3 earlier.
 4 **A.** Yes.
 5 **Q.** That those tests indicated the presence of
 6 a particular Novichok?
 7 **A.** Yes.
 8 **Q.** The same particular Novichok within both of
 9 their bodies; is that right?
 10 **A.** Yes, that's correct.
 11 **Q.** We have heard that those results were
 12 communicated to the police in the early hours of Tuesday
 13 morning, the one following the other?
 14 **A.** Yes, and also to Salisbury District Hospital.
 15 **Q.** Yes. Moving on, we can see further down on
 16 page 12 there were also analysis undertaken on clothing
 17 and vomit samples from the Skripals. We have heard some
 18 evidence about the clothing -- I think it was PC Collins
 19 who was sent that night to Salisbury District
 20 Hospital --
 21 **A.** Yes.
 22 **Q.** -- to bag up the clothing. Is that what we're
 23 talking about? Was it then sent to Porton Down?
 24 **A.** Yes, it was.
 25 **Q.** That would have been one of the unusual

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1 exhibits that arrived in your screening room?
 2 **A.** Yes.
 3 **Q.** Help us, were then swabs taken at Porton Down
 4 from that clothing?
 5 **A.** Clothing is difficult because it's obviously
 6 a porous substance in its own right, so -- and it's
 7 actually a fabric, so a bit like the fabric swabs that
 8 we were using. So rather than trying to swab, what we
 9 actually did was cut 10 by 10 squares of fabric from the
 10 clothing itself and we targeted areas where we felt it
 11 most likely that the victims would have placed their
 12 hands. For example, inside of the pockets of Sergei's
 13 coat and also any exposed areas that they may have
 14 touched. We took a number of those swabs and then they
 15 went into those glass jars that we have already heard
 16 about and a solvent was added and they then went on to
 17 the shaker and the same process was followed, because
 18 they are effectively a swab.
 19 **Q.** Just sticking with the process for a minute --
 20 we will come to the results -- looking about five or six
 21 lines down, the sentence starts:
 22 "All items analysed were positive for the presence
 23 of the specific Novichok ..."
 24 We have dealt with that.
 25 **A.** Yes.

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1 **Q.** I see. I see. You have mentioned testing
 2 parts of the clothing.
 3 **A.** Mm-hm.
 4 **Q.** We have obviously heard a lot about the
 5 symptoms that the Skripals experienced, typical of nerve
 6 agent poisoning, which included some secretions and
 7 vomit, and did the sort of existence of vomit on the
 8 clothing pose an extra challenge for you?
 9 **A.** It made it difficult to determine whether what
 10 we were seeing initially was contamination due to direct
 11 contamination, or contamination due to vomit, so because
 12 we had heard that there was -- we didn't know how the
 13 Skripals had been exposed in those early hours and so it
 14 was possible that they had been exposed through food or
 15 drink and if they had been exposed through food or
 16 drink, then you would expect there to be, if not the
 17 chemical itself, at least some indications of it, some
 18 breakdown products in that vomit. So we were unsure at
 19 that time. I will be perfectly honest, we had never
 20 analysed vomit before and it's quite difficult to
 21 analyse vomit because by its very nature there's
 22 obviously food in there, there's obviously -- it's
 23 obviously quite acidic and so --
 24 **Q.** Just pausing there, then, so if you -- I think
 25 perhaps you did, but if you analysed a piece of clothing

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1 **Q.** "And this was confirmed in all but one case by
 2 both ..."
 3 Then you describe LC-MS/MS and gas
 4 chromatography-mass spectrometry. Is that language
 5 describing the processes you have already mentioned or
 6 something a bit different?
 7 **A.** Yes, so what we did that night actually is we
 8 used two different analytical techniques and that's
 9 really good practice and it comes from being an OPCW
 10 designated lab, to use more than one analytical process
 11 independently to see if you get the same result, and
 12 it's particularly important when you don't know what
 13 you're looking for because it gives you a broader
 14 spectrum of things that you may be able to identify.
 15 As the -- after we had identified the Novichok that
 16 night, we almost exclusively, after that, used liquid
 17 chromatography-tandem mass spectrometry because of the
 18 sensitivity that we get from that technique.
 19 **Q.** I see. That's the process you have described
 20 already?
 21 **A.** Yes.
 22 **Q.** This was, as it were, a sort of almost
 23 developmental stage?
 24 **A.** Yes, which is why it's slightly different in
 25 this case.

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1 which you knew had vomit on it --
 2 **A.** Yes.
 3 **Q.** -- and it showed positive for Novichok, is
 4 this the point, that you didn't at that point know
 5 whether the positive was positive from the vomit or --
 6 which might indicate oral ingestion -- or positive from
 7 the jacket --
 8 **A.** Exactly.
 9 **Q.** -- which would give a different indication?
 10 **A.** Yes.
 11 **Q.** How did you go about trying to refine your
 12 exercise?
 13 **A.** If you cast your mind back you will
 14 probably -- I'm conscious we're very close to lunch and
 15 we're talking about vomit, but -- so you will remember
 16 that the Fire Brigade actually collected the vomit from
 17 the scene after the Skripals had been taken to Salisbury
 18 District Hospital. That was brought to us as an exhibit
 19 and in order to really get some empirical data as to
 20 whether it was indeed vomit or clothing that was
 21 contaminated, we analysed that vomit that was collected
 22 and we found no evidence of Novichok within it.
 23 **Q.** That was part of the answer and did you
 24 separately do your best to identify parts of the
 25 clothing which wouldn't, you thought, have vomit on it?

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1 **A.** Yes, we did.
 2 **Q.** What parts?
 3 **A.** Well, I think that was when we looked at
 4 protected areas, perhaps inside linings of garments and
 5 things like that, that were perhaps much less likely to
 6 have been covered in vomit, or, you know, touched by
 7 other secretions.
 8 **Q.** Yes.
 9 **LORD HUGHES:** Is that the reason why you're
 10 interested in pockets, for example?
 11 **A.** Yes, partly. It wasn't because, certainly not
 12 at that stage, that we thought it was the hands.
 13 **LORD HUGHES:** No.
 14 **A.** It wasn't. It was about it being protected
 15 rather than anything else.
 16 **LORD HUGHES:** I see.
 17 **MR O'CONNOR:** If we can look, please, back at the
 18 sample tracking document 006050 and look at pages 2 and
 19 I think 3 as well, we see at the top "Victims personal
 20 belongings" and if we just cast our eye down, MK26, can
 21 we see there are quite a number of entries relating to
 22 pockets --
 23 **A.** Yes.
 24 **Q.** -- jacket pouches and so on?
 25 **A.** Yes.

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1 ingestion, the likely method of ingestion. Tell us how
 2 the two sets of results, one negative from the vomit,
 3 the other positive from the clothing, what did that lead
 4 you towards?
 5 **A.** I mean, I think -- I think it was pushing us
 6 away from the idea that they had been exposed through
 7 either food or drink. I guess the only caveat I would
 8 apply to that is the one I sort of mentioned earlier,
 9 which is that we had never analysed vomit samples before
 10 and so I was concerned that we hadn't done all of the
 11 validation needed to be sure at that point, that if
 12 there had been Novichok present in the vomit we would
 13 have found it and so that alone meant that we kept an
 14 open mind, certainly at that stage, although it was
 15 looking more likely that they had been exposed either to
 16 an aerosol or to a contact hazard, so through their
 17 skin.
 18 **Q.** Yes, thank you. Let's move on. We can see,
 19 in fact, carrying on in your statement, the next
 20 sub-title refers to testing in The Maltings, Zizzi's
 21 restaurant and The Mill. You recall we addressed this
 22 with Commander Murphy yesterday, again these were early
 23 tests, were they not?
 24 **A.** Yes.
 25 **Q.** Reflective of the fact that at that very early

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1 **Q.** Including, if we just scroll down going over
 2 the page -- and do those show "high" -- in general
 3 terms, "high", that is orange readings?
 4 **A.** Yes, and I guess what I would also say is most
 5 tellingly that nearly all of them are positive. There's
 6 a few -- I think we've got the right upper swab of
 7 Sergei Skripal's shoe was negative, but more than a very
 8 high percentage I would say are positive.
 9 **Q.** Of course, one doesn't just look at one
 10 sample, one wants to look across the range --
 11 **A.** Yes.
 12 **Q.** -- and draw inferences from that. What's the
 13 point you're making, you say that a very high percentage
 14 of them are positive, does that suggest it's not
 15 a situation where the clothing has been contaminated by
 16 vomit?
 17 **A.** Yes, I think so, and that was the conclusion
 18 we drew at that point.
 19 **Q.** I suppose from -- if we just finish off on
 20 this and go back to your statement, please, INQ005923,
 21 and we were looking at page 12, we can go to page 13.
 22 At the top of the page there -- sorry, if we can go down
 23 to see -- as you said, MK26, one of the questions that
 24 you were trying to get an answer to at that point,
 25 indirectly through the sampling, was the method of

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1 stage in the investigation really that was what was
 2 known about the Skripals' movements in the period
 3 immediately prior to them starting to experience
 4 symptoms?
 5 **A.** Yes.
 6 **Q.** Starting with the bench then. In summary, in
 7 the first few lines of paragraph 30, you indicate that
 8 no agent was detected on the bench. What were and are
 9 your thoughts about that?
 10 **A.** I mean, we -- we're at least partly back to
 11 porous surfaces and if something is absorbed into
 12 a surface it's very, very difficult to swab and remove
 13 it, which is why perhaps in a house with soft
 14 furnishings you would never try to decontaminate a sofa,
 15 for example, you would just dispose of it because it
 16 would be very difficult to (a) determine that it was
 17 contaminated in the first place and (b) to prove that it
 18 was clean.
 19 That was the concern about the bench actually. We
 20 didn't detect agent, but that may be a function of
 21 swabbing being really ineffectual on that bench.
 22 Equally, the Fire Service had washed that bench
 23 down with a huge volume of water, is my understanding,
 24 and so it's possible that it had just been diluted away.
 25 **Q.** Or perhaps a combination of the two?

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1 **A.** Or maybe both, yes.
 2 **Q.** Certainly, as we will come to see, other
 3 places -- we know for a fact that the Skripals had sat
 4 on that bench.
 5 **A.** Yes.
 6 **Q.** We will see, and you became aware at about
 7 this time, that other places they had sat they had
 8 contaminated?
 9 **A.** Yes.
 10 **Q.** So it was an outlier in that sense.
 11 **A.** Yes.
 12 **Q.** But were you satisfied that there were, as it
 13 were, sufficient scientific explanations of the type you
 14 have described which explained the lack of a positive
 15 result from the bench?
 16 **A.** Yes, I can't tell you for sure which one
 17 I believe it is, but there are definitely scientific
 18 explanations for that result.
 19 **Q.** Yes. I suppose one thing we know from what
 20 you have said earlier is that we know it's very likely
 21 that the Skripals vomited on the bench, but that itself
 22 wouldn't have infected or contaminated the bench from
 23 what you've said about testing --
 24 **A.** No, not as far as we can tell.
 25 **Q.** That was the bench and then moving on we --

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1 **A.** Yes.
 2 **Q.** Could we go, please, to INQ005677, page 12.
 3 Thank you. This is a document we looked at yesterday
 4 with Commander Murphy. If we could enlarge the top
 5 third please, the line dealing with the cemetery. Thank
 6 you.
 7 MK26, I think we heard from Commander Murphy that
 8 this was quite an involved process of identifying this
 9 as a scene --
 10 **A.** Yes.
 11 **Q.** -- closing it off and then there was a period
 12 of time during which there was the type of sampling work
 13 done that we had heard about and can we take it that in
 14 the normal way the samples went back to Porton Down ?
 15 **A.** (Nods)
 16 **Q.** There was perhaps a discrepancy between
 17 Commander Murphy's witness statement and indeed his oral
 18 evidence yesterday where his answer was that the results
 19 there were negative and what's written here, which, can
 20 you see, it says three -- four lines up from the bottom:
 21 "The readings obtained from the grave sites are
 22 negligible and below a level that DSTL can report on."
 23 Now, at least one reading of that language is that
 24 in fact the results were not negative, there was some,
 25 if you like, trace of Novichok, it was just so low that

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1 you then address testing at Zizzi's and The Mill and the
 2 evidence we heard from Commander Murphy yesterday, and
 3 indeed from Dame Sally I think the day before, was that
 4 the results there -- and I'm not going to take you back
 5 to the plans and so on, but what was found was that
 6 there had been contamination --
 7 **A.** Yes.
 8 **Q.** -- associated with the evidence about where
 9 the Skripals had been inside those two buildings, but
 10 that the levels were relatively low. Is that an
 11 accurate summary? Leave aside the summary of the
 12 evidence we have heard so far, was that your
 13 understanding at the time?
 14 **A.** Yes. I guess the only thing I would say is
 15 I'm really conscious of applying what I learned later to
 16 what I knew at that time and certainly at that time we
 17 weren't dismissing them as trace. You know, we were
 18 confident in the results, we were confident that we had
 19 found it. I don't think -- well, no, there wasn't -- it
 20 didn't seem that that was the likely source of the
 21 contamination, but I don't think we fully understood
 22 that at that time.
 23 **Q.** No, right, that's fair.
 24 I'm going to come on to the car in a moment, but
 25 before we do, can I ask you about the cemetery?

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1 it couldn't be reported on. Can you clarify the
 2 position, please?
 3 **A.** Yes, and really it reflects a very scientific
 4 approach to dealing with saying that something is absent
 5 and so initially -- and this was quite early on actually
 6 in the March incident -- we weren't reporting negatives
 7 as negative, we were reporting them as below the limit
 8 of detection of the technique, which is absolutely
 9 accurate from a scientific perspective in that kind of
 10 language, but is also really unhelpful to
 11 police officers and to anyone else. You will see, when
 12 you go through the spreadsheets, that we evolved very
 13 quickly to being very clear about whether or not things
 14 were positive or negative and so that language of
 15 reporting changed.
 16 I can only assume that this was an early document
 17 of the Police compiling their information, but what
 18 I would say is that I fully agree with Commander Murphy
 19 that the cemetery was negative.
 20 **Q.** Thank you.
 21 **LORD HUGHES:** Below limits of detection includes
 22 there isn't any?
 23 **A.** Negative. Absolutely.
 24 **LORD HUGHES:** I see.
 25 **MR O'CONNOR:** Or means isn't any in --

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1 **A.** Exactly. In this case, yes.
 2 **Q.** Thank you. We can take that down and in fact
 3 can we go back to your witness statement, please, so
 4 it's INQ005923, and go to page 14. We heard -- these
 5 things are never quite as simple as we try to portray
 6 them, but we were asking Commander Murphy about the
 7 series of tests that were undertaken in that first week
 8 or so. He was describing their thought processes,
 9 working back from the bench --
 10 **A.** Yes.
 11 **Q.** -- and having identified some contamination in
 12 The Mill and Zizzi's, but, as you have explained,
 13 notwithstanding the uncertainty at the time, there
 14 wasn't a confidence that that represented the source of
 15 the contamination.
 16 **A.** That's correct.
 17 **Q.** We then heard evidence from him about the
 18 tests on the BMW which started to be conducted in that
 19 first week, although subsequent tests were then
 20 undertaken, weren't they? I think it's right, help us,
 21 is this right, that initially the tests were only on the
 22 outside of the vehicle and it was some time later that
 23 further tests were undertaken on the inside?
 24 **A.** Yes. From memory, a combined team of DSTL and
 25 CT Policing initially sampled the vehicle and only

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1 the source of the contamination, or the driver of the
 2 vehicle had contamination on his hands at the time when
 3 he had opened or closed the car door, or the source of
 4 contamination was inside the vehicle and this had been
 5 transferred to the outside of the vehicle by the driver
 6 or during the recovery."
 7 **A.** Yes.
 8 **Q.** We will recall Commander Murphy's general
 9 desire to understand where, in his words, ground zero
 10 was.
 11 **A.** Yes.
 12 **Q.** The passage I have just read suggests that it
 13 might have been, but you weren't certainly sure that it
 14 was?
 15 **A.** No, absolutely, and I suppose, possibly
 16 naively, at the time my thinking was that if someone had
 17 deliberately -- if someone was deliberately trying to
 18 poison someone but didn't want to have an impact on
 19 anyone else, poisoning perhaps the steering wheel of
 20 their car would be quite a good choice if you didn't
 21 think anyone else was going to drive it. If you had any
 22 concern at all for public safety, that might be a good
 23 option, so that was perhaps where I was leaning in my
 24 mind at least. It turned out to be wrong, of course
 25 but...

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1 sampled the outside and I think that was because there
 2 was a difficulty in locating the keys initially and so
 3 we took the outside samples, which I think was five
 4 samples, from all four door handles and the handle to
 5 the boot and those came back for analysis. I think all
 6 five were positive at varying levels with the highest
 7 level being found on the driver's door handle.
 8 **Q.** Just -- the outside door handle?
 9 **A.** The outside door handle.
 10 As Commander Murphy explained yesterday, at this
 11 point that sample in particular was the most significant
 12 level of Novichok that we had seen anywhere and there
 13 was a concern about the possible levels of contamination
 14 inside, and so I believe that the additional sampling
 15 took place after the car had been safely recovered and
 16 moved to DSTL for further exploitation.
 17 **Q.** I see. Yes, well, that certainly makes sense.
 18 Just going back to what you said about the levels
 19 found, we see, five or six lines down, paragraph 31, you
 20 refer there to the swab from the driver's door handle
 21 and that it was found to contain the highest
 22 concentration of Novichok that you had seen to date, the
 23 other swabs were of a much lower concentration, and then
 24 this:
 25 "This suggested that either the car door handle was

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1 **Q.** Hence the concern that when you opened the car
 2 you might find something even more dangerous --
 3 **A.** Yes.
 4 **Q.** -- and removing the car before you did that.
 5 **A.** Yes.
 6 **Q.** In fact, when the tests were done on the
 7 inside of the car, did they bear out your theory or not?
 8 **A.** No. We did get at least one reading that was
 9 at a similar level to that found on the door -- on the
 10 driver's door handle, which I believe was the driver's
 11 side seatbelt buckle, which obviously is metal, so would
 12 again be quite a good surface to be able to sample from
 13 and to swab successfully.
 14 I think there was significant amounts on the
 15 steering wheel, but at a lower level than we had seen on
 16 the car door handle, and also I think I say later in the
 17 statement that when you consider -- when you consider
 18 the amount of material that we recovered from those
 19 swabs inside the vehicle, accepting that we didn't swab
 20 the entirety of the vehicle and also accepting that
 21 swabbing is not 100 per cent efficient, this whole
 22 process isn't, but even accepting all of those factors,
 23 it didn't seem like there could be enough material there
 24 to see the effects that we had seen on Sergei and Yulia
 25 Skripal.

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1 **Q.** Yes, so maybe two points: the first is when
 2 you tested inside the car it didn't bear out your
 3 thought that perhaps you would find much higher levels
 4 and so you could think about the results on the door
 5 handle as secondary from the inside?
 6 **A.** Yes.
 7 **Q.** In fact, did it appear --
 8 **A.** The opposite, yes.
 9 **Q.** -- to be the other way round, that the results
 10 on the inside were probably secondary from the outside ?
 11 **A.** Absolutely.
 12 **Q.** But then the other point, if we could go over
 13 to page 15, please, I think this is the point you
 14 address towards the end of that first paragraph. Can
 15 you see about five or six lines up there's a sentence
 16 towards the end of a line starting "With this in mind"?
 17 **A.** Mm-hm.
 18 **Q.** You say:
 19 "... it is my opinion that given the levels
 20 observed from the swab samples of the Skripal vehicle,
 21 even when likely swabbing efficiency is factored in, the
 22 observed levels are orders of magnitudes lower than
 23 would be required for an estimated lethal dose in
 24 humans ..."
 25 Just to intervene, were you also not just thinking

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1 us about the searches. I think it was clear that -- by
 2 then at least, that the car wasn't the source and so as
 3 Commander Murphy talked through yesterday -- much better
 4 than me actually because he is a police officer and an
 5 investigator -- you know, you would then go to the next
 6 place that the victims had touched before touching the
 7 vehicle, logic would take you there, which I think is
 8 the point where the discussion around swabbing the front
 9 door handle as the last thing -- we didn't know at that
 10 stage, of course, whether both Sergei and Yulia had
 11 touched the door handle, or just one of them had, but
 12 either way one of them must have touched the door handle
 13 and so that's what took us to that as the last -- as the
 14 next place because we had gone sequentially through
 15 those other places.
 16 **Q.** Yes. There's one extra aspect that you
 17 mention in your statement -- and help us whether this
 18 was relevant at this point to the consideration or
 19 not -- but we have heard from all three of the officers
 20 who conducted that very first search on the Sunday night
 21 and we have heard their evidence, VN005 told us about
 22 how he had organised them taking off their PPE at the
 23 end of the evening, bagging it --
 24 **A.** Yes.
 25 **Q.** You mention in your statement going back to

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1 about in principle a lethal dose, but thinking about the
 2 effect that you had seen and tested the Skripals?
 3 **A.** Absolutely, yes.
 4 **Q.** With all those things in mind, you say
 5 consequently it was your opinion that the car was
 6 unlikely to be the primary source of contamination and
 7 exposure.
 8 **A.** Agreed.
 9 **Q.** That was a view you reached, was it, before
 10 other higher readings were found?
 11 **A.** Yes.
 12 **Q.** That then takes us to testing at Christie
 13 Miller Road and we heard from Commander Murphy
 14 yesterday -- this was I think after his -- after the
 15 first week -- that you told him, or you expressed a view
 16 that the contamination, which by that stage was being
 17 found inside the house -- and these were his words --
 18 was "Almost certainly cross contamination by
 19 police officers"; is that correct?
 20 **A.** Yes, either doing that initial search or doing
 21 subsequent searches of the property.
 22 **Q.** Can you explain how you got to that
 23 conclusion, please?
 24 **A.** I think it was partly around the account of
 25 what had happened and the information that was coming to

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1 those -- to that PPE kit --
 2 **A.** We did.
 3 **Q.** -- and testing it.
 4 **A.** Yes.
 5 **Q.** Was this at this point or not?
 6 **A.** I would have to check the exact sequence of
 7 that and also, of course, by then we knew Nick Bailey
 8 had been exposed and was hospitalised, although again
 9 I think, as was said yesterday or the day before, at
 10 that stage he had been to a number of scenes and so it
 11 wasn't necessarily the case that it was obvious that it
 12 was Christie Miller Road, but --
 13 **Q.** He had been to a number of scenes --
 14 **A.** Yes, but the other two --
 15 **Q.** -- the PPE in the bags had only been used at
 16 one scene.
 17 **A.** Yes, exactly.
 18 **Q.** Let's not worry about exactly when you
 19 undertook this work, but in your statement you describe
 20 opening the bag --
 21 **A.** Yes.
 22 **Q.** -- and testing the PPE kit.
 23 **A.** Yes.
 24 **Q.** The detail is there in your statement, but in
 25 broad summary what did that show?

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1 **A.** It showed that much if not all of the PPE was
 2 contaminated. There were eight separate gloves from the
 3 three -- I assume from the three police officers which
 4 suggests that one of the officers was double gloved, two
 5 layers of gloves. There were also goggles, face
 6 masks -- I don't think we tested overshoes and I don't
 7 think we tested suits, but we certainly focused on the
 8 items that you would have expected to have been touched .
 9 **Q.** Those tests demonstrated contamination?
 10 **A.** Yes.
 11 **Q.** Did that feed into what perhaps was a growing
 12 understanding that they might themselves have
 13 contaminated the house?
 14 **A.** Yes, and it seemed to be the logical
 15 explanation, you know, particularly when you look at the
 16 levels of contamination inside Christie Miller Road
 17 versus some of the other locations that we have already
 18 talked about.
 19 **Q.** That was all part then of the process of the
 20 decision to swab the handle?
 21 **A.** Yes.
 22 **Q.** As we have heard from Commander Murphy, is
 23 this right, that returned extremely high levels?
 24 **A.** Yes.
 25 **Q.** If we could go to page 17 of your statement,

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1 teams of officers had been in and out of the house by
 2 then.
 3 **A.** Yes.
 4 **Q.** The handle must have been held and held
 5 tightly by a number of people during that period --
 6 **A.** Yes.
 7 **Q.** -- tell us, but presumably that would have had
 8 an effect in diminishing the contamination.
 9 **A.** Because each of those touches will have
 10 removed some of the material , inevitably, as well as
 11 whatever may have dripped from the door in that time as
 12 well, or got mixed with water -- rainwater.
 13 **Q.** So -- but notwithstanding those matters, or
 14 perhaps they reinforce your view that the levels that
 15 one can infer must have been present on 4 March were
 16 certainly high enough to explain the symptoms in the
 17 Skripals.
 18 **A.** Yes.
 19 **Q.** Just casting our eyes down to paragraph 35 of
 20 your statement, you refer there to swabs that were taken
 21 of Sergei and Yulia Skripal's hands. What were the
 22 results of them and did they -- were they consistent or
 23 inconsistent with this idea?
 24 **A.** The swabs from both Sergei and Yulia's hands
 25 were positive for Novichok. This was after a number of

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1 please, and at the top -- thank you, that's fine. Do we
 2 see there in the last few lines of the top paragraph on
 3 the page you say:
 4 "... the high levels of contamination on the front
 5 door and handle and surrounding area ..."
 6 Then you say:
 7 "... which are at levels of agent estimated for
 8 a lethal dose in humans despite weathering over a number
 9 of days, make it highly likely in my opinion that the
 10 front door handle was the source of contamination and
 11 that Sergei and Yulia Skripal were exposed through
 12 contact with the handle and/or the door."
 13 **A.** Yes.
 14 **Q.** We talked about that issue around persistence
 15 and, as you say, it had been getting on for two weeks by
 16 the time that the door handle was tested.
 17 **A.** I think it had been 12 days. I think there
 18 had been rain and possibly snow in that period and the
 19 door was exposed to the elements in that time.
 20 **Q.** Not only that, but we have heard graphic
 21 evidence from the officers this being one of those doors
 22 that you have to pull the handle up in order to unlock
 23 it --
 24 **A.** Yes.
 25 **Q.** -- and lock it, and we know that quite a few

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1 days in the hospital and we still found levels of
 2 Novichok on them and so they support the conclusion that
 3 the front door handle, which we now know from their
 4 witness statements was touched by both of them, was the
 5 source of the Novichok.
 6 **Q.** Yes, thank you. In fact if we can -- we see
 7 at the bottom of this page you say "Summary of
 8 analytical findings". I'm not going to read it all out,
 9 but if we can go down onto the next page please, at the
 10 very end of that paragraph, you say -- in the last few
 11 lines you say:
 12 "The levels of specific Novichok ..."
 13 Again is that a reference to the specific --
 14 **A.** The specific chemical, yes.
 15 **Q.** -- sub-category that you had identified:
 16 "... recovered by swabbing of the door handle and
 17 surrounding area after many days of weathering, combined
 18 with the contamination found throughout the locations
 19 visited in Salisbury that afternoon by the Skripals
 20 suggests that it is highly likely, in my opinion, that
 21 many lethal doses of the highly toxic specific Novichok
 22 were applied to the door handle."
 23 Is that --
 24 **A.** I would agree.
 25 **Q.** That remains your view?

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1 **A.** Yes.
 2 **Q.** Thank you. Let me ask you one more short set
 3 of questions and then I may suggest that we have
 4 a break.
 5 What we have just described is your process of
 6 analysis which led you to the positive conclusion, if
 7 you like, that the door handle was contaminated and
 8 there were, as you just said, many lethal doses on it.
 9 We heard from Commander Murphy his concept of a sort of
 10 temporal dirty/clean line. We have just been talking
 11 about the dirty part of that analysis. It's right,
 12 isn't it, that you also tested samples from -- that were
 13 relevant to the Skripals' earlier actions the day
 14 before, not just in the house but, for example, the
 15 Cassidy's vehicle?
 16 **A.** Yes.
 17 **Q.** Did the results of those samples lead you to
 18 a conclusion about when the Novichok may have been
 19 applied to the door?
 20 **A.** Yes, so it was identified by Mr Asman actually
 21 that it was a priority to identify the last point when
 22 the victims had not been contaminated and I think by
 23 then he will have known that they had been to the
 24 airport the evening before in the Cassidy vehicle and so
 25 the Cassidy vehicle was brought to DSTL for sampling and

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1 own conclusions relating to the Skripal poisoning.
 2 **A.** Yes.
 3 **Q.** If we could have on screen, please, INQ002995,
 4 thank you, we can see, just to orient ourselves, this is
 5 described as a note by the Technical Secretariat and we
 6 will see, won't we, several -- or three, to be precise,
 7 such notes which record visits made by the technical
 8 teams or technical assistance visits as they are called
 9 in cases such as this. Yes?
 10 **A.** Yes.
 11 **Q.** We can see the note itself is dated 12 April,
 12 but if we look into the body of the document it
 13 describes a visit to the UK between 21 and 23 March.
 14 **A.** Yes.
 15 **Q.** Before we go any further in the detail, can
 16 you just give us a little bit of context in terms, for
 17 example, as to whether or not visits such as this are
 18 usual, what it takes for them to happen and, when they
 19 do happen, how they happen?
 20 **A.** Okay. I think it's probably fair to say that
 21 I know a lot more now than I did at this time about
 22 technical assistance visits from the OPCW. I think
 23 there had probably been a few over the years at the
 24 request of various countries who perhaps wanted
 25 assistance with training, or something like that, but in

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1 testing, in the expectation that it may be negative and
 2 we hoped it would be, and it did turn out to be
 3 negative.
 4 **MR O'CONNOR:** Yes, thank you.
 5 Sir, I'm going to go on to a different document.
 6 I wonder if that's a convenient moment to break.
 7 **LORD HUGHES:** If it is for you, Mr O'Connor,
 8 certainly.
 9 2 o'clock then, please. Will that give you ample
 10 time this afternoon, Mr O'Connor?
 11 **MR O'CONNOR:** I think it will, sir, yes.
 12 **LORD HUGHES:** 2 o'clock then, please.
 13 **(12.45 pm)**
 14 **(The lunch break)**
 15 **(2.00 pm)**
 16 **LORD HUGHES:** Yes.
 17 **MR O'CONNOR:** MK26, before lunch we had gone
 18 through the process of sampling and testing relating to
 19 the Skripal poisoning and you had explained to us your
 20 developing understanding of the results of the various
 21 swab analyses and so on.
 22 Before I move on to the Amesbury poisoning, I would
 23 like to ask you about the first of the OPCW visits,
 24 which took place earlier in the year and, as we shall
 25 see, and as I shall ask you, it appears confirmed your

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1 this particular instance the decision was taken by HMG
 2 to request the assistance of the OPCW in investigating
 3 and confirming the results that we had obtained.
 4 I think the decision was taken that it would be
 5 a good thing from an international perspective, as
 6 supporters -- the UK being supporters of the OPCW and of
 7 the Chemical Weapons Convention from a very early
 8 period -- to request that the OPCW come independently
 9 and collect samples and take them back to The Hague and
 10 send them out through the designated lab system.
 11 **Q.** Let me just interrupt you. One of course can
 12 think of diplomatic political reasons that would support
 13 that sort of decision. Can I just ask you this: was
 14 there in any sense any doubt in your mind, or DSTL's
 15 corporate mind about the accuracy of your own
 16 conclusions that, as it were, would have been an extra
 17 reason to ask for independent verification?
 18 **A.** No. There was no doubt in my mind, or in
 19 DSTL's mind, or even probably indeed in HMG's mind about
 20 the results that we had obtained, but I think there was
 21 recognition that it was important for the international
 22 community to see that supported independently.
 23 Having said that, despite my confidence in our
 24 results, it felt really uncomfortable at the time, it
 25 felt like getting our homework marked on an

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1 international stage because that's exactly what it was.
 2 The press were following the team round and monitoring
 3 the results.
 4 **Q.** We will see -- but a group of people came to
 5 the UK and spent several days here.
 6 **A.** Yes.
 7 **Q.** We will see when we read the document they
 8 were provided with samples of various materials or --
 9 and they also visited some of the scenes in Salisbury.
 10 There's a reference to a briefing, a formal briefing
 11 that they received; did that involve you?
 12 **A.** Yes, I was there.
 13 **Q.** I will ask you about that as we go. Perhaps
 14 we can look at the document now in more detail. We saw
 15 in paragraph 2 that the visit took place between 21 and
 16 23 March. At paragraph 3, there's a reference to
 17 receiving information about three individuals: the
 18 Skripals and Mr Bailey. Then at paragraph 4 there's
 19 a reference to the team collecting blood samples from
 20 all three from the hospital.
 21 At paragraph 5, as I mentioned, on-site sampling of
 22 environmental samples conducted by the OPCW, so they
 23 weren't just given your materials, or your samples, they
 24 took their own; is that right?
 25 **A.** Yes, that's correct.

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1 results. First of all at paragraph 8 we see them
 2 concluding that they found that the three hospitalised
 3 individuals had been exposed to this toxic chemical, so
 4 we read that as Novichok, do we?
 5 **A.** Yes.
 6 **Q.** Then they go on to deal with the environmental
 7 samples, so those would be the samples taken at The Mill
 8 and Christie Miller Road?
 9 **A.** Yes, that's correct.
 10 **Q.** They say those also demonstrated the presence
 11 of this toxic chemical, that is Novichok?
 12 **A.** Yes.
 13 **Q.** They add that the results of their analysis
 14 confirmed your own analysis. That's at paragraph 10.
 15 **A.** Yes.
 16 **Q.** Finally -- and we have touched on this
 17 before -- they say that the TAV, that's the technical
 18 assistance visit team:
 19 "... notes that the toxic chemical was of high
 20 purity. The latter is concluded from the almost
 21 complete absence of impurities."
 22 In fact, it's the later document, isn't it, that
 23 talks about 97 per cent and 3 per cent, but something
 24 similar being said there in any event?
 25 **A.** Yes.

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1 **Q.** They are described as sites identified as
 2 possible hot spots of residual contamination. They see
 3 from the document that they were taken to The Mill and
 4 to 47 Christie Miller Road.
 5 **A.** That's correct.
 6 **Q.** Does that accord with your memory?
 7 **A.** Yes.
 8 **Q.** Sir, I won't call it up, but for the record
 9 it's INQ005668, page 24.
 10 Then casting our eyes down to paragraph 7 we can
 11 see, as it is put:
 12 "The team was briefed on the identity of the toxic
 13 chemical identified by the United Kingdom ..."
 14 Now, you have said -- is that the briefing you were
 15 involved with?
 16 **A.** Yes.
 17 **Q.** We know, from looking at these documents, they
 18 are rather sort of shy about naming the chemical, so can
 19 you help us: in that briefing what did you tell them
 20 about the chemical that you thought you had found?
 21 **A.** We told them that we had identified
 22 a Novichok, as had been said publicly by that time, and
 23 the specific chemical identity of that compound.
 24 **Q.** Yes, thank you. Then if we can go over the
 25 page, we come, I think, to the results, the OPCW

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1 **Q.** Well, you have said that it felt like having
 2 your homework marked. Presumably you were gratified
 3 with the outcome?
 4 **A.** Yes.
 5 **Q.** Thank you. Let's move then to the Amesbury
 6 poisonings and if we can go to page 7 of your witness
 7 statement please. That's INQ005923, page 7. As set out
 8 there, MK26, and indeed as we have heard from other
 9 witnesses, just like the Skripals your first involvement
 10 came from being asked to conduct biomedical samples on
 11 blood; is that right?
 12 **A.** Yes.
 13 **Q.** You have explained -- if we look at
 14 paragraph 17, is this right, that you are referring
 15 there to those initial cholinesterase inhibition tests
 16 that we discussed earlier in relation to the Skripals --
 17 **A.** Yes.
 18 **Q.** -- with a similar result showing inhibition?
 19 **A.** Yes, that's correct.
 20 **Q.** We will come back to this, but if we just
 21 glance down to paragraph 19 which we see at the bottom
 22 of the page, is that the equivalent of the second stage
 23 that we discussed with the Skripals, the more precise
 24 testing to understand the particular nerve agent that
 25 may or may not be involved?

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1 **A.** Yes, that's correct.
 2 **Q.** Before we go on, we turn over to paragraph 18,
 3 was this, as it were, a different or an additional
 4 process that was conducted here but not with the
 5 Skripals?
 6 **A.** Yes, and I can explain.
 7 **Q.** Yes, do. The key phrase seems to be "Unbound
 8 nerve agent", or at least that's what you were testing
 9 for.
 10 **A.** Yes. I mentioned earlier that on an annual
 11 basis we undertake proficiency tests set by the OPCW in
 12 order to demonstrate our competence. When the Skripal
 13 poisoning took place in March 2018, we were part way
 14 through our annual biomedical sample proficiency test
 15 that had been set by the OPCW.
 16 For biomedical samples, as I explained earlier,
 17 they give some detail -- we're reliant on some detail
 18 around the signs and symptoms the patients are showing
 19 and that particular scenario for that test was a nerve
 20 agent scenario. The consequence of that was, by total
 21 coincidence, when the Skripal samples arrived in March,
 22 we were part way through that test and indeed everything
 23 was set up ready to analyse those samples from the
 24 proficiency test the following day, which meant that we
 25 were able to do that very specific test much more

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1 **A.** Yes, which was much quicker, but we were
 2 really conscious that to wait for the confirmatory
 3 result the following day would further delay the
 4 response and cordoning perhaps of areas for probably
 5 another 24 hours and so we reported at that time.
 6 **Q.** I see. That's very helpful, thank you.
 7 In terms of the outcome though of, shall we say,
 8 the combination of that initial novel test that you
 9 undertook, combined with the second test which was
 10 similar to that that you had undertaken earlier in the
 11 year, is it right, first of all, the outcome was
 12 a conclusion that there was Novichok in both the samples
 13 from Dawn and Charlie?
 14 **A.** Yes.
 15 **Q.** If we look over -- I think are we on page 7.
 16 Yes. If we look over onto page 8, we can see that at
 17 the end of that top paragraph you do indeed say that the
 18 analytical results confirmed that both Dawn and Charlie
 19 were poisoned by -- then those words again "A specific
 20 Novichok agent"?
 21 **A.** Yes.
 22 **Q.** I think we know what you mean by that in terms
 23 of it being a member of that class.
 24 **A.** Yes.
 25 **Q.** Was it the same specific Novichok agent that

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1 quickly in that instance.
 2 However, when Dawn Sturgess and Charlie Rowley were
 3 poisoned in July, June/July, and the samples came to us,
 4 we weren't mid-way through a test and so we had also
 5 been testing environmental samples for many months by
 6 that point, and so our instruments needed to be
 7 recalibrated and so we looked for an alternative test
 8 that could be done quickly to give us an indication as
 9 soon as possible after receiving the samples of whether
 10 or not it was the same chemical that had been found
 11 in March.
 12 One of our scientists did a brilliant piece of work
 13 that day and took a method from the literature and was
 14 able to demonstrate that there was free Novichok in the
 15 blood samples from both Dawn and Charlie, and so that is
 16 why there is a different test.
 17 It also probably shed some light on why the first
 18 result that we reported later on 3 March -- sorry,
 19 3 July -- was at a reasonable level of confidence, but
 20 we didn't actually finally confirm until the following
 21 day when we had completed that original test that we had
 22 used in March, which we had done full validation of and
 23 were totally confident in.
 24 **Q.** I see, so because by the time you were doing
 25 that other test you had already done the free --

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1 you had found earlier in the year with the Skripals?
 2 **A.** Yes, it was.
 3 **Q.** Thank you. If we could move on in the
 4 chronology and go on to page 9, please. We know -- of
 5 course we have heard evidence about 9 Muggleton Road and
 6 you refer to the fact in your statement that, as we
 7 know, samples were taken and we will come to look at the
 8 results of them in due course.
 9 **A.** Yes.
 10 **Q.** But it's right, isn't it, that there was
 11 a period of time after Dawn and Charlie became ill when,
 12 just as with the Skripals really, there was uncertainty
 13 as to precisely how they had become ill and in
 14 particular the source of the contamination?
 15 **A.** Yes, absolutely.
 16 **Q.** And it wasn't until some days later, in fact
 17 I think it was 11 July, that the bottle of -- well,
 18 I was going to say perfume, but the perfume bottle
 19 containing Novichok was understood to be what it in fact
 20 was --
 21 **A.** Yes.
 22 **Q.** -- on the kitchen counter in the flat.
 23 Just looking at paragraph 23 of your witness
 24 statement, you describe there a process that you
 25 undertook of trying to think about what type of vessel

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1 Novichok could have been in, but also knowing that it --
2 that Dawn had been poisoned with it, in particular what
3 might have attracted her to it, for example. I'm going
4 to ask you about that, but can I ask you to -- first of
5 all, was this something that you -- a process that you
6 were asked to undertake by, for example, the police, or
7 did you do it of your own sort of instinct?

8 **A.** I think the description of a possible
9 container is really generic and is very similar to the
10 one that we talked about in the context of the Skripal
11 poisoning. I think the thing that was different in this
12 case was that in order for -- well, in my mind, perhaps,
13 in order for them to have picked -- for them to have
14 picked it up and kept it, it had to have been attractive
15 or desirable in some way and particularly, given that
16 two people had been poisoned, you know, the -- you could
17 imagine that it was perhaps something that maybe for
18 some reason they had both collected.

19 I think -- I don't know the exact sequence of
20 events now, but I think that this was probably
21 a conversation with CT Policing, with Mr Asman, about
22 the types of container that it might be, or the types of
23 thing that may have been collected, which is I think how
24 we started talking about make-up and I think by then we
25 probably knew that Dawn was more seriously ill than

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1 for analysis --

2 **A.** Yes.

3 **Q.** -- because of this discussion about --

4 **A.** I was worried about make-up.

5 **Q.** You thought that that might be the
6 explanation?

7 **A.** Yes.

8 **Q.** In fact, as you say, none of the contents of
9 the make-up bag were positive, but, as we have heard,
10 some days later the bottle was found on the kitchen
11 side.

12 **A.** It was even worse than that actually because
13 the make-up was really dreadful for analytical
14 instruments, so I was really unpopular following that as
15 well so ...

16 **Q.** I see. At that stage, 11 July, the bottle is
17 identified and of course it was presumably a high
18 priority then for testing.

19 **A.** Yes.

20 **Q.** You describe that in paragraphs 24 and 25 of
21 your statement and is this a fair summary, that when you
22 tested the content of the bottle you found not only --
23 and we can see those words again -- "A specific
24 Novichok", but the same specific Novichok as you had by
25 that stage identified in Charlie and Dawn's blood?

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1 Charlie Rowley was.

2 **Q.** I see. You mention in this paragraph first of
3 all you were -- as well as thinking about cosmetics or
4 make-up, you were also thinking about some sort of
5 applicator for what you understood to be a practical
6 purpose presumably?

7 **A.** Yes, because by then obviously we had
8 identified the door handle and you would have to imagine
9 that the people applying that to the door handle -- for
10 them to have not been seen must have been not in
11 personal protective equipment particularly, or at least
12 not visibly in personal protective equipment, and
13 therefore you would think that they would want something
14 that meant that their hands were unlikely to come into
15 contact with the material itself, so perhaps something
16 to apply it to the door handle.

17 **Q.** Yes.

18 **A.** I don't think this is anything specific,
19 I think it's common sense and not anything else
20 actually.

21 **Q.** All right. In any event -- and we're now at
22 the top of page 10 -- as a result of this discussion or
23 thought process on your part, you say that on 7 July, so
24 some days before the discovery of the perfume bottle,
25 Dawn Sturgess' make-up bag was recovered and submitted

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1 **A.** That's correct.

2 **Q.** Then if we go down to paragraph 25, by that
3 stage you were well advanced with testing the swabs from
4 all of the testing that was going on --

5 **A.** Yes.

6 **Q.** -- in the flat and so on, and we have seen the
7 diagrams and the sofa and the kitchen and so on.

8 **A.** Yes.

9 **Q.** Did those swabs contain traces of the same
10 Novichok as you had found both in the bottle and in
11 Charlie and Dawn's blood?

12 **A.** They did, and I think importantly in a lot of
13 cases they contained higher levels of Novichok than
14 perhaps we had seen in the previous incident.

15 **Q.** What did that tell you?

16 **A.** That there had perhaps been a less specific
17 application of it in the property. We were finding it
18 in a variety of rooms. As I said, you know, certainly
19 in the early days of swabbing at the Skripals' house at
20 Christie Miller Road, the levels were -- we were getting
21 a lot of negative samples in those days, whereas at 9
22 Muggleton Road when we were first sampling there we were
23 getting an awful lot of positive samples by comparison.

24 **Q.** Would that therefore be consistent with the
25 evidence we have now heard of that period of time where

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1 Dawn tried to open the bottle, perhaps half succeeded,
 2 and then, as we have heard, Charlie opened it, put it
 3 together and got it all over his hands, washed it off --
 4 **A.** Yes.
 5 **Q.** -- and then Dawn applied it to herself, so
 6 I think the words you describe was a less specific
 7 exposure?
 8 **A.** Yes, and potentially drips from that process
 9 as well that ended up in the flat.
 10 **Q.** Yes. Just to complete this then, if we could
 11 go to the top of page 11, we see you have said:
 12 "As the perfume bottle recovered from the kitchen
 13 is in my opinion the primary source of the Novichok
 14 nerve agent at 9 Muggleton Road, it is almost certain
 15 that the contamination of clothing and surfaces within
 16 the property are transfers of the material after
 17 Ms Sturges and Mr Rowley became contaminated with
 18 material from the bottle."
 19 Does that remain your opinion?
 20 **A.** Yes, it does.
 21 **Q.** Thank you. Yes, then just below that,
 22 paragraph 26, you refer there to a separate piece of
 23 testing in the bin in the Brown Street carpark in
 24 Salisbury. As we will come to hear, one of the places
 25 where Mr Rowley said that he thought he might have found

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1 **A.** Yes.
 2 **Q.** -- what view do you have about the likelihood
 3 of in that scenario the bottle of Novichok actually
 4 leaving any contamination on the bin?
 5 **A.** I think that had the -- there's so many ifs to
 6 this answer I'm afraid. If we assume that Mr Rowley's
 7 account that they -- that he gave that bottle in the box
 8 to Dawn the morning that she became ill, then we have to
 9 imagine that the outside of that box wasn't
 10 contaminated, or at least not heavily so at the point
 11 where he had recovered it.
 12 **Q.** Why is that?
 13 **A.** Because otherwise we would have expected him
 14 to have shown symptoms at some point before he did.
 15 **Q.** I think what you're saying is quite shortly
 16 after he picked it up?
 17 **A.** Yes.
 18 **Q.** Within a few hours of that?
 19 **A.** Yes. Therefore, I would assume that the
 20 bottle itself was reasonably well contained at that
 21 stage and then that makes it unlikely, in my opinion,
 22 that there would be contamination on the inside of that
 23 bin. It becomes even worse when we consider that
 24 potentially a long period had passed and many lots of
 25 rubbish had been emptied from that bin, and so I think

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1 the perfume was in one of those large waste bins --
 2 **A.** Yes.
 3 **Q.** -- in the Brown Street carpark. You describe
 4 in paragraph 26 testing. Was it -- one often sees
 5 photographs of two bins. Did you test two or just one?
 6 **A.** I believe we collected two.
 7 **Q.** Yes. We can read the paragraph. The answer
 8 was that the tests were negative.
 9 **A.** Yes.
 10 **Q.** We will come on to talk in a few minutes, but
 11 you of course by that stage had examined the bottle, its
 12 various parts, also the packaging that came with it.
 13 **A.** Yes.
 14 **Q.** We can assume perhaps that if the perfume had
 15 been left in one of those bins and that was where
 16 Mr Rowley found it, it would have been -- the bottle
 17 would have been within one or other or both of those
 18 plastic bags --
 19 **A.** Possibly.
 20 **Q.** -- and everything, the bottle and the bags,
 21 would have been inside the box. I quite understand that
 22 you can't say that for sure, but just for the
 23 purposes --
 24 **A.** Logically I would have expected so.
 25 **Q.** If one were to assume that --

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1 we knew from the outset that it was probably unlikely
 2 that we would find Novichok in that bin, but it was
 3 important to do the analysis.
 4 **Q.** Of course. Thank you. In grappling with the
 5 many hypotheticals and imponderables about where the box
 6 may or may not have been found, we will take that into
 7 account.
 8 I wanted to ask you just three more sets of
 9 questions relating to the Amesbury poisoning. The first
 10 comes back to what we described as the clean and dirty
 11 line.
 12 **A.** Yes.
 13 **Q.** We have mentioned it already with the
 14 Skripals, the temporal division, as it were. We have
 15 heard, and we talked this morning about the fact that in
 16 the Skripal case your testing assisted in establishing
 17 that as at something like 6 o'clock on the Saturday
 18 evening that the door handle was not contaminated
 19 because of the evidence around Maureen Cassidy and then
 20 the absence of contamination in the pick-up truck.
 21 **A.** Yes.
 22 **Q.** In Dawn's case were tests undertaken in places
 23 where Dawn had been, things that she had touched, that
 24 established a similar temporal clean/dirty line?
 25 **A.** Yes, so I think CT Policing did quite a rapid

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1 job of determining the movements of Dawn and Charlie on
 2 the Friday evening -- Friday daytime and Friday
 3 evening -- and established that they had been at Dawn's
 4 flat at John Baker House and at some time that evening
 5 had got a bus to Amesbury. So samples were collected
 6 from both Dawn's room at John Baker House and the bus
 7 was seized and brought to DSTL and was sampled at DSTL.
 8 All of the samples from both John Baker House and
 9 the bus were negative which I think gives us a line at
 10 about 10 or 11 o'clock on the Friday evening.
 11 **Q.** Yes, thank you. That was the first thing.
 12 The second thing is test results in Queen Elizabeth
 13 Gardens. As you have just mentioned, there was evidence
 14 relating to Dawn's movements the day before her symptoms
 15 developed on the Friday that included the fact that she
 16 had been in Queen Elizabeth Gardens that afternoon.
 17 **A.** Yes.
 18 **Q.** She went there with Charlie and some of their
 19 friends, and it was for that reason, was it not, that
 20 Queen Elizabeth Gardens came into focus?
 21 **A.** Yes.
 22 **Q.** And that there was testing there.
 23 **A.** Yes.
 24 **Q.** As you have mentioned, as the investigation
 25 progressed, there was convincing evidence that Dawn

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1 **Q.** Yes. If we could go, please, to the sample
 2 tracking document, so it's INQ006050, page 42, please.
 3 We see at the top of the page, MK26, can you see, the
 4 location is indeed Queen Elizabeth Gardens, in fact the
 5 Queen Elizabeth Gardens toilet. If we just cast our
 6 eyes down the page and looking at the locations of the
 7 sample and on the right-hand side the results, is this
 8 right, that this exercise in sampling -- and before we
 9 go any further we will see on the second column that
 10 these samples were all taken -- well, in late July, most
 11 of them on 20 July, 21 July.
 12 **A.** Yes.
 13 **Q.** What they showed -- in terms of the results
 14 from Queen Elizabeth Gardens -- they showed some very
 15 low results relating first of all to the men's and
 16 women's toilets, yes?
 17 **A.** Yes, that's correct.
 18 **Q.** And also -- and this is towards the bottom --
 19 one of the benches.
 20 **A.** Yes.
 21 **Q.** I think it's right to say that quite a large
 22 number -- five, six, at least benches were tested, but
 23 this is just one of them, bench 1.
 24 **A.** Yes.
 25 **Q.** Those are the grey very low results and then

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1 hadn't been contaminated herself on that day, the
 2 Friday.
 3 **A.** That's correct.
 4 **Q.** So that's the context. Having said that, as
 5 we will come to see, positive results were discovered in
 6 relation to some of the samples that were taken in Queen
 7 Elizabeth Gardens, were they not?
 8 **A.** Yes, they were.
 9 **Q.** We will go to them in a minute. Of course,
 10 the reason why it is of extra interest is there is at
 11 least a possibility -- and don't answer that at the
 12 moment because we will come back to that, but it at
 13 least has been suggested that the contamination that was
 14 found at that stage in Queen Elizabeth Gardens may have
 15 been the result of contamination four months or so
 16 earlier, in early March, on Sunday, 4 March, because, as
 17 we have seen and will certainly see more of this next
 18 week, Petrov and Boshirov on their second day in
 19 Salisbury, on the day of the poisoning, Sunday, 4 March,
 20 towards the end of their time in Salisbury they walked
 21 down Water Lane. That was the beginning of the
 22 so-called missing half an hour and it is at least
 23 possible that they at that point walked down Water Lane
 24 and into Queen Elizabeth Gardens; is that right?
 25 **A.** I believe so.

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1 between -- in the middle of them with a green result, so
 2 a low result, but higher obviously than the very low
 3 results, we can see that that is a swab of a cabinet
 4 prior to opening one of the results, the cable tie?
 5 **A.** Yes.
 6 **Q.** That brings us back to the discussion we were
 7 having earlier. That would have been one of the
 8 cabinets with the gloves inside that were used for the
 9 testing process?
 10 **A.** Yes.
 11 **LORD HUGHES:** That's back at the ranch, as it were?
 12 **A.** Absolutely. Absolutely.
 13 **MR O'CONNOR:** I will ask you to help us with this,
 14 MK26. There has obviously been some form of
 15 contamination of your equipment that you would not
 16 expect to see.
 17 **A.** I would agree.
 18 **Q.** What are your views about the extent to which
 19 that contamination of the cabinet may, in fact, explain
 20 either or both of the sets of results relating to the
 21 toilets and the bench?
 22 **A.** Okay, so I will try and -- I will take this
 23 slowly, I think. At the top of that page, the first
 24 sample that's there is a toilet control swab from QEG
 25 men's toilet which will be a swab that was taken into

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1 the toilets and not wiped across any surfaces, so it's
2 just a true control actually for that environment.

3 The one immediately below that is a swab of our
4 cabinet prior to unpacking that set of samples. That
5 swab is negative. Then all of the samples from that
6 batch of samples, which goes down as far as 1452,
7 I believe, were then opened and unpackaged in that
8 cabinet. As you have rightly said, there are four very
9 low-level positives listed there, one of which is the
10 ladies' toilet control swab, which is the one that will
11 have been taken into the ladies' toilet, not opened, not
12 wiped across any surfaces.

13 I think that part of it in isolation suggests to me
14 that it is possible that there was low-level
15 contamination in the toilets in Queen Elizabeth Gardens.
16 Equally, we've got an unexpected positive in a control
17 swab and that throws doubt into my mind, particularly in
18 a swab that was taken into that environment and then
19 brought back out again and shouldn't -- but hadn't
20 actually been wiped across that environment, as to
21 whether or not that was contamination.

22 Having said that, the fact that in that particular
23 batch of samples the cabinet swab was uncontaminated
24 gives me some confidence that those results may be real.

25 **Q.** Can I just interrupt you, I don't want to

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1 **Q.** So when you say "in this instance" do you mean
2 the toilets?

3 **A.** Yes.

4 **Q.** All right. Because -- am I right that we
5 haven't come onto the green cabinet?

6 **A.** No, which is a different scenario, I think.

7 **Q.** Is there anything more to say about the
8 toilets?

9 **A.** No. I think what I would add is that there
10 are scenarios that could explain a low-level positive
11 result in Queen Elizabeth Gardens toilets four months
12 later from March, one of which, as you have indicated,
13 perhaps you will discuss with Commander Murphy next
14 week, includes that the two Russian suspects had been in
15 that area after having been to the Skripal address.

16 I also think it's not inconceivable that someone
17 who had perhaps attended to the Skripals had then gone
18 to Queen Elizabeth Gardens toilets on their way
19 perhaps -- there's a carpark next to it -- back to their
20 car and had deposited a low-level of contamination that
21 we were still able to find a few months later. I think
22 what I'm saying is that from these results we can't tell
23 what the source of that material is in this instance.

24 **Q.** But I think what you are saying is it's
25 perfectly plausible that those very low results were

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1 break your flow or make things more complicated as
2 I hope I won't.

3 **A.** No, it's okay.

4 **Q.** Just going back to your description about how
5 the process worked, I think you were at pains to
6 emphasise that the jars containing the swabs and/or the
7 water, when they were inside the cabinet in the shaker,
8 were sealed.

9 **A.** Yes.

10 **Q.** How is it that it might be possible for
11 contamination -- cross contamination inside the cabinet
12 to affect the samples in any way?

13 **A.** In this instance, I don't think this was cross
14 contamination in a cabinet. I think if anything it may
15 have been cross contamination within the scene.
16 You know, our teams and the police teams had all been to
17 multiple scenes by that time. I should also say that
18 a very low-level is at a level many, many times below
19 any kind of level that we would expect to show an
20 effect. So our tests are so sensitive -- and
21 particularly by this stage we had refined that method so
22 much that we were detecting down to such low levels.
23 I don't -- in this instance, I don't think this will
24 have been laboratory contamination, but it could have
25 been scene contamination between one scene and another.

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1 true very low results?

2 **A.** I think it's possible.

3 **Q.** You mentioned someone who had attended to the
4 Skripals. I think you are not there talking about one
5 of the emergency services perhaps who had a high profile
6 role in the events, but possibly --

7 **A.** A member of the public.

8 **Q.** Is it important to understand that -- I think
9 we have heard other evidence to this effect, that very,
10 very low levels of exposure to Novichok may not cause
11 any symptoms at all?

12 **A.** Absolutely, and it's one of the reasons, when
13 I described earlier, that we were testing everyone that
14 crossed into a scene for cholinesterase inhibition is
15 because that test enables us to detect much, much below
16 where we would expect someone to show symptoms, so it
17 gives us an indication that they have been exposed.

18 **Q.** One thing we certainly know is there was
19 really quite a lot of Novichok in different places in
20 Salisbury, certainly with secondary contamination.

21 **A.** Yes.

22 **Q.** We're now talking about July, so between the
23 time of March and July, are you positing the possibility
24 that someone, possibly without even knowing it, may have
25 had a very low-level of Novichok on their skin, used the

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1 toilets and that is what might have caused this?
 2 **A.** Or maybe not even their skin, maybe their
 3 shoes, you know. They could have walked it in there.
 4 There's a number of options, I think.
 5 **LORD HUGHES:** What would they have -- where would
 6 they have had to have been before -- for example, would
 7 it be enough if they had been in Zizzi's.
 8 **A.** Possibly, possibly.
 9 **LORD HUGHES:** I see.
 10 **A.** I don't remember whether we did samples from
 11 the floor of Zizzi's, sir, but we definitely did samples
 12 from the floor beneath where the Skripals were sitting
 13 in The Mill and there were low levels of contamination
 14 on the floor there.
 15 **LORD HUGHES:** I see.
 16 **MR O'CONNOR:** Just before we move on --
 17 **A.** Shall we do the bench?
 18 **Q.** We will, but I don't think you're saying that
 19 the type of hypothesis we have just mentioned about
 20 someone picking up some low-level contamination on their
 21 feet and then going to the toilets -- you're not saying
 22 that's somehow more likely than --
 23 **A.** No.
 24 **Q.** -- for example Petrov and Boshirov actually
 25 using that location to move their Novichok around,

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1 contamination in the cabinet because the cabinet swab
 2 contamination is at a higher level than that from the
 3 cable tie.
 4 **Q.** I see. So the cable tie is secondary
 5 contamination --
 6 **A.** I believe so, in that case.
 7 **Q.** -- on that understanding.
 8 **LORD HUGHES:** Cross contamination.
 9 **A.** I think so.
 10 **MR O'CONNOR:** That, I think, is your explanation
 11 for the --
 12 **A.** Cable tie.
 13 **Q.** -- green line, if I can put it that way, and
 14 the line immediately above it.
 15 **A.** Yes.
 16 **Q.** Does that link -- where does that leave the
 17 three very low readings, the control bench and then the
 18 swabs from the bench itself further down?
 19 **A.** I think what I would say about those is that
 20 the cabinet swab, prior to the unpacking for those, is
 21 uncontaminated, there's a negative result there, and so
 22 while on the face of it that suggests that they may be
 23 real results, I think I would now have doubt, partly at
 24 least because what we're talking about here is the
 25 swabbing of a bench which, as we have discussed, is

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1 you're simply saying that any of those things are, from
 2 a scientific point of view, possible?
 3 **A.** Yes.
 4 **Q.** Right. Then can we move onto the bench and
 5 back to the subject of cross contamination.
 6 **A.** Yes, so I think the bench result is much more
 7 of an issue in terms of it being much more likely in my
 8 opinion to be the result of low-level contamination in
 9 our cabinet, and for context by 24 July -- no, sorry, by
 10 the time we were opening that cabinet swab -- that swab
 11 of the cable tie -- so the cable tie was submitted to us
 12 on the 20th but was opened in the cabinet on 24 July,
 13 and therefore the cabinet swab was taken on 24 July, and
 14 by that time we had received many samples from Muggleton
 15 Road, we had received clothing from both Dawn and
 16 Charlie that was very heavily contaminated with Novichok
 17 and therefore was much above the levels of contamination
 18 that we had seen on all but the door handle actually
 19 from the Skripal address and so it was very, very
 20 difficult to be cleaning the laboratory and so there are
 21 a few instances of low-level cabinet swab
 22 contamination -- and this is an example of one -- and
 23 for me that result where the cabinet result is at low
 24 and the swab from the cable tie is at very low, the most
 25 plausible explanation for that one is that that was

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1 quite a difficult surface to sample from. My concern
 2 would be that that may -- those three results there from
 3 the bench may also be the results of low-level cross
 4 contamination.
 5 **Q.** From the same cross contamination?
 6 **A.** They're different cabinets --
 7 **Q.** Right, so no?
 8 **A.** -- so probably not.
 9 **Q.** Your concern about those entries is simply --
 10 **A.** It's simply the levels that I know we were
 11 seeing by that point in July actually and therefore it
 12 makes me concerned about very low-level results in
 13 isolation.
 14 **Q.** I see. I don't want to labour this.
 15 **A.** I know.
 16 **Q.** But are there reasons why you are concerned
 17 about those three bench readings at the bottom of the
 18 page that don't apply to the toilets?
 19 **A.** No, I think the bench -- sorry, I think the
 20 toilet result, it is possible that that is also the
 21 result of contamination because again we've got very
 22 low-level results without a specific indication that
 23 there's a problem.
 24 **Q.** You don't -- as you said with the toilet, the
 25 control swab was clear.

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1 **A.** It was, it was. It's just enough to cause me
2 doubt --
3 **Q.** I see.
4 **A.** -- on those cases because I know the levels of
5 material that we were seeing by that stage and the
6 difficulty was to clean between batches of samples and
7 ensure that everything was clean.
8 **Q.** All right. Maybe just finally on this point,
9 you are making a general point about the sort of accrued
10 cleanliness of the cabinets by that stage. Is that
11 a concern which only applies to very low results and
12 when you see the higher results from Muggleton Road, for
13 example, is there any doubt in your mind about those?
14 **A.** No, there's no doubt in my mind, but I think
15 the reality is that everything changed once we started
16 analysing samples from Muggleton Road and we will
17 probably come to -- we will come to the bin and its
18 contents shortly, I expect, but also the clothing from
19 Dawn and Charlie which, as I have already suggested, was
20 so far above anything we had seen in that period
21 between March and June that it was very, very difficult
22 to ensure that we had completely cleaned all traces of
23 Novichok in between sets of samples, whilst still
24 maintaining the tempo of operations that we were trying
25 to support.

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1 happened.
2 **Q.** Yes. Now, I'm going to ask you some questions
3 about the issues covered in this document, certainly not
4 all of them, some of them the answers are clear and
5 really one can simply read what is said there. Let me
6 ask you this first of all: many of the questions relate
7 to the different components of the bottle --
8 **A.** Yes.
9 **Q.** -- and their size and their practicability and
10 exactly how they work. Can you tell us how did you go
11 about answering those questions, in particular were you
12 using the actual bottle or not?
13 **A.** The bottle as submitted to us came as a small
14 glass bottle with a silver collar that we know to be the
15 pump and then a white long -- maybe, I don't know,
16 10-centimetre long -- applicator that was attached at
17 the top and by pushing down on that applicator liquid
18 was dispensed from the bottle. That was how it arrived.
19 We also know -- and Commander Murphy talked about
20 this in the hearings in Salisbury -- that a small yellow
21 orange cap was also recovered from the kitchen at 9
22 Muggleton Road.
23 **Q.** Yes. I'm just going to interrupt you. We
24 will come on in more detail to those.
25 **A.** Okay.

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1 **Q.** All right. Let me come on, if I may, to
2 a separate matter, although we're still talking about
3 the Amesbury poisoning, and if we could have on screen,
4 please, INQ005154. This is a document, as we can see,
5 entitled "Questions for DSTL".
6 **A.** Yes.
7 **Q.** They were questions sent to DSTL by -- I think
8 we can see in the top left-hand corner -- Counter
9 Terrorism Police?
10 **A.** Yes.
11 **Q.** No doubt it was sent in soft copy because in
12 fact what we have, is this right, is both the questions
13 that were sent to DSTL and the answers that were sent
14 back by DSTL?
15 **A.** Yes, that's correct.
16 **Q.** I think it's the case -- you tell us -- that,
17 in fact, the answers on this document were entered by
18 you?
19 **A.** They were.
20 **Q.** Was it, in fact -- were you part of a team
21 that came up with these answers or were they, in fact,
22 your answers?
23 **A.** These were answers prepared by me following
24 discussion with our scientists in the laboratory who had
25 been in close contact when the examination of the bottle

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1 **Q.** You mentioned in the document a model, I just
2 wanted to find out -- did you then make a model?
3 **A.** Yes, so from the measurements that were taken
4 in the laboratory, we had a few different 3D -- models
5 3D printed, none of which looked particularly like the
6 bottle, I will be honest, and are all kind of white
7 opaque -- white or cream opaque plastic, but what they
8 enabled us to do was to consider the size and shape of
9 the bottle.
10 **Q.** Obviously you could sort of manipulate those,
11 hold them in your hands, the model --
12 **A.** Yes.
13 **Q.** -- and perform sort of experiments with them
14 that you couldn't do with the original bottle, I take
15 it, because it was so dangerous?
16 **A.** Yes.
17 **Q.** You have described those four components of
18 the bottle.
19 **A.** Yes.
20 **Q.** Looking at the answers to some of your
21 questions, the questions on this document, you were
22 being asked about how the bottle worked and in
23 particular how it was sealed.
24 **A.** Yes.
25 **Q.** Can I summarise and ask if you agree with

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1 this. As I understand it, the answers you were giving
 2 led to the conclusion that the bottle would be sealed,
 3 if you like, in -- could be sealed in two ways: one if
 4 the -- if what you described as the collar or the pump,
 5 the silver component, was screwed on to the bottle?
 6 **A.** Yes.
 7 **Q.** As I understand the answers you gave there,
 8 that would effectively seal the bottle?
 9 **A.** I believe so.
 10 **Q.** That would be one way of doing it.
 11 **A.** Yes.
 12 **Q.** The lid that you mentioned, it doesn't fit
 13 over the --
 14 **A.** No.
 15 **Q.** -- over the collar, over the applicator?
 16 **A.** No.
 17 **Q.** One would have to -- sorry, I don't mean the
 18 applicator, I meant the collar or the pump.
 19 **A.** No, it doesn't.
 20 **Q.** One would have to remove that, but then
 21 perhaps obviously with the lid on the bottle, that would
 22 be a second way of sealing the bottle.
 23 **A.** Yes.
 24 **Q.** Is that right?
 25 **A.** Yes.

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1 **A.** Yes.
 2 **Q.** -- on page 26. I take it that is what you had
 3 in mind?
 4 **A.** Yes, that's it.
 5 **Q.** If we could just briefly go back, please, to
 6 INQ005126, page 6. We are familiar with this, of
 7 course, but just so there's no confusion, the
 8 applicator, the white plastic extending component at the
 9 top.
 10 **A.** Yes.
 11 **Q.** Detachable?
 12 **A.** Yes.
 13 **Q.** At the bottom, the bottle?
 14 **A.** Yes.
 15 **Q.** But between the two of them, the silver
 16 component can be described as a collar --
 17 **A.** Yes.
 18 **Q.** -- but from what you have said and certainly
 19 the questions in that document, within it is the pump
 20 mechanism?
 21 **A.** Yes, so I would describe it as if you were to
 22 take a normal perfume or aftershave bottle and pull off
 23 the spray at the top and then what you have underneath
 24 is a small tube that the spray attaches to, when you
 25 remove the white applicator, there's a tube that the

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1 **LORD HUGHES:** You put that on instead of the
 2 collar, could you, if you wanted to?
 3 **A.** Yes.
 4 **MR O'CONNOR:** I'm going to go to a different
 5 document, but if we just -- before we leave this one, at
 6 the very bottom of that page can you see below the
 7 number 4 there's a question about nerve agent readings
 8 from the outside of the bottle and the answer you gave
 9 is:
 10 "The outside of the bottle was not tested as it had
 11 already been handled by DS and CR ..."
 12 Presumably Dawn and Charlie?
 13 **A.** That's right.
 14 **Q.** But then you say this:
 15 "The outside of the bottle has been sent for DNA
 16 testing."
 17 **A.** We took swabs from that bottle and, as with
 18 the previous DNA swabs, Mr Asman is better placed to
 19 talk about the results from that work than I am.
 20 **Q.** Fine. Well, I was going to ask whether you
 21 knew the outcome of those tests, but we can ask Mr Asman
 22 tomorrow.
 23 Could we go, please, to INQ005133, page 11. You
 24 mentioned as one of the components of the bottle the
 25 lid --

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1 applicator was attached to that's part of that pump. So
 2 I would say it operates very similarly to a perfume
 3 bottle, which is why the item with the applicator
 4 removed would be relatively safe. I say "relatively" in
 5 that the material wouldn't be flowing out of it. It
 6 would still be hazardous, I would suggest.
 7 **Q.** Yes, certainly. I think the important point
 8 that, as I understand it, is one could be looking at the
 9 silver component, one could be forgiven for thinking
 10 that's simply just a bit of silver plastic or whatever
 11 it is, there's nothing inside it. What you're telling
 12 us is that it does contain part of the workings of the
 13 bottle?
 14 **A.** Yes, and a tube that you can't actually see
 15 very well in that picture that obviously goes down into
 16 the liquid.
 17 **Q.** Yes. Holding that thought, I would just like
 18 to ask you about the packaging. We have seen pictures
 19 of the box -- in fact, we saw them on the picture with
 20 the lid there, we're familiar with that.
 21 **A.** Yes.
 22 **Q.** Could we go to INQ005133, page 7, please. Do
 23 you see at the bottom of the page, MK26, there are those
 24 two -- the two pictures of the two bits of plastic
 25 packaging, the plastic bags, call them what you will?

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1 **A.** Yes. These were recovered from a plastic
2 carrier bag that was being used as a bin bag in the
3 kitchen at 9 Muggleton Road.
4 **Q.** Yes. Would it be right to think of it -- in
5 terms of -- we have talked about the bottle, those four
6 components.
7 **A.** Yes.
8 **Q.** In terms of the packaging, it's the box plus
9 those two bits of plastic?
10 **A.** I believe so.
11 **Q.** Obviously the question of exactly what was
12 inside what and how it was packed is not for you.
13 **A.** No.
14 **Q.** But then moving, as you have suggested, to
15 where these various things were found, we know, of
16 course, that the bottle with its pump, collar and
17 applicator were found on the kitchen sideboard --
18 **A.** Yes.
19 **Q.** -- near the sink. Is it right -- you have
20 mentioned the bags, but in fact not just the bags but
21 the bags and the box and the lid were all found in that
22 sort of plastic bag/bin on the floor?
23 **A.** Yes, that's correct.
24 **Q.** In fact, if we move on to page 10 of this same
25 document, please, do we see there on the left-hand

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1 The two plastic packets that you showed a moment
2 ago were also contaminated and there is a -- I think on
3 the page that we had previously, there's a suggestion
4 that the inside of one was contaminated at a higher
5 level to the inside of the other and I think that's
6 absolutely true. However, I don't think I would reach
7 the conclusion, when you consider all the other results
8 from that bin, that that means that one item or another
9 from the bottle was more likely or less likely to be in
10 that container.
11 I think the problem is -- and Commander Murphy
12 referred to this as bin juice in an earlier hearing --
13 that bin had, as well as obviously cans that had
14 probably had some liquid in, there was a decomposing
15 banana skin in there that was all contributing to this
16 decomposing material that was coating all of the items
17 in that bin. Unfortunately, I think the cap, the yellow
18 cap was probably the primary source of the Novichok, but
19 that ended up all over the contents of the items in that
20 bin and I think it makes it impossible to draw
21 meaningful conclusions about those two plastic packages.
22 **Q.** Just to be clear, where -- we are now talking
23 about difficulties in interpreting the readings, we're
24 not talking about cross contamination --
25 **A.** No.

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1 side --
2 **A.** Yes. Yes. So the box, I believe, was just
3 behind. It's underneath that yellow --
4 **Q.** I think you can actually see that on the
5 floor.
6 **A.** Yes. There, that's better. It was outside of
7 the bag and I believe it had a crumpled up bus ticket
8 from the evening before.
9 **Q.** Yes. That's on the floor but then the bag
10 just next to it, did that contain the lid and the pieces
11 of plastic?
12 **A.** Yes, and various other items.
13 **Q.** Of course. There may be some discussion about
14 the levels of contamination found, for example, on the
15 lid or those plastic bags.
16 **A.** Yes.
17 **Q.** What confidence do you have in the
18 contamination readings that were taken from items that
19 were found in that rubbish bag?
20 **A.** I think interpretation of the information from
21 the rubbish bag is really challenging. All of the
22 items, from memory, that were recovered from that bag,
23 which includes empty beer cans, I think a wine bottle,
24 that you wouldn't see any reason to be related in
25 themselves to this, were contaminated with Novichok.

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1 **Q.** -- or anything wrong with the readings that
2 you took.
3 **A.** No.
4 **Q.** But what you are saying is that the accurate
5 readings you took don't necessarily reflect the amount
6 of Novichok that was or wasn't on those items at an
7 earlier stage?
8 **A.** Yes. So if, for example, the box had been
9 recovered with the items still in it, or not in a bag,
10 or if the two plastic packages hadn't been discarded
11 into a bag with the yellow cap, we may have been able to
12 draw something meaningful, but the circumstances here
13 I think make it impossible.
14 **Q.** I see, yes. If they had been put like the box
15 on the floor separately --
16 **A.** Yes.
17 **Q.** -- and then recovered separately, each put in
18 exhibit bags and brought to you, then at the very least
19 the position would be different --
20 **A.** Yes.
21 **Q.** -- because you wouldn't be concerned that
22 Novichok from the lid or somewhere else may have got
23 mixed up?
24 **A.** Mm-hm. Even in the picture actually what you
25 can see there is quite dirty liquid inside those bags

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1 that for me is a real indicator that this is decomposing
 2 material from the bin that's spread throughout the
 3 packages and -- throughout the items.
 4 **Q.** All right, thank you. I want to move on to
 5 another subject and it involves us going back in time,
 6 so we started by discussing the Skripal poisoning and
 7 your work in March and following. We then went forward
 8 to the very end of June and July and we were looking at
 9 Queen Elizabeth Gardens in fact in late July.
 10 **A.** Yes.
 11 **Q.** I now want to go back to May.
 12 **A.** Yes.
 13 **Q.** Because it's right, isn't it, that in
 14 early May 2018, there was some of the type of testing we
 15 have just been discussing that took place not in
 16 Salisbury -- or rather sampling that took place not in
 17 Salisbury or Amesbury, but in London?
 18 **A.** Yes.
 19 **Q.** The first -- well, one of the places where
 20 that took place was at the City Stay Hotel in east
 21 London.
 22 **A.** That's correct.
 23 **Q.** If we go back to your witness statement,
 24 please, INQ005923, to page 19. It is this section of
 25 your witness statement which discusses this part of the

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1 stage it was two months after the time when it was known
 2 that Petrov and Boshirov had been in that hotel room and
 3 so for all the reasons we discussed earlier in terms of
 4 persistency -- not so much the weather, but cleaning,
 5 other people being in the room, you must have thought
 6 immediately that it would be a challenging sampling
 7 exercise?
 8 **A.** Yes.
 9 **Q.** Is this fair, a good chance that if you found
 10 anything it would be at trace levels?
 11 **A.** Yes.
 12 **Q.** In light of those two factors, was the
 13 sampling on the scene and/or the analysis back at Porton
 14 Down conducted in a different way to the testing we have
 15 discussed so far?
 16 **A.** Yes. I think in preparation for -- if we were
 17 to find anything at all, it was likely to be results at
 18 trace levels. I suggested some additional measures.
 19 I guess this would start with the sampling team who wore
 20 double layers of gloves and changed gloves between every
 21 sample -- changed their outer layer of gloves between
 22 every sample that they collected to reduce the
 23 likelihood of them moving material, if there was any,
 24 around the room.
 25 In terms of our preparations to receive the samples

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1 investigation.
 2 **A.** Yes.
 3 **Q.** Now, we're all familiar with where this fits
 4 in to the facts of the case. This was the hotel where
 5 Petrov and Boshirov had stayed in March.
 6 **A.** Yes.
 7 **Q.** So two months or so earlier than early May.
 8 As you describe in your witness statement, no doubt
 9 there came a time where Commander Murphy or someone told
 10 you about the possibility of samples being taken in that
 11 hotel?
 12 **A.** Yes.
 13 **Q.** As you describe, at least two things would
 14 have been immediately obvious to you: one is the
 15 potential significance of this testing in the scheme of
 16 the investigation.
 17 **A.** Yes.
 18 **Q.** It wasn't another scene in Salisbury?
 19 **A.** No.
 20 **Q.** This was something quite different and
 21 potentially very important to the criminal
 22 investigation.
 23 **A.** Yes, and no reason, as far as we were aware,
 24 for Novichok to be present.
 25 **Q.** Yes. Secondly, as we have mentioned, by this

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1 back at DSTL we put additional cleaning into the
 2 cabinets, we took additional cabinet swabs and we also
 3 swabbed some of the other items that were used in the
 4 extraction process. That was really to try to provide
 5 assurance that there -- that if we got a positive
 6 result, that it was a real positive.
 7 **Q.** Yes, all right. I'm just looking for the
 8 number. Don't worry.
 9 Just going back to the testing, it was in the hotel
 10 room --
 11 **A.** Yes.
 12 **Q.** -- and an en suite bathroom?
 13 **A.** Yes.
 14 **Q.** There were 30 swabs that were used in that
 15 process?
 16 **A.** Yes, it was 29 plus a control.
 17 **Q.** A control -- you mentioned that in the loos in
 18 Queen Elizabeth Gardens.
 19 **A.** Yes.
 20 **Q.** Was that simply a swab that was brought into
 21 the room and exposed to the air?
 22 **A.** It just wasn't even exposed to the air. It
 23 was just brought into the room.
 24 **Q.** That was the control.
 25 **A.** Yes.

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1 Q. Then 29 that were actually swabbed in various
2 places within the room and the bathroom.
3 A. Yes.
4 Q. I think we see from your statement that of
5 those 29 effective swabs, there were two that in fact
6 ultimately produced a positive result?
7 A. Yes.
8 Q. Which were those?
9 A. Those were from a window latch and one from
10 the sink in the en suite bathroom.
11 Q. We may go back to this, but in general terms
12 what level were those positive results?
13 A. They would be a very low-level.
14 Q. They're not actually in the -- that sample,
15 the sample tracking document.
16 A. No.
17 Q. But had they been, would they have been
18 grey --
19 A. Yes.
20 Q. -- like the Queen Elizabeth Gardens ones we
21 saw?
22 A. Yes, they would.
23 Q. Which is the lowest level --
24 A. That we would report.
25 Q. -- on the calibration above the white and the

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1 A. Yes.
2 Q. What you have already told us, those two swabs
3 very low but still positive readings:
4 "All other samples from the City Stay Hotel were
5 negative for the presence of the specific Novichok nerve
6 agent. All cabinet and fume cupboard swabs were also
7 negative for the presence of Novichok nerve agent."
8 Then perhaps one inserts the word "However"?
9 A. Yes.
10 Q. "The swab taken from the shaker used in the
11 extraction indicated the presence of trace levels of
12 Novichok at levels similar to that seen from the two
13 positive hotel room samples."
14 In broad terms, is this fair, had this been
15 replicated on one of those sample tracking documents, we
16 would be in similar territory to where we were with the
17 Queen Elizabeth Gardens, simply in the sense that one
18 would see what looked like positive results from the
19 sampling exercise itself, but then a glitch, a positive
20 result where one hadn't expected to see it from the
21 laboratory equipment?
22 A. Yes.
23 Q. The question is: does the positive result from
24 the shaker suggest that there may have been a cross
25 contamination which affected the result which appeared

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1 negative results.
2 A. Yes.
3 Q. Yes. That was obviously a very significant
4 outcome in terms of the police investigation.
5 A. Yes.
6 Q. No doubt you would have expected and hoped
7 that all of the surrounding swabs in relation to the
8 assurance exercise were negative and that would have
9 simply left you with two positive swabs from the room
10 and nothing to suggest that anything had gone wrong with
11 the process itself.
12 A. Yes.
13 Q. In fact, it wasn't quite like that, was it?
14 A. No.
15 Q. If we can go to the next page of your
16 statement and we go about 10 or 15 lines into
17 paragraph 40 -- yes, so just above the bottom of the
18 screen there can you see a line starting
19 "Concentrations", MK26?
20 A. Yes.
21 Q. Reading on from there, you say:
22 "The swab from the window latch and that taken from
23 the bathroom sink were positive for the specific
24 Novichok nerve agent at levels close to the limit of
25 detection of the instruments used for the analysis."

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1 to be produced from the window sill and the bathroom
2 sink?
3 A. So as I'm sure -- as I'm sure you can imagine
4 I have thought about this a lot and I thought about this
5 a lot at the time. I believe that the results from the
6 hotel room are real positive results and I can set out
7 my rationale for why I think that's the case.
8 As you have said, quite rightly, the control sample
9 from the room that was unopened was negative, as were
10 the fume cupboard and cabinet swabs where we unpacked
11 and did the initial processing of all of the hotel room
12 swabs. All of those were negative, as were all the
13 blank samples that were run between the hotel room swabs
14 on our instruments, all were negative.
15 Earlier on, at the start of this hearing, I talked
16 about the shaker, I talked about it as a large
17 instrument with almost like hands that hold the pots
18 that contains the swabs. The swabs when they go onto
19 that shaker are in glass jars and they're wrapped with
20 a material called parafilm, which is a flexible sort of
21 plastic material that seals the jar and ensures that
22 it's an airtight seal on that jar.
23 My thinking is that I cannot conceive that the
24 contact from that shaker to that jar has transferred to
25 the inside of the swab -- inside of the container and

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1 therefore to the swab and the sample, particularly in
2 the context that that swab sample from the shaker that
3 was positive is at a level that's so similar to the
4 levels that we saw from the hotel room.

5 If it had been even a bit higher, or substantially
6 higher, I would have more doubt because that would cause
7 me to question again whether it was possible, still
8 against that context of I cannot conceive of how that
9 contamination can have got into those jars. In my
10 opinion, the samples from the hotel room are true
11 positives and not the result of laboratory
12 contamination.

13 **LORD HUGHES:** What's happened to the shaker?

14 **A.** Oh, the shaker was then cleaned.

15 **LORD HUGHES:** No, no, but how has the shaker got on
16 it whatever it has got on it, or might it have got on
17 it?

18 **A.** Well, may have got on it, or may have been
19 a small amount of contamination because of the low
20 levels that we're in that was transferred at some other
21 stage of the preparation into that sample.

22 **LORD HUGHES:** Yes, I see.

23 **MR O'CONNOR:** The shaker was contaminated, there's
24 no doubt about that.

25 **A.** Yes.

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1 Miller Road. Those were collected and were handled in
2 a very controlled manner. Everything else that came
3 from the scenes in relation to the Salisbury poisoning
4 were at a much lower levels than the items that we were
5 then subsequently recovering from 9 Muggleton Road .

6 I think the difference in time between the Queen
7 Elizabeth Gardens samples in July, which were taken once
8 we were already into Muggleton Road, versus the samples
9 from the City Stay Hotel, which were done in May when we
10 had only dealt with the most contaminated area being the
11 front door handle, meant that there was much better
12 control of that contamination, or much less likelihood
13 is probably a better way of putting it, of there being
14 laboratory contamination.

15 **Q.** Although, of course, we do know that the
16 shaker was contaminated. You're not suggesting
17 that's --

18 **A.** No, I'm not, but I think that was at such
19 a low -- it was at a very low-level, but -- and was also
20 sporadic. I went back actually and checked through all
21 of the cabinet results from that period and they're all
22 negative also. You know, there was not a widespread
23 contamination problem -- widespread laboratory
24 contamination problem in May. It became much more
25 challenging in July.

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1 **Q.** It shouldn't have been?

2 **A.** No.

3 **Q.** But your logic, as I understand it, is first
4 of all -- you have just -- the contamination on the
5 shaker, you cannot see how that could have got into the
6 bottle?

7 **A.** No.

8 **Q.** Secondly, it's about the differential levels
9 of contamination because, as I think I have understood
10 when we were talking earlier about Queen Elizabeth
11 Gardens, there the contamination of the equipment was at
12 a higher level --

13 **A.** Yes.

14 **Q.** -- than the suspect readings which is
15 consistent with secondary contamination?

16 **A.** Or transfer in some way, yes.

17 **Q.** Transfer, all right, and I think that's the
18 point you're making, that here if the two levels are
19 similar, that doesn't suggest, or isn't compatible with
20 the transferred contamination?

21 **A.** The other thing I would add, which I alluded
22 to when we were talking about Queen Elizabeth Gardens,
23 that at this point in May the highest levels of samples
24 that we had seen were from swabs collected from the
25 front door handle of the Skripal house at Christie

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1 **Q.** Yes. Well, MK26, you have set out much of
2 that reasoning in your witness statement. If we could
3 go over to page 21 and towards the end of that
4 paragraph -- that lengthy paragraph, that's it, so at
5 the end of that reasoning which, as I say, is really
6 similar to that which you have explained orally, you
7 say -- we can pick it up three lines from the end:

8 "It is therefore my opinion that the data obtained
9 from the window latch and bathroom sink are robust and
10 reliable, with the likelihood that these are the results
11 of cross contamination being remote."

12 Then if we could go down to the bottom of the page,
13 because you use the word "remote" in a technical --
14 sense.

15 **A.** Yes.

16 **Q.** -- the professional head of intelligence
17 assessment yardstick?

18 **A.** For want of a better way of expressing
19 uncertainty really.

20 **Q.** You're a scientist, MK26, you wouldn't want
21 just to rely on language.

22 When you say "remote" there, what you are intending
23 to convey is a less than 5 per cent chance?

24 **A.** Yes, so I think I'm -- if we turn it the other
25 way round, I'm 95 per cent confident that that is the

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1 case, that it is the case that the results from the
 2 hotel room are real.
 3 **Q.** Yes. Just a few final questions on this issue
 4 and then I may suggest that we have a short break. You
 5 describe in your statement that there was a second
 6 exercise, a repeat sampling of the room.
 7 **A.** Yes.
 8 **Q.** Was that partly because of -- was that at
 9 a time when these concerns had already arisen about
 10 possible cross contamination?
 11 **A.** No, it was more -- well, it was a number of
 12 things actually. It was to see whether or not we could
 13 find further confirmation -- further confirmatory
 14 samples, if there was other areas of contamination. The
 15 first set of samples had focused on likely touch points
 16 in the room, so things like light switches and taps and
 17 those sorts of things. The second sampling really
 18 focused on those areas where we had already found the
 19 positives, so we were just looking for further
 20 corroboration really and for completeness.
 21 **Q.** In fact, as you explain in your statement, the
 22 results of that second exercise were negative -- were
 23 entirely negative --
 24 **A.** Yes.
 25 **Q.** -- including from the window latch and

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1 there, they brought it there?
 2 **A.** Yes.
 3 **Q.** Presumably potentially at a higher level given
 4 the passage of time?
 5 **A.** Yes.
 6 **Q.** One thing we do know is that later in the
 7 year, I think it was September, Boshirov and Petrov
 8 appeared on television, we have seen the video, we will
 9 see it again.
 10 **A.** Yes.
 11 **Q.** Is there any inconsistency between your
 12 findings of Novichok in their room, which we assume was
 13 there in March, you found in May on the one hand, and
 14 them appearing perfectly healthy in September?
 15 **A.** Not at all and I think we have talked about
 16 this in various ways actually, one being that exposure
 17 to cholinesterase inhibitors can be at such a low-level
 18 as to not cause symptoms and therefore they may never
 19 have experienced symptoms.
 20 If they had done some manipulation of the bottle in
 21 the City Stay Hotel you would imagine they were wearing
 22 some kind of PPE at that point in order to protect
 23 themselves, and so maybe the transfer happened from the
 24 PPE rather than from them themselves. You know, I think
 25 there are a number of explanations, but it doesn't

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1 bathroom sink areas that you had previously obtained the
 2 positive from.
 3 **A.** Yes.
 4 **Q.** Does that alter your assessment, your
 5 95 per cent confidence about the truth, or the validity
 6 of those earlier readings?
 7 **A.** No, it doesn't change my assessment because
 8 the levels that we found on that first sampling visit
 9 were very low and therefore it is entirely conceivable
 10 that those areas that were contaminated, that
 11 contamination was removed in that first swabbing and if
 12 there was any at all that remained, it would have been
 13 below our limit of detection, and so we wouldn't have
 14 found it.
 15 We were really going back just to see if there was
 16 any more in related areas, or areas around those, rather
 17 than expecting necessarily -- rather than expecting at
 18 all to get another positive from the exact same spot .
 19 **Q.** Yes. Just picking up on the levels that you
 20 found, and appreciating, as we have said, the difficulty
 21 in sort of extrapolating, given the months that have
 22 passed and so on, the implication -- or the inference is
 23 if the results you found were valid, which you say
 24 you're very confident they were, is that there was
 25 Novichok in the room when Fedotov and Boshirov were

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1 surprise me that they were -- certainly that they were
 2 well in September and they may never have been ill at
 3 all.
 4 **Q.** All right. Very lastly on this, we have been
 5 talking about the City Stay Hotel where we know that
 6 Boshirov and Petrov stayed. There is also evidence --
 7 and we will come to hear this next week -- that Fedotov
 8 stayed at a different hotel, the Dolphin Hotel,
 9 somewhere in West London, I think close to Paddington
 10 station.
 11 **A.** Yes.
 12 **Q.** Was there any testing there?
 13 **A.** Yes. Again, a number of swabs were taken,
 14 again from touch points with the same processes in place
 15 around additional care with changing gloves at all times
 16 between each sample being taken and with all the
 17 additional precautions in place in our laboratory and
 18 all of those samples were negative from the Dolphin
 19 Hotel.
 20 **Q.** Thank you.
 21 Sir, may I suggest we take a break?
 22 **LORD HUGHES:** Yes, you may. Do you mind if I just
 23 ask something for clarification? Were you present when
 24 the swabs were taken in the City Stay Hotel room?
 25 **A.** I wasn't in the hotel room, but I was close by

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1 and was providing advice.
 2 **LORD HUGHES:** That may answer the question. I was
 3 just thinking about the -- if you're right, the
 4 persistence of this substance on a window latch which
 5 might or might not receive any attention in the
 6 meantime --
 7 **A.** Yes.
 8 **LORD HUGHES:** -- but also on a sink in the
 9 bathroom.
 10 **A.** Yes.
 11 **LORD HUGHES:** Therefore, I was going to ask about
 12 do you know whereabouts on the sink it was. Presumably
 13 you don't.
 14 **A.** I don't, not to that --
 15 **LORD HUGHES:** Indeed, nor can anybody else.
 16 **A.** I don't think so.
 17 **LORD HUGHES:** What do you do with the swab, wipe it
 18 all round.
 19 **A.** They wiped it around.
 20 **LORD HUGHES:** Not just in the bowl of the sink, but
 21 round the --
 22 **A.** Around, yes.
 23 **LORD HUGHES:** Thank you very much.
 24 **MR O'CONNOR:** Can I indicate we're not under any
 25 pressure of time, so can I suggest the 15-minute break.

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1 **Q.** We will come in a moment to some of the
 2 language you used to describe your degree of confidence
 3 and that calibration that we looked at before the break.
 4 There are no qualifying language in that paragraph --
 5 **A.** No.
 6 **Q.** -- is that because you are certain of those
 7 words?
 8 **A.** Yes.
 9 **Q.** Thank you.
 10 At paragraph 45, you refer to the samples recovered
 11 from 9 Muggleton Road, including a sample from the small
 12 Nina Ricci perfume bottle recovered from the kitchen at
 13 that address which you say there was the primary source
 14 of Novichok?
 15 **A.** Yes.
 16 **Q.** You describe the Novichok as being at high
 17 levels of purity and you say that when it was submitted
 18 to the laboratory for analysis, it contained sufficient
 19 material to poison many thousands of individuals if
 20 delivered effectively.
 21 **A.** Yes, that's correct.
 22 **Q.** You go on to say that:
 23 "High levels of contamination with the specific
 24 Novichok were recovered from small swatches of material
 25 cut from clothing reported as belonging to Dawn Sturgess

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1 **LORD HUGHES:** Don't worry, Mr O'Connor. 15 minutes
 2 it is. 3.35. Thank you.
 3 **(3.20 pm)**
 4 **(Short Break)**
 5 **(3.37 pm)**
 6 **LORD HUGHES:** Yes.
 7 **MR O'CONNOR:** MK26, finally I would like to come to
 8 look with you at your overall conclusions and so may we
 9 go, please, in your statement, INQ 005923, to page 23
 10 and starting then with paragraph 44. You say:
 11 "The analysis of blood and post mortem samples ..."
 12 Biomedical samples?
 13 **A.** Yes.
 14 **Q.** "... from Dawn Sturgess confirm that she was
 15 poisoned with a specific Novichok nerve agent."
 16 You add that:
 17 "This same Novichok was also detected in blood
 18 samples from Charles Rowley, and from those collected
 19 from Sergei Skripal and Yulia Skripal in March 2018.
 20 This confirms that the same specific Novichok agent was
 21 responsible for the poisoning of all four of these
 22 casualties."
 23 We have touched on this earlier; does that remain
 24 your opinion?
 25 **A.** Yes, it does.

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1 and Charles Rowley, given the levels of material present
 2 on at least one item of Ms Sturgess' clothing [you say]
 3 it is highly likely that she was exposed to many lethal
 4 doses of the Novichok agent."
 5 **A.** Yes, that's correct.
 6 **Q.** Again, the repeated references to specific
 7 Novichok, the Novichok, the Novichok agent, they all
 8 mean -- carry that meaning that we discussed earlier
 9 today?
 10 **A.** The same Novichok.
 11 **Q.** The same Novichok, yes.
 12 In that last sentence which we read, you said it is
 13 highly likely she was exposed to many lethal doses.
 14 Could we just go back to page 21 in the document,
 15 please, and go back to the footnote at the bottom of
 16 that page. The very bottom. Thank you. On that
 17 calibration highly likely means 80 to 90 per cent; is
 18 that the sense in which you are using that language in
 19 paragraph 45?
 20 **A.** Yes, I am.
 21 **Q.** Thank you. Perhaps we could go back to the
 22 conclusions, so back to page 23 now, and then reading on
 23 to paragraph 46, you now move from the Amesbury incident
 24 back to the Salisbury incident. You say:
 25 "Extensive sampling of the home of Sergei Skripal

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1 at Christie Miller Road ... demonstrated contamination
 2 with the same specific Novichok nerve agent."
 3 I take it you mean the same Novichok nerve agent as
 4 that found in Amesbury?
 5 **A.** Yes, I do.
 6 **Q.** You say:
 7 "Comparison of the levels of contamination at that
 8 property make it almost certain that the front door
 9 handle of the property was the primary source of the
 10 contamination with the Novichok nerve agent."
 11 I'm not going to ask that we go back to that
 12 calibration, but the "almost certain" on that
 13 calibration is more than 95 per cent.
 14 **A.** Yes.
 15 **Q.** Is that what you mean there?
 16 **A.** Yes.
 17 **Q.** Then you say "highly likely", so back to 80 to
 18 90 per cent --
 19 **A.** Yes.
 20 **Q.** -- that all contamination within the property
 21 was the result of search activities as part of the
 22 investigation?
 23 **A.** I believe so.
 24 **Q.** At paragraph 47, then you refer on to the City
 25 Stay which we have just discussed.

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1 **A.** No, I think the post mortem was on 17 July.
 2 **Q.** Right.
 3 **A.** The return visit was to collect the material
 4 from the bottle.
 5 **Q.** Of course. Yes, that's absolutely right and
 6 we will come to that over the page, thank you.
 7 Those were the two visits in any event and just
 8 scrolling down, we will see that the team -- this is
 9 paragraph 4 -- obtained blood samples from Mr Rowley and
 10 then, paragraph 5, as we saw with Professor Rutty,
 11 attended Dawn Sturges's post mortem.
 12 **A.** Yes.
 13 **Q.** You helpfully reminded us of the date.
 14 Paragraph 6:
 15 "The team requested and received splits of
 16 biomedical samples collected by the British authorities
 17 for delivery to the OPCW laboratory ..."
 18 Going over the page, we see at paragraph 7
 19 a similar paragraph to that we saw earlier in the first
 20 visit:
 21 "The team was briefed on the identity of the toxic
 22 chemical identified by the United Kingdom ..."
 23 Just pausing there, did you again conduct that
 24 briefing?
 25 **A.** It was a very similar one to the briefing

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1 **A.** Yes.
 2 **Q.** Before we go any further, could we go now,
 3 please, to INQ002993. Now, we looked earlier today,
 4 MK26, at the first of the OPCW documents, the one that
 5 reported on the visit in March 2018.
 6 **A.** Yes.
 7 **Q.** This is a similar document. It's a report on
 8 the second round of visits and I think, as we mentioned
 9 earlier, there was more than one visit on this occasion?
 10 **A.** Yes.
 11 **Q.** But these are the TAV OPCW visits responding
 12 to the Amesbury incident?
 13 **A.** Yes.
 14 **Q.** In fact, we looked at this document with
 15 Professor Rutty because it's right, isn't it, that on
 16 one of the occasions covered in this report the OPCW
 17 visitors in fact attended the post mortem?
 18 **A.** That's correct.
 19 **Q.** We will remind ourselves from paragraph 2 that
 20 there were -- the visits took place first of all in July
 21 between 15 and 18 July and that would have covered the
 22 post mortem and then again on 13 August 2018 to obtain
 23 an additional environmental sample. In fact, I know I'm
 24 misremembering it, I think the post mortem may have been
 25 on 13 August -- maybe not. Anyway.

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1 in March, but yes.
 2 **Q.** You have, of course, told us that what you
 3 found in those Amesbury samples was Novichok, the same
 4 Novichok as had been found earlier, and one takes it
 5 that was the briefing you gave them?
 6 **A.** Yes.
 7 **Q.** Then if we read on. As you say at
 8 paragraph 9, it was the second deployment in August
 9 where the OPCW team collected a sample of the bottle --
 10 **A.** That's correct.
 11 **Q.** From the bottle. Then we see paragraph 10:
 12 "The results of the analysis of this environmental
 13 sample ..."
 14 That's from the bottle?
 15 **A.** Yes.
 16 **Q.** This was the paragraph I think we looked at
 17 this morning.
 18 **A.** Yes.
 19 **Q.** ... show that the sample consists of the
 20 toxic chemical at a concentration of 97-98 per cent."
 21 They talk about 2 to 3 per cent being the impurity.
 22 Then at paragraph 11, we can see that the OPCW
 23 confirm your findings. They say they:
 24 "... confirm the findings of the United Kingdom
 25 relating to the identity of the toxic chemical that

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1 intoxicated Mr Charles Rowley and Ms Dawn Sturgess."
 2 In other words, they confirmed the presence of
 3 Novichok?
 4 **A.** Yes, that's correct.
 5 **Q.** They go on, on their own behalf, also to
 6 confirm your conclusion that that was the same chemical
 7 that had been involved with the earlier Salisbury
 8 poisonings.
 9 **A.** Yes.
 10 **Q.** Then they move on to a separate issue in
 11 paragraph 12, do they not? Because having stated in
 12 paragraph 11 that the same compound, the same precise
 13 chemical was involved in both Salisbury and Amesbury,
 14 they then go on to consider whether they are able to
 15 express a view about whether it came from the same
 16 batch.
 17 **A.** Yes.
 18 **Q.** I won't read it out, but their conclusion was
 19 that they were unable to make a finding about that; is
 20 that fair?
 21 **A.** Yes.
 22 **LORD HUGHES:** Now, you have given us a conclusion
 23 about that.
 24 **A.** I have.
 25 **MR O'CONNOR:** Which I'm going to come to, sir.

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1 This work ..."
 2 Before I read the next sentence, I think we
 3 probably all know what we mean by the same batch, but
 4 perhaps you can explain exactly what you mean.
 5 **A.** My interpretation, or my meaning from the same
 6 batch, is that it was from a single synthesis of that
 7 Novichok made from the same pre-cursor compounds at the
 8 same time.
 9 **Q.** Right, so it takes us back to the
 10 manufacturing process?
 11 **A.** Yes.
 12 **Q.** To carry on in that paragraph, you say:
 13 "This work ..."
 14 In other words your analysis:
 15 "... has concluded that it is highly likely ..."
 16 Again, we wouldn't go back to the calibration, but
 17 that was 80 to 90 per cent, yes?
 18 **A.** Yes.
 19 **Q.** "... highly likely that not only is the
 20 identity of the chemical agent found on the door handle
 21 at Christie Miller Road and within the perfume bottle
 22 recovered from 9 Muggleton Road identical, but that the
 23 Novichok at both locations is from the same batch of
 24 Novichok prepared at the same time, from the same
 25 precursor chemicals."

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1 Before we do, just drawing together the threads
 2 from this document, we have seen that the OPCW confirmed
 3 your conclusions both as to the chemical that was
 4 involved in Amesbury --
 5 **A.** Yes.
 6 **Q.** -- and also the fact that it was the same
 7 chemical that had been seen in Salisbury?
 8 **A.** Yes.
 9 **Q.** They also endorsed the views that you have
 10 expressed to us about high levels of purity. We have
 11 seen those references.
 12 **A.** Yes.
 13 **Q.** Based on earlier evidence, earlier discussion,
 14 is that in your view an indicator that this particular
 15 Novichok was produced by a state actor rather than
 16 a non-state actor?
 17 **A.** That's my opinion, yes.
 18 **Q.** Then we come to the issue of the batch and if
 19 we can go back to your witness statement, please,
 20 paragraph 48, so it's INQ005923, paragraph 48. You say:
 21 "Detailed analytical work has been undertaken to
 22 determine whether the material recovered from the door
 23 handle of the Skripal home at Christie Miller Road is
 24 from the same batch of the specific Novichok as that
 25 recovered from the perfume bottle at 9 Muggleton Road.

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1 Are you able to go any further in open in
 2 explaining your reasoning?
 3 **A.** Very little. I guess what I would add is that
 4 the OPCW process requires the laboratories that receive
 5 the samples to report within a fixed period of time and,
 6 as has been indicated, the high levels of purity of the
 7 sample mean that in order to look at batch matching,
 8 what we're talking about is analysis of those very
 9 low-level impurities. That takes a substantial amount
 10 of time and therefore -- that's probably all I can say
 11 as to why we were able to reach a conclusion that the
 12 OPCW was not. I'm happy to provide more detail in
 13 closed.
 14 **Q.** I think I can -- I'm certainly not going to
 15 press you to provide any more detail, but I think it
 16 follows from what you have said that your conclusion --
 17 your positive conclusion about the same batch is one
 18 that you make and that you're quite comfortable with the
 19 fact that the OPCW was unable to reach a conclusion?
 20 **A.** Yes.
 21 **Q.** Now, we're still on paragraph 48. In the
 22 second half of that paragraph you refer to another OPCW
 23 document which relates not to either the Skripal
 24 poisoning or the Amesbury events, but rather to the
 25 subsequent Navalny poisoning, if I can put it in that

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1 way.
 2 **A.** Yes.
 3 **Q.** Picking it up a few lines further down, you
 4 say:
 5 "However, there has since been a further OPCW
 6 technical assistance visit ... at the request of the
 7 government of Germany in 2020 to investigate the
 8 suspected poisoning of a Russian citizen, Mr Alexei
 9 Navalny."
 10 If we could please go to that document, it's
 11 INQ005924, and we see there -- we can see the date at
 12 the top, 6 October 2020, and we can see that in the
 13 first paragraph the request for the visit was made
 14 in September 2020. Perhaps we can -- we probably will
 15 all be able to remember, it was quite high profile at
 16 the time --
 17 **A.** Yes.
 18 **Q.** -- Mr Navalny was on an aeroplane, fell ill
 19 and the plane landed, I think, in Germany, certainly he
 20 ended up in hospital in Germany. Those were the
 21 circumstances which led to this visit.
 22 **A.** That's correct.
 23 **Q.** He was in hospital. If we could go to
 24 paragraph 5 of the document, please, we see "the
 25 results" -- and this is really the content that's

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1 many hundreds of chemicals that are related that could
 2 be used for toxic purposes and we discussed that them
 3 not being listed on the schedule doesn't mean that
 4 they're not illegal, they are, and therefore this
 5 particular chemical, as reported, wasn't listed on the
 6 annex to the chemicals to the convention, but is related
 7 to the two schedules listed there.
 8 **Q.** Yes. Was it -- I think you mention -- coming
 9 at this from a distance, one might think of chemicals
 10 being added to the annex frequently, but you said
 11 earlier that, in fact, it hadn't happened until 2019?
 12 **A.** This is the only time, from when the Chemical
 13 Weapons Convention came into force in 1997, that
 14 additional chemicals had been added to the schedules,
 15 which was 2019.
 16 **Q.** On that occasion was it only Novichok -related
 17 chemicals?
 18 **A.** A small number of classes of chemicals were
 19 added at that time, yes.
 20 **Q.** Those added, did they all relate to Novichok ?
 21 **A.** Yes.
 22 **Q.** As ever, the OPCW document is rather coy about
 23 which chemicals are involved, but we can infer by the
 24 fact that it is referring to chemicals added to the
 25 annex that it is Novichok chemicals?

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1 repeated in your witness statement, isn't it:
 2 "The results of the analysis of biomedical samples
 3 conducted by the OPCW ... demonstrate that Mr Navalny
 4 was exposed to a toxic chemical acting as
 5 a cholinesterase inhibitor. The biomarkers of the
 6 cholinesterase inhibitor found in Mr Navalny's blood and
 7 urine samples have similar structural characteristics to
 8 the toxic chemicals belonging to schedules 1.A.14 and
 9 1.A.15, which were added to the Annex on Chemicals to
 10 the Convention [at the 24th session of the Conference of
 11 the States parties] in November 2019."
 12 Similar structural characteristics to toxic
 13 chemicals on the annex, but it then goes on to say:
 14 "This cholinesterase inhibitor is not listed in the
 15 Annex on Chemicals to the Convention."
 16 Can you unpack some of that for us? You chose to
 17 refer to this in your statement; what can we draw from
 18 this?
 19 **A.** I draw from this statement from the OPCW that
 20 the chemical that was identified in the samples taken
 21 from Mr Navalny was related to the Novichok chemicals
 22 that were added to the schedules of the Chemical Weapons
 23 Convention in 2019, but it is not one of those listed in
 24 those schedules.
 25 As I said, probably very early on today, there are

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1 **A.** Yes.
 2 **Q.** Thank you. Then I think very lastly, MK26, if
 3 we can go back to your statement, page 25, paragraph 49,
 4 we have talked about the level of was it the same
 5 chemical and you said yes. We have talked about the
 6 question of whether the Amesbury and Salisbury chemicals
 7 were from the same batch. You have explained why your
 8 answer to that is yes, notwithstanding that the OPCW's
 9 view was -- well, they said they couldn't express a view
 10 on that.
 11 **A.** Yes.
 12 **Q.** The last perhaps question is: well, if it was
 13 from the same batch, was it the same bottle that was
 14 involved on both occasions. Are you able to express
 15 a view on that scientifically?
 16 Let's look at paragraph 49 of your statement, and
 17 what you say is this:
 18 "Given my opinion (at paragraph 48 above) that the
 19 material recovered from the door handle at 47 Christie
 20 Miller Road and the liquid recovered from the bottle
 21 found at 9 Muggleton Road are highly likely to have come
 22 from the same batch of Novichok, and the volume of
 23 material recovered in the perfume bottle, it is my
 24 opinion that it is a realistic possibility ..."
 25 Pausing there, again without going back to the

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1 calibration, that is a 40 to 50 per cent chance?
 2 **A.** Yes.
 3 **Q.** "... it is a realistic possibility that the
 4 bottle recovered from 9 Muggleton Road was used to apply
 5 the material to the door handle of the Skripal property
 6 at 47 Christie Miller Road."
 7 **A.** Yes.
 8 **Q.** "However, given the scientific evidence
 9 available to me, it is not possible to exclude the
 10 possibility that a second bottle of the same batch of
 11 Novichok was used in the attack on the Skripals, and
 12 that the bottle found at 9 Muggleton Road was a second
 13 bottle which was then discarded."
 14 **A.** Why he.
 15 **Q.** Would it be fair to say, to summarise what
 16 you're saying, there is circumstantial evidence that is
 17 consistent with the bottle found in Amesbury having been
 18 used in Salisbury?
 19 **A.** I think so.
 20 **Q.** But as a scientist you are not able to say in
 21 an expert capacity that it certainly was?
 22 **A.** Yes, and I think I have tried to express my
 23 uncertainty because it's unclear exactly what the
 24 circumstances were of the finding of that bottle and the
 25 assembly of that bottle, and so without that

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1 findings were of the same specific type of Novichok. Is
 2 it right that all of the significant Novichok findings
 3 were from that same specific type?
 4 **A.** Yes.
 5 **Q.** Not only the blood of the Skripals, the blood
 6 samples of Charlie Rowley and Dawn Sturgess, also in
 7 room 108 of the City Stay Hotel; is that right?
 8 **A.** Yes.
 9 **Q.** In fact, all of the significant findings, both
 10 in Salisbury and in Amesbury?
 11 **A.** All of the findings actually.
 12 **Q.** Thank you. 47 Christie Miller Road, could we
 13 have up on screen, please, 5923 and page 17 of that.
 14 That's your statement. Towards the bottom -- well,
 15 right at the bottom of the page, in paragraph 36, on the
 16 last line you say this:
 17 "It is my opinion that from analysis ... [of]
 18 locations visited by the Skripals on the afternoon of
 19 the 4 March 2018, their vehicle and samples from the
 20 interior and exterior of their house at Christie Miller
 21 Road that the source of contamination with Novichok was
 22 the door handle to Sergei Skripal's property."
 23 Then you go on to talk about relative and
 24 decreasing amounts there.
 25 **A.** Yes.

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1 information, it's not possible to exclude that there
 2 were two bottles.
 3 **Q.** Just to be clear, the possibility that you are
 4 adverting to is the possibility that it was a different
 5 bottle, one that has not been found, that was used in
 6 Salisbury and the bottle that we did then find, or
 7 Charlie found with such tragic consequences, was
 8 a bottle that had been brought along and was discarded
 9 without having been used in Salisbury?
 10 **A.** I think that's possible.
 11 **LORD HUGHES:** But if it is, it's two bottles from
 12 the same batch; is that it?
 13 **A.** Yes.
 14 **LORD HUGHES:** Right.
 15 **MR O'CONNOR:** MK26, thank you. Sir, those are my
 16 questions.
 17 **LORD HUGHES:** Thank you very much indeed,
 18 Mr O'Connor, I'm grateful.
 19 Mr Straw.
 20 **MR STRAW:** Thank you very much, sir.
 21 **Questioned by MR STRAW**
 22 MK26, good afternoon. I'm Adam Straw and
 23 I represent the family of Dawn Sturgess and her partner.
 24 In response to Mr O'Connor's questions you
 25 mentioned that a number of the results of the Novichok

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1 **Q.** Is this right, it's your opinion that they
 2 were contaminated when leaving the house at about 13 :30
 3 on 4 March?
 4 **A.** I think that's what the evidence shows, yes.
 5 **Q.** Is one of the reasons for that conclusion, as
 6 you say, the relative and decreasing amounts of Novichok
 7 on items that they touched subsequently?
 8 **A.** Yes, and also the high level of Novichok on
 9 the door handle when it was sampled 12 days post
 10 4 March.
 11 **Q.** When you say "relative and decreasing amounts"
 12 is that, for example, high amounts on the Skripals'
 13 hands?
 14 **A.** Yes.
 15 **Q.** High on the BMW?
 16 **A.** Particularly the driver's door, yes.
 17 **Q.** Driver's door. The keys?
 18 **A.** Yes.
 19 **Q.** The car key and the door keys. But then going
 20 down lower or medium levels on The Mill, Zizzi's and so
 21 on?
 22 **A.** Yes.
 23 **Q.** You explained already that there was
 24 a clean/dirty line, so on 3 March you explained that at
 25 the time when Maureen Cassidy touched the front door

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1 handle at about 6 pm that evening, the front door handle
2 wasn't contaminated?
3 **A.** I can find no evidence that it was
4 contaminated at that time.
5 **Q.** Is one of the reasons for that conclusion that
6 if the many lethal doses was on the door handle at the
7 time that she touched it, one would expect to see traces
8 on her Isuzu that she then sat in for a significant
9 period going to Amesbury and back?
10 **A.** Yes, and that Maureen herself would have
11 become ill.
12 **Q.** Right. Yesterday, with Commander Murphy, we
13 went over evidence as well that a number of items that
14 Sergei Skripal had touched on the night of 3 March,
15 after himself having held the door handle, were
16 negative.
17 **A.** Yes.
18 **Q.** Did you read or see that evidence?
19 **A.** Yes, I did.
20 **Q.** The diabetes monitor, mobile phone and so on
21 and so on?
22 **A.** Yes.
23 **Q.** Is that additional evidence to show that the
24 many lethal doses weren't on the front door handle at
25 that time, 6 pm or so, on Saturday evening?

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1 items that they touched?
2 **A.** Yes.
3 **Q.** For example, that Novichok was on Dawn's hands
4 in high levels?
5 **A.** Yes.
6 **Q.** Is that consistent with Charlie's account that
7 she sprayed it on her hands and rubbed them together ?
8 **A.** Or on her wrists -- her hands or her wrists,
9 yes, but that and the clothing samples that we also had
10 showed high levels of Novichok.
11 **Q.** Similarly on Charlie -- and we have heard that
12 there were medium to high levels on his hands, on his
13 jeans, on the soap dispenser and tap and so on that he
14 touched -- are those findings in respect of Charlie
15 consistent with his account of how he became
16 contaminated?
17 **A.** I believe so, yes.
18 **Q.** He spilled it on his hands and then would have
19 washed them off?
20 **A.** Yes, and would have touched the tap and the
21 soap.
22 **Q.** We also heard there were decreasing levels on
23 things he touched later. For example, the van that he
24 went into Boots had lower levels -- low to medium levels
25 on the seat that he sat in?

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1 **A.** I believe so, yes.
2 **Q.** Does a similar point to that which you made
3 about Mrs Cassidy apply as well, that you would expect
4 him to become ill if he had been contaminated at 6 pm on
5 Saturday evening? You would have expected him to become
6 ill before 21 hours later when he actually did do?
7 **A.** I think from what we know now, yes, I would
8 have done. I think it was less clear at that point, but
9 obviously we have learned from what we saw with Sergei
10 and Yulia and then subsequently what was seen with both
11 Dawn Sturgess and Charlie Rowley.
12 **Q.** Okay. That's Salisbury. Moving on to
13 Amesbury, please. You told Mr O'Connor, I think, that
14 your opinion was that the Novichok in the Nina Ricci
15 bottle was the cause of the poisoning of Dawn and
16 Charlie.
17 **A.** Yes, that's correct.
18 **Q.** Is it right your reasons for that include,
19 firstly, that by far the highest level was that in the
20 bottle?
21 **A.** Absolutely.
22 **Q.** Secondly, does a similar reason apply as we
23 saw with the Skripals, that there were -- well, firstly
24 that there was the same specific Novichok, not just in
25 the bottle but on Dawn and Charlie and on a number of

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1 **A.** Yes.
2 **Q.** The passenger door handle. Does that also
3 support the conclusion that they became contaminated as
4 described, so between 9 to 10 am on 30 June when Dawn
5 sprayed herself with the Nina Ricci bottle of perfume?
6 **A.** I believe so, yes, and my understanding is he
7 then washed his hands and it was after Dawn had gone to
8 hospital that he got in the van and so had lower levels.
9 **Q.** Thank you. Just one incidental point about
10 this. We have a witness statement from someone called
11 T92L.
12 **A.** Yes.
13 **Q.** I don't think I need to bring it up, sir, but
14 the reference is 5140 and in that T92L says:
15 "Swabs taken from both casualties ..."
16 So Dawn and Charlie:
17 "... showed significantly lower levels of
18 contamination on Mr Rowley as compared to Ms Sturgess."
19 **A.** Yes.
20 **Q.** Is that your understanding?
21 **A.** I can't remember the exact data now and
22 unfortunately the spreadsheets don't help us because we
23 have categorised the levels into different bandings, and
24 so I would have to check the exact levels on each of
25 them, but that may well be true. I would just need to

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1 look at the information.
 2 **Q.** More broadly then, does the evidence more
 3 generally support the conclusion that Charlie received
 4 a lower dose than Dawn did?
 5 **A.** My suspicion would be, as I think FT49 stated
 6 in his evidence, that the act of washing his hands
 7 immediately after the material was spilt on them removed
 8 the bulk of it in Charlie's case, whereas unfortunately
 9 in Dawn's case we have no evidence that she washed after
 10 applying the material and so probably received a much
 11 higher dose.
 12 **Q.** I would like to ask now a few questions about
 13 a document that Mr O'Connor took you to. Could we have
 14 on screen, please, 5154.
 15 **LORD HUGHES:** Have we got a date for this,
 16 Mr Straw, do you happen to know?
 17 **MR STRAW:** Good question.
 18 **LORD HUGHES:** It doesn't matter if it isn't there.
 19 **MR STRAW:** It's at the last page, so page 5,
 20 29 August 2018.
 21 **LORD HUGHES:** Thank you very much.
 22 **MR STRAW:** Going back to page 1 and question 6, is
 23 it right that -- well, you discuss in question 6 the
 24 yellow cap fitting on top of the bottle.
 25 **A.** Yes.

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1 As we have discussed, Novichok is very potent material,
 2 very small amounts are toxic, and so doing excessive
 3 amounts of handling it's best practice to avoid that as
 4 much as possible. So to the best of our belief, when
 5 the applicator was removed, the cap -- the collar with
 6 the tube that comes out from the top of the collar that
 7 the applicator would fit onto is leak proof. But I'm
 8 sure you can appreciate we wouldn't want to fill it with
 9 something and actually try it out because of the hazard
 10 that would pose.
 11 **Q.** Yes. Mr O'Connor asked you about the wrappers
 12 and the Novichok findings from inside those plastic
 13 wrappers.
 14 **A.** Yes.
 15 **Q.** Is this an accurate summary of your opinion,
 16 that the Novichok that was found inside the wrappers
 17 could have been from cross contamination?
 18 **A.** I think there was so much Novichok on all of
 19 the items that were in that carrier bag that it's
 20 impossible to draw a conclusion as to the origin of that
 21 contamination of Novichok.
 22 **Q.** Yes. Could we go back to that document we
 23 just had up on screen, 5154, please, and go over to
 24 page 3. Question 19 there, you are asked:
 25 "How were the wrappings sealed?"

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1 **Q.** We have already had evidence about that, but
 2 was it your conclusion that when it's screwed on the top
 3 of the bottle, the bottle is leak proof?
 4 **A.** It is a screw cap and the screw threads inside
 5 the cap fit perfectly onto the bottle, so as far as we
 6 can tell, it fitted perfectly and would be leak proof.
 7 **Q.** Can you go over the page, please, to question
 8 11. Here you are asked:
 9 "Is the pump/bottle leak proof when the pump is
 10 fitted to the bottle?"
 11 Just to understand the question first, is that --
 12 we have seen the silver collar on the bottle --
 13 **A.** Yes.
 14 **Q.** -- but with the applicator off and also with
 15 the cap off so it's just the silver collar?
 16 **A.** Yes.
 17 **Q.** Is that what we're looking at here?
 18 **A.** Yes.
 19 **Q.** Thank you. What's your answer to that
 20 question?
 21 **A.** It's difficult to be absolute and so that's
 22 why we have said we think it is leak proof, so we --
 23 when the bottle was brought to us, we removed the
 24 contents from it as safely as possible in order to
 25 minimise the hazard. However, it was still hazardous.

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1 Do you see question 19?
 2 **A.** Yes.
 3 **Q.** "(a) what equipment would be needed to do so
 4 and is it portable?"
 5 You are asked, and I think the response is:
 6 "Small portable heat sealers are widely available."
 7 Can you explain any more of that, please?
 8 **A.** This is clearly outside of my area of
 9 expertise. However, you can go onto Google or to Amazon
 10 and find small portable heat sealers for plastic bags
 11 for kitchen use predominantly. They are the size of
 12 a small stapler, so quite small, and are able to firmly
 13 seal plastic and so it is possible that that is -- that
 14 that type of device could have been used.
 15 **Q.** Over the page, please, on page 4, question 30.
 16 The question is:
 17 "How long does it take to put the plastic encased
 18 items into the box?"
 19 I think they're asking here about plastic wrappers
 20 around -- if that was the state that they were in, how
 21 long would it take those to put into the Nina Ricci box.
 22 The answer is 10 seconds, but then it's also added
 23 there:
 24 "To heat seal, an approximation of 2 minutes was
 25 given."

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1 Is that your answer first?
 2 **A.** Yes, but we were guessing and I think you will
 3 hear from a packaging expert who may be better placed to
 4 comment than I am.
 5 **Q.** Okay, thank you. We have finished with that
 6 document. Thank you.
 7 There's another document I would like to ask you
 8 about, please, which is 5801, page 6, please. I should,
 9 sorry, probably go back to the start of this just to
 10 introduce it because I don't think we have seen it
 11 before. Page 1, please. At the top there "DSTL
 12 interview":
 13 "This write-up is mostly from the session I had at
 14 DSTL with ... and [MK26]"
 15 Do you see that?
 16 **A.** Yes.
 17 **Q.** Is this a meeting that you had with someone
 18 else?
 19 **A.** Yes, it was a lessons learned type discussion
 20 with someone.
 21 **Q.** Thank you. Over at page 6, please, at the top
 22 of the page there's a summary of this incident and the
 23 second paragraph down:
 24 "It was an extremely nasty and reckless attack. It
 25 was inevitably going to be detected as FGA and so was

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1 "As his victory became clear Putin thanked
 2 supporters. He used the opportunity to make his first
 3 public comments about the Skripal case saying 'it would
 4 be rubbish, drivel, nonsense for Russia to embark on
 5 such an escapade on the eve of the presidential
 6 election'. The Skripals would have 'died on the spot'
 7 if they were targeted by a 'military grade nerve agent'
 8 of which Russia had none."
 9 Just before I ask you about that, I'm going to go
 10 to one similar statement. Could we have 4577, please,
 11 on the screen. This is another version, March 2019, of
 12 the Russian Embassy document. Could you go , please, to
 13 page 17 of that. At the bottom of the page there's
 14 another quote from President Putin and you can see one
 15 paragraph up we're now looking at a later point, so
 16 18 May 2018 this is.
 17 **A.** Yes.
 18 **Q.** It's the second statement from President
 19 Putin. At the bottom of the page:
 20 "We wish him the best of health, we are really very
 21 happy. I have several considerations in this respect.
 22 First. I think if a combat grade nerve agent had been
 23 used, as claimed by our British colleagues, the man
 24 would have died on the spot. A nerve agent is so
 25 powerful that a person dies instantly or within several

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1 sending a message."
 2 Firstly, is that something you said or someone else
 3 said?
 4 **A.** I honestly don't remember and it's interesting
 5 actually this write-up because when I saw it I went back
 6 and looked at the date of it and I can see it's in my
 7 calendar, but I have no recollection of it at all.
 8 I don't doubt that I was there, I just don't remember .
 9 **Q.** No problem. You may not be able to answer
 10 this question then. Do you know what FGA is?
 11 **A.** Yes, FGA is Fourth Generation Agent, which is
 12 a term that's used to describe agents such as Novichok .
 13 **Q.** Thank you. The last area of questions I would
 14 like to put to you, please, are about false statements
 15 by two of those who may be implicated in these events.
 16 Could we have a look first at two statements from
 17 Mr Putin. The first is in the document numbered 4728.
 18 Could we have that on screen , please. This is a DipTel,
 19 diplomatic telegram. The date given in the index,
 20 although it's not on the document itself, is
 21 20 March 2018. Could you go , please, to page 4 of that
 22 document. Towards the bottom of the page -- this page
 23 is about Putin winning the election which was
 24 in March 2018. Towards the bottom of the page and
 25 paragraph 4 "Reactions":

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1 seconds or minutes."
 2 Two questions about those comments. Firstly, is it
 3 correct that if Mr Skripal had been poisoned by a nerve
 4 agent he would have died on the spot?
 5 **A.** I think there's a number of answers to that
 6 question actually. I think a lot of them were covered
 7 by FT49 in his evidence, which was about the means of
 8 delivery, whether that was an inhaled dose of Novichok,
 9 whether it was through the skin, and I also think in
 10 this particular case the recovery of the Skripals in
 11 particular was beyond what any of us would have
 12 expected. We also, at the beginning of this incident,
 13 believed that they would die and I think it's testimony
 14 really to the excellent response from the first
 15 responders and from the medical staff who treated them
 16 that they survived.
 17 Sadly, as we have heard, in Dawn's case the dose
 18 that she received and probably the route that she
 19 received it meant that her poisoning was unsurvivable,
 20 from all I have heard in the last few weeks.
 21 **Q.** But as to what Vladimir Putin is saying here
 22 about someone dying on the spot, in other words within
 23 seconds or perhaps minutes, we know of course that
 24 neither Sergei Skripal nor Yulia Skripal died, Charlie
 25 didn't die. Dawn did die but not on the spot, quite

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1 a while later.
 2 **A.** No.
 3 **Q.** Insofar as Mr Putin is saying here that's
 4 incorrect, isn't it?
 5 **A.** I would say that's incorrect and that's what
 6 the evidence shows us.
 7 **Q.** Similarly, the second part of his March
 8 statement, Russia had no military grade nerve agent,
 9 we're going to hear -- well, there is a written
 10 statement that's been produced for the Inquiry by
 11 someone called Rebecca Sagar, who is the Deputy Director
 12 for Defence and International Security at the Foreign
 13 and Commonwealth Development Office. Just for the
 14 reference, sir, it's 6103. Paragraph 11 of that, she
 15 said the answer to that question is they did have
 16 military grade nerve agents in March 2018, in particular
 17 they had Novichok.
 18 Are you able to say anything more in open about
 19 that question other than what Ms Sagar has already said?
 20 **A.** I would say that's outside my area of
 21 expertise and knowledge, so I wouldn't be able to say
 22 anything.
 23 **Q.** Thank you. That's Mr Putin. The second
 24 person is the foreign minister, someone called Sergei
 25 Lavrov, and again I would like to look at one or two

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1 effectively found that there was a toxin in -- that was
 2 present in US, UK and NATO nerve agents but not in
 3 Russia, USSR, nerve agents, is that correct?
 4 **A.** No. As a standard process within the OPCW
 5 laboratories, when they send samples out to the
 6 designated labs for analysis they also include a control
 7 sample that they have spiked a precursor chemical into.
 8 The purpose of that is to enable them to evaluate
 9 whether or not the laboratory's performed correctly and
 10 identified that chemical which is unrelated to the event
 11 that they're investigating in that particular sample.
 12 It's an additional sample.
 13 In this particular case, a precursor to
 14 a cholinesterase inhibitor known as BZ, which is another
 15 cholinesterase inhibitor, the precursor to that chemical
 16 was used in the control sample spiked by the OPCW,
 17 deliberately spiked. If it was the Swiss laboratory,
 18 I don't know, whichever laboratory identified that in
 19 the samples sent to them did so absolutely correctly,
 20 but it has nothing to do with the authentic samples that
 21 were collected from the Salisbury events.
 22 **Q.** In support of that I think it may help if we
 23 go to the OPCW documents themselves. This is the last
 24 document I'm going to ask you to put up, but it's 4425,
 25 please, page 4. This is an OPCW document dated

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1 statements he has made and ask you about those, please.
 2 Could we have, please, on screen 5100. You see at the
 3 top of the page there:
 4 "This is an open version of a document that
 5 contains material that has been withheld from this open
 6 version."
 7 Then under "Salisbury" three lines down it says:
 8 "On 14 April Foreign Minister Lavrov cited a report
 9 by a Swiss centre for radiological and chemical
 10 bacterial analysis. Drawing on that he claimed that
 11 a toxin found in the Skripal samples was present in US,
 12 UK and NATO nerve agents but never found in USSR nerve
 13 agents."
 14 A couple of questions about that. Firstly, was
 15 there an analysis by a Swiss centre about this case?
 16 **A.** I don't know because when the OPCW Director
 17 General selects laboratories to send samples to, it's
 18 done so anonymously and so the identification of those
 19 laboratories is not known to us or anyone else, so
 20 I don't know. Possibly.
 21 **Q.** Okay, and that might have fed into the OPCW
 22 results?
 23 **A.** They may have been one of the laboratories
 24 selected.
 25 **Q.** Okay. But as to his claim that the OPCW

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1 18 April 2018, do you see that? Could you go over the
 2 page, please, page 5, just the last line there
 3 confirming that the floor is now passed to
 4 Mr Marc-Michael Blum and then over the page we can see
 5 what Mr Marc-Michael Blum says. In the second paragraph
 6 down, second sentence he said that:
 7 "The labs were able to confirm the identity of the
 8 chemical by applying existing, well-established
 9 procedures. There was no other chemical that was
 10 identified by the labs."
 11 **A.** Yes.
 12 **Q.** Is he saying there the labs identified
 13 Novichok and there wasn't anything else?
 14 **A.** He then goes on in the next sentence though to
 15 explain that:
 16 "The precursor of BZ that is referred to in the
 17 public statements, commonly known as 3Q, was contained
 18 in the control sample prepared by the OPCW lab in
 19 accordance with the existing quality control
 20 procedures."
 21 That's as I explained. It's in the standard
 22 procedures to assure the process.
 23 **Q.** That's effectively refuting Mr Lavrov's
 24 claims?
 25 **A.** Yes.

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1 **Q.** For completeness, please, can we go to page 72
 2 of that document, a statement by UK ambassador and then
 3 within that statement over at page 75, please, towards
 4 the bottom of the page, so this is within the
 5 ambassador's statement, at the bottom:
 6 "Over the past weekend, foreign minister Lavrov
 7 said that the Russian Federation had somehow obtained
 8 information to suggest that the chemical used was
 9 identified by a world leading laboratory as BZ. In
 10 fact, the four OPCW designated laboratories did not
 11 detect BZ in any of the samples collected in Salisbury."
 12 Is that then confirming that there was no other
 13 analysis --
 14 **LORD HUGHES:** Well, hang on a minute, never mind
 15 what a British Government representative may have said:
 16 was there any BZ in the samples that you looked at?
 17 **A.** There was no BZ in any of the samples that we
 18 looked at, either in our labs at Porton Down or, as
 19 they're saying there, in any of the samples that were
 20 submitted to the OPCW laboratories. The only related
 21 chemical to BZ was in the control sample included by the
 22 OPCW as a quality control measure and that was
 23 a precursor, not BZ itself.
 24 **LORD HUGHES:** That's Q3, is it?
 25 **A.** Yes.

1 **LORD HUGHES:** Or, I beg your pardon, 3Q.
 2 **A.** 3Q.
 3 **LORD HUGHES:** That went to the OPCW selected labs;
 4 which they were you don't know.
 5 **A.** Yes.
 6 **LORD HUGHES:** But does that mean there's 3Q in the
 7 samples that you collected from your various Salisbury
 8 and Amesbury sites?
 9 **A.** No.
 10 **LORD HUGHES:** No, okay.
 11 **MR STRAW:** Other than the OPCW analysis and the
 12 DSTL, your analysis, is it right there was no other labs
 13 analysing the Novichok from the Salisbury or the
 14 Amesbury incidents?
 15 **A.** That's correct.
 16 **MR STRAW:** Thank you. I don't have any further
 17 questions. Thank you very much.
 18 **LORD HUGHES:** Thank you very much, Mr Straw.
 19 That's very helpful. Anybody else? No.
 20 **MR O'CONNOR:** I have no questions, sir.
 21 **LORD HUGHES:** Right. Well, thank you very much
 22 indeed, MK26.
 23 **A.** Thank you, sir.
 24 **LORD HUGHES:** It's an education of interest,
 25 whatever the outcome may be for all of us. Thank you.

1 **A.** Thank you.
 2 **LORD HUGHES:** 10 o'clock tomorrow at, I think,
 3 level 2, am I right?
 4 **MR O'CONNOR:** You are right, sir, yes, level 2.
 5 **LORD HUGHES:** All right, 10 o'clock tomorrow,
 6 level 2. Thank you.
 7 **(4.27 pm)**
 8 (The Inquiry adjourned until 10.00 am on Thursday,
 9 14 November 2024)
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