Neutral Citation Number: [2019] EWHC 2316 (Ch)

Case No: HC-2016-003648

IN THE HIGH COURT OF JUSTICE
BUSINESS AND PROPERTY COURTS OF ENGLAND AND WALES
BUSINESS LIST (ChD)

Rolls Building
Fetter Lane, London, EC4A 1NL

Date: 05/09/2019

Before :

MR MICHAEL GREEN QC
(sitting as a Deputy Judge of the Chancery Division)

- -

Between :

BAJAJ HEALTHCARE LIMITED	**Claimant**
- and -	
FINE ORGANICS LIMITED	**Defendant**

- -
- -

Mr Tiran Nersessian (instructed by **R. R. Sanghvi & Co.**) for the **Claimant**
Mr Neil Cameron (instructed by **Rollits LLP**) for the **Defendant**

Hearing dates: 14-17, 20-22 May 2019

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Approved Judgment

I direct that pursuant to CPR PD 39A para 6.1 no official shorthand note shall be taken of this Judgment and that copies of this version as handed down may be treated as authentic.

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MR MICHAEL GREEN QC

MICHAEL GREEN QC:

A. INTRODUCTION

1. This judgment is divided into the following sections:

    A. Introduction
    B. The Issues
    C. The Witnesses
    D. The Facts
    E. The "Green Contaminant"
    F. The Terms of the Contract
    G. Breach of Contract
    H. Loss
    I. Disposition.

2. This action is about a chemical substance called 2-Amino-4-Hydroxyacetophenone[1], which I will refer to, as it was throughout the trial, as "**AHA**". The Claimant company, Bajaj Healthcare Limited (**BHL**) which is based in India, manufactured AHA for the Defendant company, Fine Organics Limited (**FOL**) and is claiming for its unpaid invoices totalling US$513,946.23 plus interest. FOL is refusing to pay these invoices, and is counterclaiming for damages, on the basis that the AHA that was supplied to it in 2014 was contaminated by an unidentified substance which has caused loss to it. This substance was referred to by FOL as the "**Green Contaminant**".[2]

3. On one level this is a straightforward claim in respect of goods sold and delivered. The parties are agreed that the AHA that was supplied met the written specifications of FOL and it was delivered and used for the purpose that FOL intended to use it, albeit not as efficiently as FOL would have liked.

4. On another perhaps more disturbing and unsatisfactory level however this is about deception, in particular, whether the manufacture of the AHA took place where BHL had led FOL to believe it did and whether there has been a cover-up of the true reasons for the presence of the Green Contaminant. BHL has destroyed nearly all the relevant documents concerning the manufacture of the AHA which is of course highly unfortunate and suspicious.

5. There has been a curious lack of frankness between the parties some of which can be explained as protecting commercial interests, but also in respect of what might otherwise appear to be straightforward matters such as the use to which the AHA was to be put by FOL and the location of its manufacture by BHL. There was an intermediary who was heavily involved in matters relevant to this case but who was

[1] This has also been referred to as 2-Amino-4-Hydroxyacetophenone Hydrochloride. AHA was what BHl contracted to provide and the precise terms of that contract will be dealt with later in this judgment.

[2] Even though this is a somewhat loaded description as BHL does not accept that the AHA was contaminated, it will be convenient for certain purposes in this judgment to adopt it.

not called as a witness, a Dr Uday Gokhale. I will explain the involvement of Dr Gokhale in due course but it is one of the strange features of this case that both parties are claiming that Dr Gokhale was acting for the other at the material time and that his knowledge should be attributed to that other party.

6. In the circumstances I cannot regard this as a simple sale of goods case. Neither party nor their experts have been able to identify what the Green Contaminant is or how it got into the 2014 consignment of AHA. I will have to try to work out what is likely to have happened on the balance of probabilities by reference to the surrounding circumstances, the available contemporaneous documentation and the credibility of the witnesses, in particular, Mr Anil Jain of BHL.

B. THE ISSUES

7. The issues that I need to determine can be broadly stated as follows:
   (1) The terms of the contract between FOL and BHL including any terms to be implied by the Sales of Goods Act 1979 ("**SGA**");
   (2) Whether BHL was in breach of contract in supplying AHA which included an unknown substance in it;
   (3) If BHL is found to be in breach of contract, the loss to FOL, if any, caused by such breach.

C. THE WITNESSES

8. Before turning to the facts, I propose to make some general findings about the witnesses.

9. (a) BHL's witness

   BHL's only factual witness was Mr Anil Jain. He is the joint Managing Director of BHL and, as he accepted in his oral evidence, effectively the second-in-command to the founder, Mr Bajaj. For the purposes of the trial, there was prepared for him two witness statements: the first dated 18 April 2019 was 108 pages long containing 399 paragraphs[3]; the second, dated 26 April 2019, was 17 pages and 59 paragraphs[4]. Much of the witness statements was unnecessary and unhelpful commentary and/or submissions on FOL's evidence (in the many sections of the witness statements headed "*What we now know*"). In cross-examination by Mr Neil Cameron on behalf of FOL, these lengthy witness statements were hardly referred to. That is because, as Mr Cameron submitted to me in closing, FOL's position is that Mr Jain "*is not worthy of belief on any topic on which he gave evidence*".

10. Mr Jain unfortunately could not travel to London to give evidence in the Court room. Instead he was cross-examined by video link to a facility in Mumbai, India and there

[3] This was actually his Second Witness Statement in the proceedings.
[4] Likewise, this was his Third Witness Statement.

were a few technical difficulties. It appeared to be suggested in Mr Jain's witness statement that his English was not very good and that his witness statements had to be explained to him in Gujarati. However, when he was actually giving evidence, he seemed to have no difficulty with understanding the questions, reading documents or giving his answers in English. There were many emails in the evidence written and received by him in good English.

11. The reason Mr Jain could not travel was because his passport had been impounded in 2014 and the Court in India had refused to give permission for him to travel. Since 2005, Mr Jain has been subject to criminal fraud charges before the Magistrates Court in Jaipur but these have yet to be determined.

12. There were two particular issues that have founded FOL's invitation to reject Mr Jain's evidence in its entirety, namely:
    (i) The destruction of most of the relevant documents in this case; and
    (ii) The failure to disclose and the subsequent alleged cover-up of the fact that the AHA was manufactured at a factory that FOL was unaware of and which it had not seen or audited.

    I will come to deal with the detailed facts around, in particular, the second point but at this stage, in relation to assessing Mr Jain's evidence, I find as follows.

(i) The destruction of relevant documents

13. On 6 November 2018, in response to a specific disclosure application by FOL, Mr Jain made his first witness statement. In that witness statement, Mr Jain effectively stated that all relevant documents, in particular the batch manufacturing records, in relation to the production of AHA between 2011 to 2014 had been destroyed as part of BHL's routine practice in such respect. This was even said to have happened after it was clear that there was a dispute in relation to the 2014 batches of AHA and even after these proceedings had commenced. This extraordinary state of affairs was inevitably explored with Mr Jain in cross-examination.

14. In paragraph 7 of his first witness statement Mr Jain described the documents that came into being in relation to the manufacture of all BHL's products. These included:

> "a. raw material specifications
>
> b. batch manufacturing records or batch sheets, which are prepared by our Quality Assurance Department. These record the date and time of the commencement and completion of the production of a specific batch of a product, and the quantity produced; the in-put materials used; general instructions on the operation for the production of the material in question; equipment details and packing materials issuance details; the blending procedure; packing details; details of sampling by our Quality Control Department; labelling details; the checks carried out to ensure that past packaging materials are not utilised for the current batch and that surplus current packaging materials are destroyed; and a specimen label;
>
> c. materials requisition slips;

d. checklists for the review of batch or lot manufacturing;

e. equipment cleaning records;

f. finished or final product specifications;

g. intimation slips for the sampling of finished goods;

h. chromatograms;

i. batch or lot release checklists;

j. packing lists and delivery notes;

k. analytical work reports and certificates of analysis;

l. invoices;

m. bills of lading."

15. These would clearly be highly relevant documents for the purpose of working out how a consignment of AHA could have become contaminated, whether through the raw materials used, the manufacturing process adopted or the storage or transportation of the product. According to Mr Jain, every single such document in relation to all its AHA production for FOL, including the last 2014 consignment in issue in these proceedings, has been destroyed and/or is said to be unavailable from BHL.

16. In paragraph 12 of his first witness statement, Mr Jain explained BHL's document retention policy:

> "The Claimant's general (but not invariable) practice is to preserve documents relating to a specific product for a period of one year after the expiry of that product's shelf-life – in the case of AHA, 2 years. Thus documents would therefore generally be preserved for a total of three years. At the end of a period during which managers might preserve documents relating to batches of product produced by Bajaj, those documents would be destroyed."

According to this timetable, the documents relating to 2011 AHA would routinely be destroyed in 2014 and the critical 2014 documents would potentially be destroyed in 2017.

17. On 12 June 2014, Dr Gokhale forwarded to Mr Jain an email he had received that day from Mr Dunn of FOL in which he had said that there was a problem with their "*hydrogenations*" and "*something is poisoning the catalyst*"[5]. Mr Dunn said that it could be a sulphur impurity in the AHA and if it was then BHL would not be paid. Dr Gokhale's email to Mr Jain said:

> "Now, that they have production problem, wherein there [sic] catalysts is getting poisoned.

[5] These are references to the further process that FOL subjected the AHA to in order to convert it to the final product, as explained later in this judgment.

> As you are fully aware that S[6] is coming from the facility where this is manufactured.
> FOL has asked me to visit A'leshwar[7] and do the detailed study – this is problem for me as well as for Bajaj.
> The other reason, nitrile source, where I had told you that it will be a problem – we saved 1.5 USD but now stand to loose [sic] more…
> The more worry is that if Evonik efuses [sic] to accept the final product from FOL and investigations lead to Bajaj – manufacturing site as well as procurement of r.m.[8] – then there is problem."

Quite apart from the significance of this email as providing some clues as to how the manufacturing of the AHA in 2014 may have gone wrong, for present purposes it shows that by June 2014 BHL was fully aware that a serious problem had arisen with the 2014 consignment of AHA and that FOL may well be refusing to pay for the AHA as a result. Nevertheless, Mr Jain gave no instructions to preserve documents that may be needed to resolve this potential dispute. In fact, according to the routine destruction policy (if that was truly in play), the documents relating to the 2011 manufacture of AHA would have been destroyed shortly after receipt of this email.

18. These proceedings were commenced in December 2016. At that time, at least the highly relevant documents relating to the 2014 consignment should have been in existence, as Mr Jain admitted in cross-examination. However, Mr Jain says that they have since been destroyed. Mr Jain said that, despite knowing of their crucial importance to the case, he "*overlooked*" informing the Quality Assurance department not to destroy any such documents.

19. Mr Jain's first witness statement included the following explanations for having destroyed the documents referred to in paragraph [14] above:

> "18. In respect of the documents mentioned in these requests, I have made enquiries within the Claimant organisation and confirm that:
> (i) The documents mentioned at paragraph 7 above existed, having come into existence during the course of the manufacture of the AHA or at the conclusion of the manufacturing process for each batch manufactured;
> (ii) The documents had been prepared in hard copy;
> (iii) For the AHA manufactured in 2011, 2012 and 2013, the documents have been destroyed and are believed to have been destroyed just after three years from the date of manufacture. For documents up to March 2014 cannot be found.
> (iv) The claimant's employees who authorised the destruction were the managers within its Quality Control Department and the Quality Assurance Department; and
> (v) The documents in question were destroyed for the reasons set out at paragraphs [sic] 12 above.

[6] Mr Jain says that he understood this to be a reference to sulphur.
[7] This is Ankleshwar which is where the Nigam Pharmachem facility was located – this is the facility where BHL says it manufactured the AHA but which FOL claims it knew nothing about.
[8] This is raw materials.

…

20.2 As to (ii): the documents mentioned at paragraph 7 above existed, and were held in hard copy. The analytical raw data for the sampling of the AHA finished product for 2011, 2012 and 2013, and until March 2014 is not available. The documents for 2011, 2012 and 2013 are believed to have been destroyed just after three years from the date of manufacture, and those up to March 2014 cannot be found. The claimant's employees who authorised the destruction were the managers within its Quality Control Department and the Quality Assurance Department. The documents were destroyed as set out at paragraphs [sic] 12 above."

…

24. Neither the Defendant's recommendation nor the Claimant's own list of suppliers from the relevant time can now be found, and are thought to have been deleted where held in soft copy, or misplaced where held in hard copy. It is possible also that they were destroyed where held in hard copy.

…

28. The tracking of raw materials in the course of the manufacturing process of the AHA was carried out by Nigam. I have made enquiries with Nigam, and have been informed that no documents from the preparation of AHA have still been preserved by Nigam.

…

43. Most communications with Nigam took place orally, and in person or over the telephone. Personnel from the Claimant supervised processes carried out by Nigam. Some email correspondence, which existed in soft copy, is now no longer available."

20. As can be seen, Mr Jain appears to accept little or no responsibility for this extraordinary state of affairs. He was wholly unapologetic in both his written and oral evidence and laid the blame on BHL's Quality Assurance department for having carried out its routine destruction policy. Where he said in his first witness statement that the 2014 documents could not be found, he confirmed in his oral evidence that he had since discovered that those documents had also been destroyed. He appeared quite blasé about all of this during cross-examination and totally unconcerned about the consequences of having allowed this to happen, if that is all that he did.

21. I am afraid that I do not accept that these documents were destroyed pursuant to a routine destruction policy and I find that Mr Jain's evidence in such respects is both incredible and concerning. I consider it most likely that he specifically directed that all documents relating to the 2014 manufacture of AHA be destroyed because they contained incriminating evidence. I conclude this for the following reasons:

(1) BHL's Site Master File, to which Mr Jain was taken, included the following in the "Documentation" section: "*All the documents related to all departments are recorded both electronically and on paper also at QA*". Therefore, it appeared as

though there would be electronic as well as hard copy records of everything. However, Mr Jain's evidence was that at the time they "*did not have a server*" and "*we were not recording all documents electronically*". In other words, they were in breach of their own policy document that had been provided to FOL. He also said that the only electronic documents were blank template forms that were printed off and then completed in hard copy. This struck me as highly implausible.

(2) It appears that the only electronic documents that have been disclosed are emails between BHL and FOL, which could not be successfully destroyed by BHL as they would be available from FOL. There was apparently email traffic between BHL and Nigam, as referred to in paragraph 43 of Mr Jain's first witness statement, but somehow these have been deleted. There is now no evidence whatsoever in relation to the arrangements that existed between BHL and Nigam Pharmachem in relation to the manufacture of AHA, including whether BHL had subcontracted the manufacture to Nigam Pharmachem (in its original Reply, BHL had said this, but then amended the Reply to assert that it was partly manufactured at Nigam's facility but not subcontracted). The true position therefore cannot be determined.

(3) Dr Christie found a document when he visited BHL in May 2013 that had been issued by the Finnish Medicines Agency following an inspection of BHL's facilities in April 2013. It is a Statement of Non-Compliance with Good Manufacturing Practice under two EC Directives. The document identified certain critical and major deficiencies: the critical one being "*falsification of documentation and deliberately hiding the use of an unapproved critical starting material*." The Report went on to say that "*The deliberate hiding of traceability data for the critical starting material could be regarded as criminal activity that puts patient health at risk*." Mr Jain said in cross-examination that he accepted those findings but he blamed it, again, on a person in the Quality Assurance department who he said had done this to hide his mistakes. This clearly shows the capacity for BHL to be engaged in falsifying records.

(4) In November 2014, as part of FOL's investigations as to what went wrong with the 2014 AHA consignment, Dr Christie and Dr Parkinson visited the Vadodara facility[9] to audit it and discuss with Mr Jain how the 2014 manufacture was carried out. It is FOL's case that Mr Jain confirmed that the manufacture took place at Vadodara and Mr Jain showed them the production records for that 2014 manufacture. Those productions records, according to Dr Parkinson who made manuscript notes of what he found but did not take copies of the records, identified vessels at Vadodara in which the manufacture was said to have taken place. BHL's case now is that part of the manufacture of all the commercial quantities of AHA took place at the Nigam facility, not at Vadodara. That would mean that the records shown to Dr Christie and Dr Parkinson were false records.

[9] This was the Unit II facility at Vadodara which was the only facility that FOL visited and audited at the material time and which it says BHL led it to believe would be where the AHA would be manufactured. This is dealt with more thoroughly below.

Neither those, nor the real production records (if such existed) are before the Court.

22. The Finnish Medicines Agency Statement shows a propensity on the part of BHL to falsify documents. Mr Jain accepted that he did not tell Dr Christie and Dr Parkinson that manufacture did not take place at Vadodara which was the only site they audited. It is likely that, if he was intent on concealing the actual site of manufacture, he would falsify the records in order to maintain that pretence. The 12 June 2014 email shows that Mr Jain was well aware that the use of an unauthorised and unaudited facility where the AHA could have been contaminated could lead to BHL not being paid.

23. But the main reason why I reject Mr Jain's evidence in relation to the documents is because it is simply not credible that every single document, whether in hard copy form or electronic, was destroyed because of a routine policy that was allowed to continue even after the dispute arose. As soon as there was a question mark over the 2014 AHA and there was a risk of BHL not being paid, a reasonable and honest response by BHL would have been to want to investigate for itself what had happened. Such an investigation would require examination of the production records, at the very least. It would be obvious that such documents should not be destroyed. If that was not done, it could only have been because BHL and Mr Jain knew exactly what those records stated and they would have exposed the fact that, as indicated in the 12 June 2014 email, manufacture was not taking place at Vadodara and also, possibly, that they had used cheap and low quality raw materials that might have caused the contamination. In other words, there was every incentive to conceal those facts from FOL.

24. Mr Nersessian on behalf of BHL pointed to the existence of some contemporaneous records that had been disclosed by BHL. These included some Certificates of Analysis and Analytical Work Reports prepared by the Quality Control department. In response, Mr Cameron on behalf of FOL said that the non-destruction of these documents shows that there was actually selective destruction of unhelpful documents. The documents that have survived merely show the testing of the AHA that had been manufactured and confirm BHL's case that the AHA complied with the specification. The documents that would show how and where the AHA was manufactured have all been destroyed.

25. I was unimpressed with the casual way that Mr Jain treated this part of his evidence. In my view he knew the seriousness of what he had done but tried to pretend that it was a mere oversight not to have instructed the Quality Assurance department to preserve all documents related to the AHA. I find that he was not telling the truth about how these documents came to be destroyed and that this impacts on the overall credibility and reliability of his evidence.

(ii) The other manufacturing site

26. I have referred above to the use of the Nigam facility for the manufacture of the AHA and that this was not disclosed to FOL. I will deal with this more fully in the detailed

factual section of this judgment below. Mr Jain admitted in his oral evidence that he never personally informed anyone at FOL that manufacture of AHA was taking place at Nigam or that the company Nigam Pharmachem was itself involved in the manufacture (see paragraphs 28 and 43 of his first witness statement quoted from above which suggest this). Instead, he led FOL to believe that it was all taking place at BHL's facility at Vadodara, which was inspected and audited by FOL a number of times, including after the dispute arose.

27. In my view this can only be because Mr Jain knew that it was unauthorised and that FOL would have insisted on auditing Nigam before allowing manufacture to take place there. Mr Jain's only response to this was that Dr Gokhale knew that manufacture was taking place at Nigam and he assumed that Dr Gokhale had told FOL this. Even if Dr Gokhale did know, that would not absolve Mr Jain of responsibility for ensuring that FOL knew that manufacture was not taking place at the site that had been audited and which FOL was entitled to assume would be the only place of manufacture. It was incumbent on Mr Jain to inform the representatives of FOL, particularly when they were visiting Vadodara, and it is disingenuous of him to say that he thought they knew, when it was perfectly obvious that they did not. This was all part of the false narrative that Mr Jain on behalf of BHL was peddling to FOL.

28. In summary then, I find that Mr Jain's evidence is littered with lies and concealment. I am not prepared to accept anything that he says unless it is supported by untainted and independent contemporaneous documentation.

(b) FOL's witnesses

29. FOL called five factual witnesses, all of whom were probably more qualified than the experts to give expert evidence. The five were:

(1) Mr David Dunn, who was at the material time employed as FOL's Procurement Manager. Mr Dunn has a degree in Chemistry and has 26 years' experience in the industry. He was involved throughout the material time and his evidence dealt primarily with the procurement process that led to the agreements entered into with BHL for the manufacture and supply of AHA.

(2) Dr Tony Christie, who is the Supply Chain Manager of FOL and was responsible for Quality Assurance. He has a degree in Chemistry and Toxicology and a PhD in Analytical Science (Chemistry). His evidence also dealt with the procurement and continuing management of the contracts between FOL and BHL.

(3) Dr Michael Chalton, who is the Development Group Leader for Lianhetech Europe Limited, FOL's parent. He has a degree and PhD in Chemistry and more than 23 years' experience in the industry. His evidence was primarily concerned with the investigation into and the costs of dealing with the 2014 AHA.

(4) Dr Edward Stefaniuk, who has now retired after 29 years with FOL and was formerly the Process Optimisation Specialist. He has a degree in Chemistry and a

PhD in Physical Organic Chemistry. His evidence was principally concerned with the investigations but he also dealt with the management of the contracts.

(5) Dr Nigel Parkinson, who is, since 2013, FOL's Technical Director. He is also Vice-President and Managing Director of FOL's parent. He has a PhD in Organic Chemistry and some 26 years' experience in research and development and running manufacturing plants. His evidence concentrated on the calculation of FOL's losses.

30. By and large, I found FOL's witnesses to be honest and credible. When giving evidence on scientific matters within their expertise, they were generally coherent and reliable; perhaps less so when discussing contractual issues and the commercial relationship with BHL. I found it refreshing, however, that there was not a particularly consistent line among FOL's witnesses on what the terms of the contract were and it appeared to me as though they each had their own independent thoughts on the matter. As such, their evidence seemed to me to be not overly co-ordinated which is positive and makes it more credible.

31. There were some surprising admissions which I will deal with in the course of the factual section of this judgment, such as an acceptance on the part of Mr Dunn and Dr Chalton, contrary to FOL's pleaded case, that a factory usage test was not a part of the AHA acceptance criteria. Even though contractual interpretation is not really a matter for them, Dr Christie, for example, agreed that the purchase orders were only referring to the agreed specifications in terms of the acceptable impurity limits, which was also contrary to FOL's case. (I will have to decide whether that is correct.)

32. While of course they were all keen on FOL's behalf to avoid payment in respect of the 2014 AHA consignment and to support the counterclaim, I consider that they did genuinely believe that it had been contaminated with a substance that caused serious problems in the conversion process to the final product. There was a certain amount of defensiveness, particularly from Mr Dunn and Dr Parkinson, when they were questioned as to why there was not more of a reaction when they received information that the AHA may not have been manufactured at Vadodara and the trustworthiness of BHL, but I consider that FOL's witnesses were telling the truth when they claimed that they believed, at least up to that point, that the AHA had been manufactured by BHL at Vadodara. The lack of reaction was probably because FOL had already received good effective AHA in 2012 and 2013 and it was keen to be able to continue with this profitable business into 2014. I do not consider that this undermines their evidence.

33. In short, I am satisfied that FOL's witnesses were telling the truth and honestly trying to assist the Court in resolving the dispute.

(c) The uncalled witness: Dr Uday Gokhale

34. I did not hear evidence from Dr Gokhale. Not surprisingly, neither side was prepared to take the risk of calling him as their witness. He was responsible for getting the parties together in the first place and was thereafter involved in most discussions that took place throughout the course of their contractual relationship and was copied in to many emails. As I mentioned above, BHL and FOL both say that Dr Gokhale was acting for the other at the material time and that his knowledge should therefore be attributed to that other.

35. BHL entered into a written agreement with Dr Gokhale dated 1 January 2011 by which Dr Gokhale agreed to act as an "ADVISOR" to BHL in respect of a number of "*mentioned activities*" which were as follows:

> " - to try & get the agency business of Polamin, Germany
> - to try & get the exclusivity for Polamin, Germany for Indian market for their range of products
> - to advice [sic], & develop the business for Polamin products in Indian market
> - to advice [sic], & develop the business of [BHL's] existing products, in domestic as well as international market"

BHL has said that this agreement was limited to business with Polamin although the last item on the list seems to be broader and to encompass other "*existing*" customers and products. As well as being remunerated with a monthly sum, Dr Gokhale was provided with a laptop and a data card "*to perform his agreed duties*". The period was 36 months but with a 180-day notice period. Dr Gokhale was given a BHL email address – uday.gokhale@bajajhealth.com – although he also had, and sometimes used, his personal Yahoo email address. Thereafter, according to Mr Jain, Dr Gokhale had "*complete freedom of our head office, and freedom to speak to any member of staff*"; he was also able to visit any manufacturing site and laboratory.

36. In paragraph 2A of BHL's Amended Reply, BHL denied that Dr Gokhale was ever an employee of BHL and went on to assert that: "*at an unidentified point no later than March 2012, Dr Gokhale ceased to act as an independent contractor for BHL in relation to existing and future business because he was acting as agent of FOL*." However I have seen no evidence of the actual termination of the agreement between BHL and Dr Gokhale and he clearly continued to be involved in some capacity or other for BHL in relation to the AHA. He was nominated by BHL on FOL's supplier questionnaire dated 18 April 2011 as FOL's point of contact with BHL. There are a number of emails to FOL in 2013 and 2014 in which Dr Gokhale referred to "we" as meaning him and BHL.

37. The position is complicated by the fact that Dr Gokhale, through his company Chait Life Sciences, entered into an agreement with FOL on 14 March 2012. The agreement was for one year with an option to renew for another year and it was to "*monitor the business activity of FOL*" in India. In particular, Dr Gokhale was to visit the "*Bajaj factory at Vadodara*", "*Mumbai port*" and "*Bajaj office in Mumbai*". (This is strong evidence as to where FOL thought BHL was manufacturing its AHA.) Dr Gokhale would be remunerated by reference to each visit and to report as to his findings. The

background to the agreement (as will be explained in more detail below) was concerns arising out FOL's audit of the Vadodara facility in January 2012 and Mr Jain's immediate indication of a delay to the 2012 production of AHA. Dr Gokhale did visit the premises and reported back to FOL, particularly concentrating on the reasons for delayed deliveries. FOL says that Dr Gokhale had no role beyond this and he was clearly not acting as its agent with any authority to agree contractual variations or the like. Mr Dunn described Dr Gokhale as their "*eyes and ears in India*" and that FOL used him as a "*sounding board*".

38. BHL submits that Dr Gokhale's alleged knowledge that the AHA was not being manufactured at Vadodara should be attributed to FOL. FOL submits that Dr Gokhale's alleged knowledge that the AHA was to be converted to Octopamine (see below) should be attributed to BHL. Having not heard any evidence from Dr Gokhale and on the basis of the conflicting contractual documentation, I am not prepared to attribute Dr Gokhale's knowledge to either party. While his emails and involvement are significant in the history of the relationship between the parties, their relevance lies more in what he specifically told each party than in any contrived attribution of his knowledge.

(d) The expert evidence

39. Unfortunately, the expert evidence proved to be of limited assistance. I will deal with some of their findings below but at this stage I make the following general comments about the expert evidence.

40. By an Order of Deputy Master Cousins dated 13 February 2018 each party was permitted to adduce expert evidence in the field of "*Industrial Chemical Manufacturing*". The said Order went on to detail what the expert evidence was to be directed at:

> "The Expert shall report on (i) whether the [AHA] supplied by the Claimant to the Defendant contained any impurity or contaminant; (ii) if so, what the impurity or contaminant was: and (iii) what the effect of any such impurity or contaminant would be on the hydrogenation process carried out by the Defendant."

There were then a series of more detailed questions to be answered by the experts. The experts were required to serve their reports and then to meet to try and narrow the issues between them.

41. BHL instructed Mr Paul Forsythe of Alemare Solutions Limited as its expert. FOL instructed Mr Peter Claes as its expert. The experts served their reports and corresponded with each other. However, no joint statement of the points of agreement and disagreement was finalised and I have not seen any such document. BHL has blamed Mr Claes for not returning a draft prepared by Mr Forsythe but I am not concerned with the reasons for the failure to comply with the Order. Unhelpfully, there was simply no joint statement before the Court.

42. At the start of the trial, Mr Cameron on behalf of FOL sought to adduce a further report prepared by Mr Claes which I was told contained the results of further tests that Mr Claes had carried out. Mr Cameron said that Mr Claes might refer to these further tests in the course of his oral evidence and so it would make sense if the Court had this available in written form. Mr Nersessian objected to this report being adduced, particularly because, as he submitted, Mr Claes had not responded adequately to the joint statement draft. In the event, I did not allow the new report to be admitted to evidence and I have not read it.

43. Mr Forsythe is, as he said in his evidence, a materials scientist. He is not a chemist and he conducted no experiments himself in order to answer the questions he was supposed to be answering. Instead he based his report purely on the testing that had been done by the parties and other third parties. I am not convinced that Mr Forsythe had the requisite expertise to opine on the matters that had been directed. His work and experience lies more in the regulation of chemical processes. His personal history section of his report states as follows (underlining added):

> "I am the director of Alemare Solutions Ltd, a Lincolnshire-based manufacturing and chemical regulation consultancy. I have a Master of Arts degree in Materials Science from Cambridge University and a Post-Graduate Certificate in REACH[10] Regulation management from Hull University. I am also a committee member of the Chemical and Industrial Consultants Association and a member of the Chemical Hazards Communication Society. Before leaving full-time employment in 2005, I worked for more than thirty years within the chemicals and composite moulding industries, improving products and processes. I specialised in using Statistics to optimise formulations and processes so that they were robust and insensitive to conditions that were impossible or expensive to control. My responsibilities included trouble-shooting manufacturing processes for my employer, the Scott Bader, its customers and licensees. I am therefore very familiar with the issues that arise when an established product is made using different equipment and raw materials. For the final five years of my employment, I managed the company's materials testing laboratory, advising the development departments, and steering products through regulatory approval processes."

44. There were a number of errors in his report and he withdrew certain findings during the course of his cross-examination. Given my doubts as to his expertise and the faults exposed in his report, I place little or no reliance on his evidence.

45. Mr Claes, by contrast, does have relevant expertise and did carry out his own testing. His particular expertise is in catalysts and chemical synthesis, which is directly relevant to this case as it concerns the effectiveness of the catalyst used in the hydrogenation process to convert the AHA into the finished product Octopamine. Even so, Mr Claes has not been able to identify what the contaminating substance is.

[10] This is an EU Regulation concerning the Regulation, Evaluation, Authorisation & restriction of Chemicals, hence the acronym REACH.

46. The problem with Mr Claes' evidence is of a different nature. He declared on the second page of his report that: "*I know of no conflict of interest of any kind, other than any which I have disclosed in my report. I do not consider that any interest which I have disclosed affects my suitability as an expert witness on any issues on which I have given evidence.*" Mr Claes did not disclose that he has worked as a consultant to FOL for a number of years and in particular in relation to its use and sourcing of catalysts. Furthermore, it appears from an email dated 27 June 2014, around the time that the problems with the AHA arose, that Mr Claes was involved in some way. While Mr Claes insisted in his evidence that he was not consulted about the AHA in question in these proceedings, his serious lack of candour in not disclosing his connection to FOL in his report is troubling.

47. Furthermore, Mr Claes said that in preparing his report, he "*utilised the services of a number of independent laboratories, to provide analytical support."* What he did not say is that he actually used FOL's facilities to carry out his experiments. This was therefore a highly misleading statement intended to give the impression that he had compiled his report independently of FOL. Mr Claes accepted in his oral evidence that this was not a "*helpful statement*" in his report and that he should have mentioned his connections with FOL. Mr Nersessian submitted that this is proof of actual bias in Mr Claes' evidence. It is certainly unsatisfactory and concerning that Mr Claes did not disclose his longstanding connection to FOL and it does, to my mind, undermine his independence. I propose to treat what he says with extreme caution. In the event, it may not be significant, as I do not believe that the expert evidence greatly assists in the resolution of the actual issues in this case.

D. THE FACTS

AHA and Octopamine

48. FOL used the AHA as an intermediate stage in the process of manufacturing a chemical known as Octopamine. There is an issue in this case as to whether BHL knew the purpose for which FOL required the AHA and even whether BHL knew of Octopamine. The conversion of AHA into Octopamine was carried out by FOL in England and this was effected by a process of hydrogenation using a Palladium Charcoal catalyst.

49. The finished product Octopamine is one of the raw materials used in the production of animal health products. It mobilises the release of fat in adipocytes (fat cells). It apparently can be used by humans to assist in weight loss but the AHA/Octopamine in this case was not for human consumption. This meant that there are less stringent regulations applicable to the manufacture of the various chemicals.

50. FOL's customer for Octopamine is a German company known as Evonik, which company used to be FOL's parent. Until 2011, FOL manufactured its own AHA (which it called Octopamine stage 3) and then converted the AHA into Octopamine

for onward sale to Evonik. But in or around 2010, a decision was taken by FOL to try and reduce its costs by outsourcing the production of AHA and in particular it was looking to use an Indian-based manufacturer if a suitable one could be found. FOL would still be doing the hydrogenation of the AHA so as to convert it into Octopamine. It is important to note that FOL therefore knew exactly what it wanted in terms of the specification of the AHA, whereas this was a wholly new product so far as BHL was concerned.

The Initial Contact between FOL and BHL

51. BHL was established in 1993 and has been involved in the manufacture and distribution of various pharmaceutical and nutraceutical ingredients to the food industry. At the material time, its head office was in Mumbai. In 2010, it had three manufacturing facilities: one in Tarapur; and two in Vadodara, Gujarat.

52. Mr Jain says that he first met Dr Gokhale in late 2009 or early 2010 at a pharma exhibition in Mumbai. At that time, Dr Gokhale told Mr Jain that he was working for a company called Degussa which was the largest manufacturer of Chlorhexidine, a disinfectant commonly used in hospitals. Degussa was interested in sourcing Chlorhexidine base from an Indian manufacturer. Dr Gokhale also mentioned to Mr Jain that he had a connection with a company called Polamin in Germany which manufactured injectable drugs for the treatment of infertility. Polamin was looking for a distributor in India for its products.

53. Once FOL had decided to outsource the manufacture of AHA, Mr Dunn had spoken to Dr Gokhale to see if there were any suitable manufacturers in India that he could recommend. Dr Gokhale had previously worked for Evonik, FOL's erstwhile parent and its customer for Octopamine. Dr Gokhale suggested BHL as a potential supplier and when Mr Dunn, together with some other FOL executives, was attending the Chem Spec Industry Trade Exhibition in Mumbai in April 2010, Dr Gokhale arranged for Mr Dunn to meet Mr Jain. In fact, at that time, FOL was looking also to outsource the manufacture of another product called HMBCG (also a Chlorhexidine base product) and that formed the principal basis of discussion at the initial meeting between Mr Dunn and Mr Jain at BHL's head office in Mumbai.

54. There appears to have been little or no contact between the parties until around December 2010 when Dr Gokhale informed Mr Jain that FOL wanted to visit BHL's manufacturing facility to see if it might be able to outsource the manufacture of both HMBCG and AHA. Arrangements were made by email (to which Dr Gokhale was copied) for Dr Christie, FOL's Quality Assurance Manager, and Dr Morgan, FOL's Technical Director, to visit BHL on 12 January 2011. The site that was chosen for their visit was Unit II at Vadodara because that was the facility that FOL had been told BHL would use to manufacture either or both of the products.

55. Dr Christie and Dr Morgan spent a day at the Vadodara site together with Mr Jain and Dr Gokhale. This was not a full audit of the site; more, as Dr Christie said, a

"*preliminary general inspection*". A Report was prepared by Dr Christie, although it was only signed and dated nearly a year later on 29 December 2011. Neither Mr Jain nor Dr Christie's Report refer to the possibility of AHA production and the Report's overall conclusion was reasonably positive:

> "The representatives of Bajaj were friendly and helpful throughout the audit. The majority of the main QA procedures were also available in written English to aid the auditing process.
> The facilities viewed during the audit were clean and tidy, with the general housekeeping conditions on site being good.
> The Bajaj site appeared to have a good control of quality and the auditors feel that the quality culture throughout the company was at a good standard and fit for the manufacture of registered starting materials.
> The manufacture of other materials at BHL for FOL may require additional inspection."

56. Following this visit, there must have been an initial discussion about the possibility of BHL manufacturing AHA for FOL. In an email sent on 27 January 2011, Mr Dunn suggested that they had got to the stage when it was necessary to discuss the precise specifications and requirements for the products to be manufactured by BHL and, to such end, a Confidentiality Agreement would need to be signed. Mr Dunn's email, which was sent to Mr Jain and Dr Gokhale (at both his BHL and personal email addresses), included the following:

> "It would make sense for us to forward our process outline for this synthesis and then any potential manufacture by Bajaj should have the same analytical profile.
> Additionally it will save you time and resource in your development."

As Mr Dunn said in his witness statement, FOL wanted BHL to produce AHA of the same quality that it had been producing and therefore it would have to use the same process and quality of raw materials as had been used by FOL. Mr Dunn attached a draft Confidentiality Agreement for BHL to sign. Mr Jain signed this on behalf of BHL on 1 February 2011.

The Original Specification

57. On 2 February 2011, Mr Dunn, on behalf of FOL, emailed to BHL the "*laboratory process outline to enable you to carry out work to assess your costs and provide a quote.*" The specification that was attached had a number of headings, the first two of which were:

> "2'-Amino-4-hydroxyacetophenone – Lab procedure Stage 2"

and

> "2'-Amino-4-hydroxyacetophenone – Lab procedure Stage 3"

At the end of the "Stage 2" section there is a paragraph that says:

> "There is no specification set out for Stage-2 because the Stage-3 process is the purification of Stage-2, then (in lab or on our plant) Stage-3 is taken through as iPA-wet (ca. 10%) material into the Stage-4 process."

At the end of the "Stage 3" section there is this paragraph:

> "Collect the product (expect ca.50g of orange pink solid) to be used in Stage-4. Dry the solid in an oven at 50ºC, under vacuum."

58. There is no dispute that the Stage 4 referred to is what FOL was to do with the AHA that would be provided by BHL following the Stage 2 and 3 processes. Accordingly, it is fairly clear that another process would have to be carried out to get the finished product, ie the hydrogenation that turned the AHA into Octopamine. However, Mr Jain has claimed that he and BHL did not know what the AHA was to be used for and/or what further processes would be applied to it. While FOL accepts that it never explained the hydrogenation process (which was probably a trade secret), it maintains that BHL obviously knew that the AHA was to be converted into Octopamine and that it would also know that this involved some form of hydrogenation. Mr Jain accepted in cross-examination that he knew that the AHA was an "*intermediate product*", meaning that it would be converted by a further process into the finished product.

59. This specification also includes details of the Raw Materials that would be required, although it did not specify any particular suppliers that BHL would be required to use. It said this:

> " Raw Materials – Points of Note
>
> Most of the raw materials don't need anything special in their specifications, but there are a few critical items.
>
> ALUMINIUM CHLORIDE
> Iron 500 ppm maximum
> Particle size 2-5mm 90% minimum
> Purity 99% minimum
>
> HYDROGEN CHLORIDE
> Water content 20 ppm maximum
>
> NITROETHANE
> Water content 0.2% w/w maximum
>
> PHENOL
> Water content 0.5% maximum
> Assay 99.5% minimum
>
> AMINO-ACETONITRILE HYDROCHLORIDE
> Assay 98.0% minimum"

While FOL was content to leave BHL to source raw materials, it was obviously important to ensure that they were of good quality by reference to these requirements as to purity. This was said by Mr Nersessian to show that FOL was prepared to accept a certain level of impurity in the raw materials, and this would include inorganic impurity.

60. The specification of AHA was stated to be:

"Appearance	Orange/pink free flowing powder
Assay (HPLC[11] area at 206 nm)	97.0% minimum
Melting point	> 231ºC
Loss on Drying	0.5% maximum
IR[12]	Conforms to standard"

As Mr Dunn pointed out in his evidence, the 97% figure for assay by HPLC is a considerably wider tolerance than FOL prescribed when it came to issue its first purchase order in September 2011. At that stage, it was raised to 99.5%, meaning that FOL would only accept AHA that had an impurity level by HPLC testing of 0.5% or less. Mr Dunn explained that this was raised as the purity levels of the AHA trial samples produced by BHL were of good quality so the level was raised and this shows there to have been a form of collaborative negotiation between the parties.

The Samples

61. Before ordering commercial amounts of a chemical product FOL had to be satisfied, by the testing of various samples, that BHL was able to manufacture and supply such commercial amounts of AHA to the requisite quality. As Dr Christie explained in his witness statement, FOL has a three-stage process involving first samples produced in the laboratory and then in the factory:
    (a) Initially the supplier must produce a small laboratory sample of AHA to demonstrate that it can produce AHA.
    (b) Then larger samples would need to be produced so that FOL could conduct a laboratory usage test. That is a trial hydrogenation process in the laboratory to see if the AHA would hydrogenate as easily and effectively as FOL's used to. It also enables FOL to test if the Octopamine would be of the required quality for onward supply to Evonik.
    (c) Finally, in order to establish whether commercial quantities could be produced, FOL required factory produced samples that it could then perform a factory usage test on, ie a factory hydrogenation that worked as effectively as FOL's used to and which produced Octopamine of the required quality.

[11] This stands for High-performance Liquid Chromatography which is used to identify and quantify components in a mixture. However, it can only detect organic compounds.

[12] This stands for Infra Red

62. However, following their initial discussions, FOL actually decided not to use BHL for the production of AHA on the grounds that its quote was too high. FOL was also talking to other potential manufacturers, including Arch Pharmalabs Limited (**Arch**) and NGL Fine Chem Limited (**NGL**). By an email dated 28 March 2011, Mr Dunn informed Dr Gokhale and Mr Jain that FOL would not be proceeding with AHA outsourcing discussions with BHL as its "*pricing was not competitive enough*".

63. Nevertheless, based on the specification it had, BHL decided to produce a laboratory sample of AHA and provided this to FOL. By an email dated 25 April 2011 Dr Gokhale told Mr Dunn (it was copied to Mr Jain):

> "As you are aware that we[13] had offered you price indication based on our paper cost.
> At the same time, we had requested for the r.ms, which kept arriving as time passed and at one stage I had all the r.m's. So, we decided to take a small batch in RnD, and to the surprise, we got excellent orange-pink solid at cost to you of USD 35.70/kg. It looked interesting to me and hence, the mail.
> In the meantime, BAJAJ HEALTHCARE, office has sent the sample to you attention and you should get it in a day or two.
> Its my sincere request to you to analyse the same and inform us whether we are successful in getting the qlty product. Hope to have your cooperation as in the past."

64. Mr Dunn responded the next day to thank Dr Gokhale for the update but to say that FOL was still minded to source the AHA from two other more competitively priced manufacturers. Dr Gokhale continued to press BHL's case and on 4 May 2011 he sent a long email to Mr Dunn, copied to Dr Morgan, in which he made a series of allegations against Arch to try to persuade FOL not to use Arch and to go with BHL instead. He said that "*Arch is almost bankrupt*" and "*almost all the [Arch] suppliers have refused to supply*". Dr Gokhale also said as to his relationship with BHL that his "*role to them is to bring the ne [sic] customers to them and I don't get paid by them for any activity*". As a result of this information, Mr Dunn says that FOL decided to reopen negotiations in relation to AHA with BHL and to test the sample that had been provided.

65. During the course of these negotiations between Dr Gokhale and Mr Dunn, FOL made it clear that it was looking for a price of around US$30 per kg. BHL, for its part, was keen to ensure that the annual volumes of AHA would be around 50 metric tonnes (**MT)**. Clearly, the volumes were an important factor in BHL being able to offer a competitive price.

66. Even though Dr Gokhale was acting for BHL in relation to these negotiations, he proposed that FOL should pay him a commission for sourcing BHL as the manufacturer of AHA. Dr Gokhale's proposal was not limited to BHL but for any products that FOL may wish to source from India. He also sought an additional charge for any visits to supplier premises that he might make, although he excluded

[13] Note the use of "we" by Dr Gokhale throughout this email.

from this, visits to BHL. On 16 May 2011, Mr Dunn declined Dr Gokhale's proposed retainer but said "*we are not ruling out a potential relationship going forward but cannot commit at this time*." This rather confirms the murky and conflicted role of Dr Gokhale.

67. On 23 May 2011, Mr Jain offered to produce the AHA for a price of US$31.65 per kg. On the same day Mr Dunn responded by saying that they hoped to have the results of the sample back from the lab soon and that "*if the sample is acceptable then we will need another 3 samples of larger size such that we can carry out lab usage tests through to our final product*." (underlining added) FOL could not do a usage test on the very small sample that had been supplied and needed larger samples in order to do so. Mr Jain could be in no doubt that the AHA that BHL was hoping to supply was to be subject to a further chemical process to convert it into the final product, and that the AHA that it would supply had satisfactorily to pass the usage test for such purpose.

68. On 25 May 2011, Mr Dunn emailed Dr Gokhale, copied to Mr Jain, Dr Stefaniuk and Dr Morgan, with further details of what FOL needed in order to progress the matter. He said (underlining added):

> "We would need 3 x 100g from 3 separate laboratory preparations (kind of a lab. validation exercise).
> Once we've done this and evaluated the results, then all things being well we can progress to 3 commercial scale batches for validation.
> The sample you've already sent is fine for quality, colour and physical properties so we should now progress further."

It was therefore clear that there would need to be a further stage of testing, after a lab usage test, as to whether the AHA could be converted on a commercial scale in the factory into its final product and that this could be done effectively and efficiently to a satisfactory quality.

69. In the second week of June 2011, the 100g samples were received by FOL. While FOL was testing the samples, there were further emails between Dr Gokhale and Mr Dunn concerning the position of Arch and Mr Dunn assured Dr Gokhale that FOL would be treading carefully vis a vis Arch.

70. On 21 June 2011, Mr Dunn indicated by email to Mr Jain that initial testing of the samples was looking positive. He also asked Mr Jain what sort of lead time BHL would need for the next stage of commercial quantity testing. He said:

> "Initial analysis of your samples shows them to be of good quality, we are currently undertaking lab usage tests through to the final product and we should have a more complete understanding by the end of next week.
> Just to understand the supply situation better, could you please indicate what would be the lead time for delivery of a trial PO of 2MT.
> We would then look to trial this material in our next campaign in 2012.

> Once we have validated the material on the commercial scale and gained customer approval we can then look at scheduling the larger demands.
> We work in campaigns, not consistently through the year, so demand might be something like 50MT spread over 3 months or so (probably in 2013).
> I hope this fits in with the way you operate your manufacturing facility?"

71. On the same day Dr Gokhale responded on behalf of BHL, saying as follows (underlining added)[14]:

> "Its heartening to note that intial analysis has of our samples are +ve, and we are sure it eill be same in case of lab usage also.
>
> Awaiting your feedback on lab usage trial.
>
> As regards, 2MT trail qty, we have worked backwords, and tentatively the scheme could be like
>
> - if we receive PO from you by end of month
> - our r.m procurment should be complete in next 4 weeks
> - so we plan production in Aug 2011
> - the production campaign should be around 2 weeks (considering first time production)
> - the material should be ready toi despatch and should be in Felixstove by end Sept 2011 (latest)."

72. By email dated 12 July 2011, Mr Dunn confirmed to Dr Gokhale and Mr Jain that the samples had passed the lab usage test. He said (underlining added):

> "Good news – your samples have been usage tested through to the final product and the results are good.
> As Craig and Tony have already inspected the Bajaj facility the next step will be for us to issue a PO for a trial 2MT. We hope to be able to be in a position to issue this PO around mid to late August, anticipating a delivery around mid to late November (please confirm 12 weeks lead time from PO to delivery is achievable).
> Please confirm that you can hold the price for this trial quantity?
> The reason for the delay is that we now need to put certain information to the customer and seek their approval to start the trial.
> We expect communications back and forth to take about 4 weeks or so.
> All being well with the trial then we would be looking to take larger scale commercial quantities from March 2012 onwards, which means that we would have to issue another PO at the end of 2011.
> I would be very grateful if you could indicate what your monthly output could be for this material as we will need to factor that into our schedule.
> Other issues, like packaging etc. we can confirm at a later date – one step at a time."

[14] I quote the spelling and grammar exactly as is and will not use "sic" to point out the many errors.

The inspection of the Vadodara facility is referenced in this email showing the importance to FOL of its audit of the actual facility to be used for production of the AHA. Also, it was clear that the AHA had to pass a factory usage test in order for FOL to order commercial quantities of AHA from BHL.

73. Over the next few days, there was discussion by email between Dr Gokhale and Mr Dunn as to the price for the further trial samples and BHL's capacity. On 18 July 2011, Dr Gokhale wrote to Mr Dunn saying:

> "We have worked out the cost, and its USD 32.55 per kg CIF Sea for 2 MT lot.
> All other conditions remain the same.
> The increase is basically due to logistics factor."

Mr Dunn responded the same day saying:

> "Yes, Ok we can live with that for the trial – I will come back to you once we have firm understanding with the customer. As below, can you please indicate what the commercial output could be per month."

To which Dr Gokhale responded by an email dated 19 July 2011:

> "Await your order for trial lot.
>
> The commercial out-put as of now should be minimum 10MT per month.
>
> If everything goes as per our plan to install one more reactor (in next 6-8 weeks)[15] then the out put will be 15 MT at least per month."

74. That was where things rested until the first purchase orders were placed for the commercial samples in September 2011 (dealt with in the next section). I pause before doing so to mention that it is part of BHL's case, as pleaded in paragraphs 3 and 3A of its Amended Reply and as submitted to me by Mr Nersessian that there was a concluded contract between FOL and BHL for the supply of AHA in February 2011, I assume by reference to the original specification provided on 2 February. I do not see how the chronology set out above can be consistent with there having been a concluded contract at that stage when the parties had only just begun negotiating and they were very far from any sort of agreement. I consider that there was only a contract when purchase orders were placed and accepted.

The First Purchase Orders

75. By the beginning of September 2011, FOL was ready to place an order with BHL for 1500kg of AHA which would be used for testing whether commercial quantities could

[15] This is implicitly a reference to the Vadodara facility. Nigam had not been mentioned.

be produced in accordance with FOL's requirements. On 5 September 2011, Mr Dunn emailed Dr Gokhale and Mr Jain and said the following (underlining added):

> "We are ready to place the PO this week – just finalising the specification and analytical method which I will forward to you in due course.
> To confirm we will need 1,500Kg for this trial and we would ask that you please offer an air freight price as we need to do our trial and get acceptance from the customer asap in order to be able to maximise the buying volume for the next campaign (good for us in terms of freeing up plant and good for you in terms of increased sales volume).
> Please indicate new lead time for 1.5MT by air freight.
> What packaging do you think would be best for this trial volume and air freight?"

76. Mr Nersessian placed considerable reliance on the fact that it was FOL that provided the "*specification and analytical method*" and there was no discussion between the parties about it. In other words, FOL was able to specify exactly what it wanted and how it was to be tested and the pricing was based on that. FOL was not relying on any expertise of BHL as it was the party that had all the expertise and knew what it wanted. It was clear to BHL, however, that FOL itself would be converting the AHA ("*freeing up plant*") and it had to be of a quality that satisfied FOL's customer.

77. Dr Gokhale confirmed a price of US$36.50 per kg if shipping by air freight to Newcastle. A few days later, on 8 September 2011, Mr Dunn sent to Dr Gokhale and Mr Jain by email the "*specification and test method*" for the AHA. The covering email is important as it said as follows (underlining added):

> "Please find attached the specification and test method for the material.
> It is our expectation that the quality and profile of the trial material (1.5MT) will be the same as the sample already received.
> If you have any questions please let me know asap.
> Can you please confirm that manufacture will take place at the facility that Tony and Craig visited when they last met you."

78. There can be little doubt that it was important to FOL that manufacture took place at Vadodara which had been visited earlier in the year. Confirmation that manufacture would take place there came in an email of the same date from Dr Gokhale, copied to Mr Jain, which said:

> "Tks fr the method and we can do all the tests in-house.
>
> The production site will be the same where Tony & Craig visited last time.
>
> At this moment, we don't see any problem arising but in case of any, will surely revert to you."

79. This could not have been a clearer confirmation that manufacture would take place at the Vadodara facility, However, Mr Jain, in his second witness statement, explained

that BHL encountered some problems with the side effects of exothermicity and the effluent and so decided to approach Nigam Pharmachem to "*loan license*" its facility where some of the manufacturing of the AHA would take place "*under the supervision of our own chemists and technicians*". That facility is about 2 hours away by road and the batches of AHA would then be shipped back to BHL's Vadodara facility for "*blending, packing and analysis*". His witness statement was carefully worded to emphasise that manufacture had not been sub-contracted to Nigam Pharmachem; nor that there had been any breach of the confidentiality agreement and, even though staff employed by Nigam Pharmachem were used, this was under BHL's supervision. This is in contrast to what BHL pleaded in its original Reply: "*All AHA supplied to FOL was manufactured at the same site known as Nigam Pharmachem throughout 2011 to 2013*."

80. Mr Jain goes on in his witness statement to assert that Dr Gokhale was fully aware of this and that the last sentence of Dr Gokhale's email of 8 September 2011 was intended to enable him and/or BHL to go back to FOL to tell them if there was a problem with the Vadodara facility requiring the Nigam facility to be used. The implication I assume Mr Jain wishes the Court to draw from this is that he thought that FOL knew from Dr Gokhale that the Nigam facility was being used by BHL. I consider that this is completely disingenuous evidence and Mr Jain knew full well that FOL wanted the AHA to be manufactured at Vadodara which it had inspected and that it had not been told that Nigam was being used. There are no documents available to substantiate what he said in his evidence about the arrangements with Nigam Pharmachem because they have all been destroyed. The fact that manufacture of these trial samples took place at the Nigam facility but that FOL thereafter only visited the Vadodara facility was the clearest possible signal to Mr Jain that FOL had no idea that this was what BHL was doing. It will be necessary to ask why Mr Jain concealed this highly material fact from FOL.

81. The specification that was provided by FOL was given a stock code no. 91963 (**First Specification**). The nine-page document was headed "**Octopamine stage 3**"[16]. The words "Octopamine stage 3" also appear at various places throughout the document on pages 1, 5 and 8. Mr Jain said that he did not know what Octopamine was and that it "*meant nothing to us*". I find this quite remarkable. Mr Jain had been provided with a detailed specification that they needed to read carefully and thoroughly to ensure that BHL was following the correct process. Mr Jain knew that AHA was an intermediate and was to be converted by FOL into something else and that something else was a product called Octopamine. I cannot believe that Mr Jain was so uninterested in what the AHA was going to be used for that he did not research what Octopamine was, if he did not know already. While I accept that FOL did not explain this to BHL or describe the hydrogenation process that it was using (which was a trade secret) it was not difficult to find out what Octopamine was from the internet and an experienced chemist would know that some form of hydrogenation would be necessary. In fact, as will be seen, BHL picked up on the reference to Octopamine in the purchase order and asked for it to be changed.

[16] There were two versions of this in the bundles, the one from BHL having the heading blanked out. However, I understood BHL to accept that the document was headed in this way.

82. Going back to the First Specification, it required there to be a "*Certificate of Analysis*" (**CofA**) provided by BHL that showed the results of seven tests to be performed on the AHA. Those seven tests were:

    1. Appearance
    2. Identification by IR
    3. Melting Point
    4. Assay by HPLC
    5. Impurities by HPLC
    6. Loss on drying
    7. pH.

    These seven tests mirror the five tests in the original specification of 2 February 2011 but numbers 5 and 7 have been added.

83. The seven tests would then be performed again by FOL when it received the AHA to confirm that BHL's CofA was correct. The actual limits to be tested were stated in the First Specification to be as follows:

1.	Appearance:	Light pink to orange pink solid
2.	Identity by IR:	Comparable to Standard Reference Material
3.	Melting Point:	231ºC minimum
4.	Purity by HPLC (% area):	99.5% area minimum
5.	Impurities by HPLC:	Largest single impurity 0.2% area maximum Total impurities 0.5% area maximum
6.	Loss on drying:	1.0% maximum
7.	pH:	2.7 minimum

    (As noted above, the purity by HPLC of 99.5% area minimum was increased from the 97% in the original specification of February 2011.)

84. There was then set out in the First Specification detailed instructions and requirements as to the testing methods and procedures for the CofA. As FOL's witnesses said, these are the prescribed and acceptable tolerances for the inevitable impurities that would be found in the AHA. All raw materials have impurities in them and there is variability in the chemical processes, so FOL set out what it considered to be satisfactory levels of impurity and the specific testing for such levels to be carried out by both BHL and FOL.

85. The purchase order for the 1500 kg commercial trial batch of AHA was issued by FOL on 12 September 2011. As originally issued it referred to "Octopamine Stage 3" rather than AHA's chemical name and Dr Gokhale asked FOL to change it, which FOL agreed to do. The relevant text from the amended first purchase order dated 12

September 2011 for 1,500 kg of AHA for a total price of US$54,750 was in the following terms (underlining added):

> "**Description**
> 2'amino-4-hydroxyphenone
> 60 x 25kg net weight drums.
> Supplied on wooden pallets.
> Agreed Spec FO Ref 91963
> Material supplied must be of same
> Quality of recently recieved [sic]
> (must meet all accepance [sic] criteria
> Stated in FO Ref 91963 and have
> Similar impurity profile etc)
> Material delivered CIF to
> Newcastle International Airport.
> Please forward all documentation
> Plus copy invoice, to Barry Austin
> At LV Shipping…"

The later purchase orders had the same two spelling mistakes and odd wording, making it likely that this wording was simply copy and pasted each time. I was told that the purchase orders were drafted by Mr Paul Dixon of FOL.

86. Both Dr Christie and Dr Stefaniuk accepted that the reference to "*similar impurity profile*" was to the impurity profile set out in the First Specification and the testing prescribed therein. However, as I understand FOL's case, it is asserting that the reference to "*same quality of recently received*" and "*similar impurity profile*" is not simply to the First Specification but to the actual quality and general impurity profile of the samples previously submitted and accepted. Mr Dunn said in his witness statement that:

> "The purchase order was, in essence, saying the sample AHA ordered must comply with the sample previously supplied, i.e. to comply with the material's known impurity profile and must not contain any other material. The tests that FOL included in the specification were based upon that requirement. Bajaj was at all times well aware that the AHA it manufactured should contain nothing else other than the materials specified and that the tests specified were designed on that basis."

87. On or around 21 September 2011, BHL returned to FOL its Supplier Questionnaire and included with that was BHL's Site Master File for the Unit II facility at Vadodara. The Supplier Questionnaire contained further details about the facility at Vadodara. Nothing was said about the Nigam facility.

88. On 23 September 2011, Mr Dunn asked whether the AHA samples would be received on time at the end of October. He said in an email to Dr Gokhale:

> "How are preparations proceeding for the manufacture of the 1.5MT trial lot?
> Are you still on time for end of October delivery?
> We need to give an indication to the customer of when our processed material will be ready and samples sent to them for evaluation.
> We need them to approve very quickly so that we can send you commercial PO in time for the next campaign."

Dr Gokhale responded by email dated 26 September 2011:

> "The key r.m will arrive in our factory by 8th (latest), and we hope to start production by Oct 10 or 11, so at this moment, it looks like the shipment will be on time.
>
> At the same time, since this product is exported for the first time from India, we are not sure (what hiccups may occur, especially with the airlines), so you can consider arrival at your end in the first week of Nov. 2011."

89. This purchase order was satisfied by the delivery of three 500kg batches. Each batch was accompanied by a signed CofA that stated that "*The sample complies with the standard of quality prescribed in specification.*" The purity tested by HPLC was certified to be 99.6%, 99.6% and 99.7% against the specified minimum of 99.5%. In other words, they passed the requisite purity level tested by HPLC.

90. FOL did its own acceptance testing of the AHA samples which confirmed BHL's CofAs. Additionally, and as anticipated, FOL carried out three factory trial production runs on each of the 500kg batches. The average time taken for the hydrogenation process was eight and a half hours and the average time taken to complete the entire Octopamine production process was 38 hours 10 minutes. These times were apparently in line with FOL's expectations and particularly with the times achieved by FOL when it was also manufacturing the AHA. FOL's customer Evonik subsequently approved the Octopamine produced from these trial samples. Mr Dunn then informed Dr Gokhale that the AHA samples had been approved and that they could move towards ordering commercial quantities of AHA.

The Audit of Vadodara in January 2012

91. Between 16 and 19 December 2011 there were some email exchanges between Mr Dunn and Dr Gokhale concerning the quantity of raw material that BHL would need to order from its Chinese supplier. That depended on the quantity of AHA that FOL was going to order from BHL and Mr Dunn confirmed that FOL would order 30 MT of AHA so long as BHL could guarantee that the full 30 MT would be manufactured and delivered, by air freight at BHL's cost if necessary, by the end of July 2012. Both sides committed to this.

92. However, as there had only been one initial inspection of the Vadodara site the previous January, FOL decided that before placing the purchase orders for 30 MT of AHA, it needed to carry out a full and detailed audit of the facility where it believed

BHL would be manufacturing the AHA. This indicates the importance to FOL of knowing the site of manufacture and ensuring that it was suitable to produce commercial quantities of AHA to the requisite standard. At no time did Mr Jain or anyone at BHL tell FOL that manufacture was taking place elsewhere and I consider that BHL's pretence of manufacture at Vadodara was deliberate and part of its devious plan to conceal the use of the Nigam facility.

93. The audit of Vadodara took place on 20 January 2012 and it was attended by Mr Dunn, Dr Christie and Dr Morgan from FOL. Mr Jain and certain other BHL employees attended on BHL's side. Dr Gokhale was also possibly there.

94. Unfortunately, the audit raised significant concerns in particular about the cleanliness and condition of the manufacturing plant. As soon as they were back in their office, FOL made known its concerns to BHL. On 23 January 2012, Dr Morgan emailed Mr Jain, saying:

> "Unfortunately, upon reflection once we had the opportunity to compare our notes and views we have come to the conclusion that we have some concerns over the Bajaj facility, particularly around the housekeeping and condition of the manufacturing plant. Tony and I feel the condition of the facility as a whole has deteriorated somewhat since the last time we were there last year. We must confess to being a little disappointed.
> We will give you some more direct feedback tomorrow/Wednesday, with some specific actions and conditions for placing the orders but I thought it would be unfair of us to leave you with the impression that we were 100% happy with the condition of the facility. Especially as we are so close to starting up.
> …
> In general, I would like to thank you for the time taken to allow us to audit your facility. We are still happy to work with Bajaj but there may be some work for you to do to allow us to progress. Obviously time is of the essence and we will expedite our activities here as soon as we can."

95. Despite having already apparently decided to manufacture at the Nigam facility, Mr Jain responded to Dr Morgan's email the next day as follows:

> "Thanks for your immediate reply and we really appreciate your transparency, which you have mentioned in your email.
> We do agree there was lacking in House Keeping and condition of the Plant since there was lot of project work was [sic] going on and moreover, there was maintenance work during that period. Hence, House Keeping was not up to the mark.
> Craig, in next few days we will send you the photographs of the plant, which you, yourself will see the difference what you have seen during your visit. We will comply to whatever suggestions you have made during the visit.
> We will wait for your more direct feed back may be today or tomorrow and then we will start our corrective action to put plant in good condition.

> As we have mentioned that we will be starting the production by first week, so please send us the PO before this weekend, so that we can enter into SAP system and start production.
> Craig, I, personally guarantee that the plant will be 100% as per your requirement and we will put all our efforts [sic]."

Unquestionably, FOL was entitled to assume that Mr Jain was referring to the Vadodara facility.

96. On 24 January 2012, Dr Christie emailed Mr Jain with a list of 19 actions "*which the FOL team consider as essential for completion prior to process start-up*". He asked for a "CAPA"[17] plan on each action as they were considered to be major issues that needed to be put right before FOL would be prepared to place any commercial orders. These included: for BHL to photograph all areas of plant and key pieces of equipment used in AHA production and to instigate a documented structured deep clean of all manufacturing areas for AHA. Dr Morgan also sent an email that day referring to Dr Christie's list and saying:

> "What we need from you is CAPA plan for each action before we place the order. Our order will also be subject to closure of these actions before start up of the process."

97. Mr Jain agreed, by email sent on 25 January 2012, to send "*a CAPA Plan for each and every action and also with the closure dates.*" On 31 January 2012, he did send the CAPA plan and attached the photographs sought.

98. At around this time, Mr Jain had requested a slight change to the AHA specification in particular in relation to the impurity profile. This was cost driven because BHL wanted to use less Isopropanol in the manufacture of AHA (Isopropanol is used to remove organic impurities). Dr Christie refused to allow such an amendment on the basis that he would need to get customer approval and the sample batches that had been approved had been in accordance with the specification.

99. On 1 February 2012, Dr Christie emailed to Mr Jain asking for the "*pictures of the remainder of the AHA plant*". The next day, Mr Jain sent the photographs attached to an email in which he said:

> "We are attaching herewith photographs of equipment which we are going to use for AHA and HMBCG[18]."

These photographs were put into Dr Christie's Audit Report as being the equipment and plant that was going to be used for the manufacture of AHA. Mr Jain confirmed in cross-examination that this was equipment at Vadodara, even though he had already, according to his evidence, decided to manufacture the AHA at Nigam.

[17] This stands for a Corrective Action Preventative Action plan.
[18] The other chemical that BHL was seeking to manufacture for FOL.

100. On 3 February 2012, Dr Christie emailed Mr Jain asking for confirmation as to the exact manufacturing site address for the AHA and the HMBCG. In response Mr Jain confirmed the site address as being the Unit II facility at Vadodara. This was what was put into Dr Christie's Audit Report. The evidence could not be clearer that FOL believed and was told by BHL that the AHA would be manufactured at Vadodara and that it required a series of actions to be taken in respect of Vadodara in order for the purchase order for 30 MT to be issued.

The Amended Specification

101. As a result of FOL's concerns it decided to add a further test to the specification, namely a Sulphated Ash test. This was intended to be a catch-all test for general dirt and debris that might be present in a production facility at a time when a chemical product is being manufactured. The permitted level of impurity was set at 0.5% but it was made "report only", meaning that a failure of the test would not mean a failure to comply with the specification but it would mean that there were on-going housekeeping issues that would need to be monitored.

102. On 2 February 2012, Mr Dixon emailed the purchase orders in respect of the 30MT of AHA and also the amended Specification as agreed with Dr Christie. This had a new stock code no. 92794 (the **Amended Specification**) and stated that it was replacing the First Specification. Items 1 to 7 remained exactly the same. Item 8 was as follows:

> "Sulphated Ash Report Only (target of 0.5% w/w max)".

February 2012 Purchase Orders

103. Despite FOL's concerns but because of BHL's apparent willingness to address them, FOL decided to go ahead with the purchase orders for 30MT of AHA. On 2 February 2012, therefore, five purchase orders, each for 6 MT of AHA pursuant to the Amended Specification, were issued. The purchase orders were numbered: 0032112; 0032115; 0032116; 0032117; and 0032118. The delivery dates for each batch of 6 MT were at monthly intervals, starting on 2 April 2012. So the first batch was due to be delivered by that date and the last batch by 1 August 2012. The cost in each purchase order was US$196,800. The description of the AHA in the purchase orders was (underlining added):

> "**Description**
>
> 2'amino-4-hydroxyphenone HCL
> 240 x 25kg net weight drums.
> Supplied on wooden pallets.
> Agreed Spec As agreed with T. Christie
> (addition of sulphated ash)
> Copy of updated spec sent with order

> Material supplied must be of same
> Quality of recently recieved [sic]
> (must meet all accepance [sic] criteria
> and have similar impurity profile etc)
> Material delivered CIF to
> Felixstowe Port."

While this is similar to the first purchase orders, the reference to the First Specification in the bracketed section has been removed. Mr Dunn says that the reference to the "*same quality of recently received*" is to the quality of all the samples previously provided.

104. Immediately after the purchase orders were issued, Mr Jain notified FOL that there may be a delay in delivery which he blamed on the fact that there had been a 10-day delay while the inspection and audit had taken place. As a result of these various problems that FOL was encountering with BHL, discussions began with Dr Gokhale for him to inspect and report on how BHL was performing. In an email from Dr Morgan to Dr Gokhale sent on 3 February 2012, he said:

> "Unfortunately Bajaj have not been particularly impressive in winning this business, the audit was poor, the plant was in a poor state, it took a week to provide us with data in response to the actions from the audit. Then when we placed the order today we were informed that the delivery would be 10 days late as the order was placed 10 day [sic] late. We actually saw the raw materials on-site so I do not see what the issue is. Let's say I am not impressed and most concerned about Anil's ability to supply our product. If this fails and we lose sales at FOL as a result, I will be seeking another supplier.
> In short I really need to believe that you would be working for us to then apply pressure to Anil to make this work…"

105. Plainly, FOL was highly sceptical as to whether BHL would actually be able to deliver the AHA. Nevertheless, it decided to proceed and place the orders. Dr Gokhale responded by email of the same date, saying that he agreed with FOL's concerns and that perhaps it should reduce the quantity of AHA ordered so that it is received on time. Dr Gokhale also offered as follows:

> "What we can do is, I will visit Anil's factory twice a month, to up-date you (this will force him to produce at his facility), if he tries to do [sic] somewhere, we can stop the business.
>
> …
>
> In on simple email, you will have to inform Anil that Uday will visit factory to oversee the production on FOL be-half [sic]."

Dr Morgan agreed to this proposal of Dr Gokhale. It also appears (from the underlined passage) that it may have been anticipated that BHL might try to sub-contract the manufacture of AHA if it could not do it all itself in time.

106. In response to Mr Jain's suggestion that there may be a 10-day delay in delivery, Mr Dunn emailed him on 3 February 2012 to say:

> "We need the last of the 30MT delivered into the UK in early July.
> If you think this cannot be done please let me know how much cannot be delivered by this time and we can adjust the PO's to reduce by that amount.
> We will then extend our manufacturing to compensate."

In a further email of the same date, Mr Dunn said:

> "From our point of view you will understand that we will be very concerned about any talk of delays.
>
> It is absolutely imperative for future good business together that the delivery of 30MT AHA proceeds without any delay or major issues."

107. In a further email on 3 February 2012, Dr Gokhale informed Mr Dunn and Dr Morgan that the threat of reducing the quantity of AHA had "*worked wonders*" and that Mr Jain was determined to execute the order in full in the agreed timeframe. Dr Gokhale continued to refer to the work that he would do for FOL and that he had discussed it with Mr Jain who had agreed, albeit reluctantly, that Dr Gokhale could visit the factory twice a month to check on the production of the AHA and that he would be accepted "*as independent person working for* [FOL]". This led to the entry of the agreement with Chait Life Sciences, Dr Gokhale's company, on 14 March 2012 (as described above).

108. During March and April 2012, BHL suffered a series of production problems which were discussed regularly with FOL at weekly conference calls. Dr Christie explained that this led to an amended AHA production process being issued by FOL around 25 April 2012. The clear assumption on FOL's part was that the production difficulties identified by BHL were at its Vadodara facility and it was not informed otherwise.

109. In April 2012, there was continuing discussion about delays and the quantity of AHA that BHL could produce. On 9 April 2012, Dr Gokhale reported by email to FOL on his visit to the "Bajaj factory" on 6 April 2012, including that the first delivery would not be 3,000kgs but between 2,500-2,700kgs and that:

> "It looks at this moment that Bajaj can produce maximum of 4 MT in a month (can go upto 4.5 MT a month, but 5 MT is definitely ruled out).

He said that he would visit the "*Bajaj factory*" again on 16 or 17 April. FOL could only have understood Dr Gokhale to be referring to Vadodara. On 16 April 2012, Mr Dunn sent an email to Dr Gokhale in which he stated that "*we have lost faith in Bajaj's ability to service our requirements for this project*".

110. By 25 April 2012, the first batch of 2.5 MT of AHA had been received by FOL. This was less than half of what was meant to have been delivered by the beginning of April 2012. FOL therefore decided to reduce the total purchase order from 30 MT to 20 MT to be fulfilled in the original timeframe. Although Mr Jain sought to persuade Mr Dunn to reduce it only to 24 MT, Mr Dunn held firm and it was agreed that BHL would manufacture and deliver 20 MT of AHA by the end of July 2012.

111. Notwithstanding all the aforesaid production problems, BHL did manage to deliver the 20 MT of AHA by the end of July 2012. The quality of the AHA was in accordance with the specification and matched the quality of the samples that had been delivered earlier. The complete hydrogenation process for the 2012 consignment of AHA took an average of 39 hours 31 minutes which was in line with the factory test production runs and with FOL's expectations. Accordingly, and despite all the difficulties experienced in the production of the 2012 AHA, FOL was satisfied with the AHA produced by BHL, paid for it and was prepared to place further orders for its 2013 Octopamine production campaign.

August 2012 visit to Vadodara

112. On 7 August 2012, Dr Stefaniuk and Mr Dunn visited the Vadodara facility. According to Dr Stefaniuk, the purpose of the visit was to "*view the facility at which Bajaj was manufacturing the AHA and also to meet the people involved in that*." During the visit, they met with Mr Jain and Dr Gokhale and were given a tour of the facility. Remarkably, in referring to this visit in his witness statement, Mr Jain says that Dr Stefaniuk's focus was on suggesting improvements to BHL's manufacturing process for AHA but he does not explain why he did not mention to Dr Stefaniuk that BHL was not in fact manufacturing AHA at Vadodara. Dr Stefaniuk took photographs of the plant and equipment that he was told was being used to manufacture AHA. He considered that the plant and equipment that he saw at Vadodara was sufficient to manufacture commercial quantities of AHA.

Purchase Orders for 2013 campaign

113. On 16 October 2012, FOL issued seven purchase orders (all dated 2 October 2012) for a total of 31.5 MT of AHA, with delivery in 5 MT batches between 23 January and 22 April 2013 (the last one being for 1.5 MT). Subsequently, the total amount was reduced to 28.5 MT by cancellation of the last purchase order and reduction of the penultimate one to 3.5 MT. The price was US$31.60 per kg.

114. All the purchase orders had identical wording to the February 2012 purchase orders, including: "*Material supplied must be of same quality of previously recieved [sic] (must meet all accepance [sic] criteria and have similar impurity profile etc)*".

115. The day after the purchase orders were placed, Mr Jain emailed FOL to say that BHL would have difficulty meeting the delivery schedule. This was a matter of some consternation within FOL as it would potentially disrupt its ability to meet the delivery requirements of its customer for the Octopamine. Mr Dixon emailed Mr Jain to say that this was "*completely unacceptable*"; Dr Morgan had even considered that FOL should find an alternative supplier. However, things seemed to have calmed down quite quickly and FOL accepted the revised delivery schedule.

116. The AHA was delivered to FOL in accordance with the revised schedule and it was in accordance with the specification, met all the tests and was of similar quality to the 2012 consignment and the earlier samples. In particular, it performed well in hydrogenation, achieving a total average Octopamine production time of 31 hours 24 minutes. FOL therefore paid BHL's invoices in full.

Purchase Orders for 2014 campaign

117. In May 2013, Dr Christie visited BHL's Vadodara facility. He was there to audit the quality standards of BHL during 2013 as part of an ongoing audit program of all FOL's Indian suppliers. At the time of his visit, AHA was not in production as BHL had finished the manufacture of the 2013 campaign. It is fairly obvious that Dr Christie would only be auditing the Vadodara facility if he and FOL believed that that was used for AHA manufacture, as well as other chemicals. It was during the course of this audit that Dr Christie discovered the Finnish Medicines Agency Statement of Non-compliance with GMP referred to above. This was the document in which it was stated that BHL had previously falsified documents. Dr Christie was asked why the discovery of this document did not cause FOL to think again about continuing to use BHL. Dr Christie accepted that it perhaps should have caused alarm bells to ring louder at the time but said that because BHL had successfully produced commercial batches of AHA of the required quality and also because AHA was not subject to strict EU regulations as it is not for human consumption, he did not fully appreciate the significance of the document.

118. On 25 November 2013, Dr Gokhale sent an email to Mr Dunn headed "Important & Urgent – 2014 AHA". Dr Gokhale then appeared to notify Mr Dunn that BHL may have been manufacturing away from Vadodara (underlining added):

> "I am putting this mail to you only as I am still investigating.
> I believe Bajaj has done this product out-side (not Bajaj company or factory).
> As I said, I have a hint, so I will go in that area on 4th Dec 2013 to find out more, till such time keep this information to you only."

Dr Gokhale went on to suggest that if BHL was continuing to be difficult on price for the upcoming purchase orders, FOL should look at another company to supply the AHA. It is not clear whether Dr Gokhale's allegation that BHL may not be manufacturing itself or at a different site was part of a plan of his to persuade FOL to switch suppliers or whether Dr Gokhale had known all along that this was so. I cannot make any findings or assumptions as to the state of Dr Gokhale's knowledge.

Presumably, however, it would be fairly obvious if he visited Vadodara during a time when AHA was supposedly being manufactured there, whether this was actually happening. In any event this was the first indication that he gave to FOL about this.

119. As with the discovery of the Finnish Medicines Agency Statement, FOL's reaction to this possibility is surprising. Instead of investigating further or confronting BHL with this, FOL decided to proceed with the issue of purchase orders for the 2014 campaign but with a slight tweak to the wording of those purchase orders, as explained below. Given the apparent importance of its audits of the manufacturing facility it thought was being used for the AHA, it is strange that nothing was done and it does, to a certain extent, undermine its evidence as to how important the place of manufacture was, so long as the requisite quality was achieved.

120. On 6 December 2013, FOL issued three purchase orders for a total of 24 MT of AHA deliverable between 17 February and 17 March 2014. The cost was US$31 per kg. The purchase orders were as follows:

Purchase Order	Quantity	Delivery Date	Amount US$
PO0056539	8,000kg	17/02/2014	248,000
PO0056540	8,000kg	03/03/2014	248,000
PO0056541	8,000kg	17/03/2014	248,000

On 13 December 2013, FOL issued two further purchase orders for a total of 14.4 MT of AHA for delivery in July 2014 as follows:

PO0056791	8,000kg	02/07/2014	248,000
PO0056792	6,400kg	16/07/2014	198,400

121. The description of the AHA on the purchase orders was slightly different to previous, in particular by referring to the place of manufacture. The email dated 6 December 2013 attaching the purchase orders was from Mr Dixon and it stated:

> "Please note that the material must be manufactured at the same site, and to the same quality as previous."[19]

This was replicated in the purchase orders themselves, as follows (underlining added):

> "**Description**
>
> 2'amino-4-hydroxyphenone HCL
> 320 x 25kg net weight drums.
> Supplied on fumigated wooden pallets.
> Agreed Spec As agreed with T. Christie

[19] This was also stated in Mr Dixon's email of 16 December 2013 attaching the two further purchase orders.

> (addition of sulphated ash)
> Material must be manufactured at
> same site as previous and be of similar
> quality of previously recieved [sic]
> (must meet all accepance [sic] criteria
> and have similar impurity profile etc)
> Material delivered CIF to
> Felixstowe Port."

122. The significant changes were to add the requirement of manufacture "*at same site as previous*" and to change "*same quality*" to "*similar quality*"[20]. As to the latter, to a certain extent it just brings it into line with the reference to "*similar*" in the bracketed section. I do not consider that it changes the requirement, whatever that is.

123. As to the addition of the specified place of manufacture, this was FOL's response to what it had been told by Dr Gokhale in his email of 25 November 2013. While it would have been preferable to have mentioned Vadodara by name, I do not think there could have been any doubt in Mr Jain's mind that this was a reference to Vadodara. He maintained in his evidence that he assumed FOL knew about Nigam because Dr Gokhale had informed it, but I do not accept this evidence. If he thought that FOL knew then there would have been no reason not to be up front with FOL's representatives either when they visited to audit Vadodara or in their email and other communications. BHL's case that "*the same site as previous*" should be construed as meaning the Nigam facility as that was where all the AHA had been manufactured (even though FOL clearly did not know this) is deeply unmeritorious and ignores the context in which those words were written and used. I will deal later with my findings as to the terms and meaning of the contract.

124. The first delivery of 8,000kg of the 2014 AHA was meant to be by 17 February 2014. However, the first delivery was of 3,000kg in early March 2014. Before then, on 27 February 2014, Dr Gokhale sent an urgent email to Mr Dunn in which he said as follows (underlining added):

> "I give below some facts and then ask for your opinion:
> - Bajaj is doing entire production at other factroy [sic] location that [sic] one audited by you.
> - The production is on at Nigam Pharmachem, based at Ankleshwar.
> - Bajaj, also bought nitrile from Chines co. other than recommended by FOL
>
> If above points don't worry FOL, then I will not be harsh with Bajaj and let the business go through smoothly.
>
> I don't want to be hindrance in your business with Bajaj.
>
> If above is not acceptable to FOL, then action has to be taken urgently, the only action will be to prevent Bajaj from doing production at other end but

[20] This is slightly odd as the covering email referred to "same quality".

> in such case, Bajaj, just can't produce by themselves, and FOL don't get the product.
>
> BUT, please consider, that there will be qlty issues as the facility as bad as anything, and basically they are co-producing for a leading agro co. in India. So, expect, dust and ammonia or pungent odour in AHA."

125. This was a pretty stark warning about what BHL was doing and it would have been clear to FOL that it could have cancelled the purchase orders for breach of contract. Furthermore, Dr Gokhale made plain exactly where the AHA was being manufactured, he named Nigam Pharmachem, and that FOL was taking substantial risks in continuing to use BHL.

126. Nevertheless, FOL said nothing to BHL and decided to continue with the purchase orders. Mr Dunn told me that as the 2014 AHA was close to being delivered, FOL decided to "*wait and see*" what the quality of the AHA was when it was finally shipped over. He also said that he did not contact Mr Jain as he had got to the stage when he did not know if he could trust anyone, meaning both Dr Gokhale and Mr Jain. Therefore, he would not want to put a possibly untrue allegation to Mr Jain and risk souring the relationship for no good purpose. It was better, so he said, to take delivery of the AHA, to test it and, if it was no good, then to take the matter further.

127. On 14 March 2014, FOL received some further disturbing news. Dr Gokhale sent an email referring to the "AHA graphs", meaning the testing of the AHA, and said (underlining added):

> "The analysis graphs have been sent by Bajaj – I know these are all manipulated. If your analysis shows difference, then please let me know first and then we decide how to take it with Bajaj."

128. FOL now had the damning Finnish Medicines Agency report, the suggestion that BHL's AHA analysis graphs had been "*manipulated*" and the fact that the AHA could have been manufactured at another factory and possibly by another company. Yet FOL did not take any action except to test the AHA when it came in.

129. Mr Nersessian for BHL submits that this was because FOL was only interested in the price at which BHL could produce the AHA and, if it complied with the specification, then that was all that mattered. It did not care where it was manufactured so long as it was of the requisite quality and was cheap. While I think that price was an important factor, I am not so sure that FOL's approach can be fairly characterised in this way. It was clearly concerned to audit the facility at which the AHA was being manufactured and this was an important factor in their assessment of the suitability of using BHL. I can understand that, after it had decided to use BHL for the 2014 Octopamine campaign, and to have been about to take delivery of the AHA, it might well feel that it would be inappropriate at that stage to jeopardise what may be perfectly good AHA. After all, it had received good quality AHA in 2012 and 2013 and it would have thought it likely that the 2014 AHA would be of similar quality. So

while others may have reacted differently to the separate pieces of information received in 2014, I do not consider that FOL's decision in the circumstances to take delivery of the AHA was unreasonable.

130. Despite knowing of the potential problems with the AHA, FOL did not start the hydrogenation process on the AHA received in early March 2014 until 3 June 2014. This was its scheduled date for use of its plant and equipment for the production of Octopamine. As explained in more detail below, all the 2014 batches of AHA contained something that stalled the hydrogenation process and required FOL to find technical solutions to convert the AHA into Octopamine. The losses that FOL says it suffered as result of the difficulties with the hydrogenation process it says should be set off against the amounts unpaid on BHL's invoices and the excess is claimed by way of counterclaim.

The Hydrogenation of the 2014 AHA

131. As set out above, the hydrogenation part of the process to convert the AHA into Octopamine should take on average under 10 hours. The first batch of AHA began its hydrogenation process at 19:45 on 3 June 2014. The following morning, Dr Stefaniuk was informed that there appeared to be a serious problem with the process which should have completed by about 5.45 that morning. Dr Stefaniuk observed that there had been virtually no take up of hydrogen and the process seemed to have stalled. Dr Stefaniuk took a sample of the AHA from the vessel where the hydrogenation was meant to have taken place and attempted to hydrogenate it in the laboratory. This too failed.

132. Dr Stefaniuk then tried other methods to get the hydrogenation reaction started. He attempted to dissolve the sample in hot water, however not all the sample did dissolve and it left a residual green solid to be filtered off. This green solid became known within FOL as the "Green Contaminant" as it was not something that should have been found in the AHA. Dr Stefaniuk then tested a sample of the AHA that BHL had supplied in 2011 but all of this dissolved and there was no residual green solid. It was becoming clearer that the Green Contaminant could be the cause of the difficulties with the hydrogenation. In order to test this, Dr Stefaniuk did a series of experiments using a number of different samples from each of the 2014 batches, all of which showed a poor rate of hydrogen uptake. He also added some of the green solid to a sample from 2011 to see how this hydrogenated and found that it was considerably slower than without the green solid.

133. Both FOL and outside companies instructed by FOL have since sought to identify what the green solid is. However, neither they nor the experts in this case have been able to do so. It was reasonably clear that it was causing a slow-down in hydrogenation and it was necessary for FOL to see if it could still convert the AHA to Octopamine and fulfil its orders to Evonik. The most effective way of doing this, as FOL discovered, was to add remedial charges of the Palladium on Charcoal catalyst to the hydrogenation process but while this was done to some of the AHA, it was the

most expensive course of action. FOL therefore also tried other methods but each had their own problems:

(1) FOL added an increased water charge into the hydrogenation process to increase the reaction rate. While this was effective, the water could not be wholly removed and this resulted in a loss of yield of approximately 14%;

(2) PWA activated carbon was used until FOL's stocks of that were exhausted. This had the effect of reducing the hydrogenation time to an average of 21 hours which was still more than double the normal time;

(3) Once the PWA activated carbon was exhausted, FOL used recycled Palladium on Charcoal catalyst as an extra charge to the process. This was problematic as the recycled material is wet, sticky and difficult to charge, making it less effective;

(4) FOL selected the least contaminated batches and added extra charges of the catalyst to the hydrogenation process. This reduced the hydrogenation process to approximately 12 hours but required substantial remedial charges of the catalyst.

134. While FOL was able to supply finished Octopamine to Evonik, it claims to have suffered a reduced yield as a result of the different methods it had to use to hydrogenate the contaminated AHA. It also says that the use of extra materials was expensive, their factory was in use for longer than it ought to have been on this and Dr Stefaniuk's time dealing with this meant that he could not be working on other things. These all are claimed as part of the counterclaim which I deal with below. Fortunately, it appears that the extra processes that were required to the hydrogenation process and the presence of the Green Contaminant did not ultimately affect the quality of the Octopamine supplied to Evonik.

135. As a result of the difficulties encountered with the 2014 batches of AHA, FOL withheld payment on BHL's invoices from late June 2014. FOL had already paid US$707,140.77 in respect of the 2014 AHA. However, after Mr Jain chased for payment on all the outstanding invoices, Mr Dunn responded by email dated 1 July 2014 saying:

> "Finance dept inform me that payment is on hold due to processing issues and technical assessment.
> Our development people believe there is a species in the AHA that is poisoning the catalyst – maybe sulphur containing species or another metal."

On 14 July 2014, Mr Dunn updated Mr Jain by email as follows:

> "Ed has completed some lab work where he has dissolved some of your batches of AHA in water.
>
> There is approx.. 1% of undissolved solid present.
>
> We are looking to identify this solid as when it is introduced to a laboratory hydrogenation it completely stops the reaction.
>
> i.e.it is poisoning the catalyst.
>
> If you have retained samples then you may want to look at these."

136. A meeting was due to take place on 22 July 2014 at FOL's offices in Middlesbrough with Mr Jain and Dr Gokhale attending, but this was postponed until October 2014 by BHL. On 15 July 2014, Dr Gokhale emailed Mr Dunn saying:

> "I have some more information, after your complaint about reaction not getting started and catalyst is being poisoned.
> I asked Anil to get HPLC in an outside lab. which belongs to my friend (I had told him that this lab. is suggested by Dave Dunn) and today I recd. Report of 2 batches which shows purity at 95-97.
> I also asked for ICP MS analysis – the S content is 15 ppm or so.
> The above clearly shows that reaction has not gone for completion.
> …
> This has cost FOL additional cost of USD 11 – 14 per kg. As Bajaj will not produce in there [sic] own facility in future FOL may have to recover the entire cost from present invoices only. Also, if there is any shortfall of supply from FOL to Evonik and if FOL has to compensate to Evonik, then even that will be built in 11 – 14 figure.
> Anil may ask for FOL analysis report of AHA batches (Bajaj has not analysed all the batches) don't share any of them with Bajaj and maintain what I have told him above when we talk on Thursday."

137. FOL has withheld a total of US$513,946.23 on the invoices submitted by BHL for the 2014 AHA. This is BHL's present claim plus interest. FOL is claiming £670,346.15 by way of counterclaim.

Investigations

138. At the same time as FOL was endeavouring to hydrogenate the AHA, it also investigated what the substance was and why it was affecting the hydrogenation process. It used three outside laboratories called Chemispec, Sembcorp and Edwards Analytical to assist with various tests. The results were all fairly inconclusive. Dr Stefaniuk and Dr Chalton compiled a Report dated 14 October 2014 which explains what they did and their broad conclusions.

139. Dr Stefaniuk carried out an Infra-Red Spectroscopy analysis on a sample of the AHA and on the isolated green substance. The test is used to identify and study chemicals and it showed that the chemical make-up of the green substance was quite

different to the AHA. In other words, this indicated that the Green Contaminant was a different material that had somehow contaminated the AHA.

140. Chemispec carried out a Mass Spectrum test. This revealed the molecular weight of one component of the Green Contaminant and the number of carbon atoms in that component. However, it cannot identify the molecular structure which is what identifies a material.

141. Chemispec also undertook a Proton Nuclear Magnetic Resonance analysis. Dr Chalton described the results of this in paragraph 6.4.3 of his witness statement as follows:

> "It shows that a component of the Green Contaminant was an organic compound, and that it contained 4 types of protons. In combination with the mass spectral analysis the data suggest the pyrazine derivative shown at figure 7 in the report. This is an impurity that could conceivably be generated in the formation of AHA. It is hard, however, to see how this component of the Green Contaminant could have such a dramatic effect on the AHA hydrogenation process. Accordingly there had to be another component of the Green Contaminant which was causing that problem."

This means that the organic impurity forming part of the Green Contaminant (referred to as the "**dimer**") could have formed naturally as a by-product in the manufacturing process of the AHA. However, it was FOL's view that this dimer was not the cause of the slow hydrogenation and it was likely to be another component of the Green Contaminant.

142. Chemispec then carried out a conventional carbon, hydrogen and nitrogen analysis of the Green Contaminant and this showed that the carbon, hydrogen and nitrogen content was different to that which would be expected if the Green Contaminant was solely the dimer. Dr Chalton again explained this in paragraph 6.4.4 of his witness statement:

> "This indicated that there are components other than the [dimer] in the Green Contaminant and as they had not been identified by any of the standard organic chemistry analytical techniques (which Dr Stefaniuk and the external companies had carried out) it follows that these other components were, most probably, inorganic material."

143. FOL then carried out a series of inorganic elemental analyses in an effort to discover any inorganic material that may be adversely impacting on the AHA hydrogenation process. However, these analyses were inconclusive.

144. Edwards Analytical carried out a ED-XRF Spectroscopy test which concluded that there was only a low level of inorganic material in the AHA. The major element that they discovered was iron but they considered that such inorganic elements that they found could not have interfered with the hydrogenation of the AHA in the way that it was.

145. Subsequently in 2016, three further samples of the 2014 AHA were sent to Edwards Analytical together with a sample of the Green Contaminant. Edwards Analytical tested the AHA by reference to the 7 specified requirements in the Amended Specification plus the Sulphated Ash test. They were also asked to carry out Extraneous Matter Tests on the AHA. Those tests revealed that, while the AHA complied with the requirements of the Amended Specification, the Extraneous Matter Tests showed that the proportion of Green Contaminant to AHA was between 3.89% to 5.67%. This indicates that of the AHA supplied by BHL in 2014, on average this was made up of 95.7% AHA and 4.3% of the Green Contaminant.

146. Edwards Analytical also carried out a series of further tests, which while again being inconclusive as to the actual nature of the Green Contaminant led Dr Chalton to conclude in paragraph 6.5 of his witness statement:

> "These tests indicate that the Green Contaminant is most likely to be an insoluble complex of the elements found in the SEM-EDX[21] and the ICP-MS[22] analysis with silicates of aluminium and iron with impurities of chromium and copper being the likely cause of the green colour."

147. BHL conducted its own tests and used two external laboratories: Simson Pharma Services; and Sitec Labs PVT Ltd. BHL internally tested two retained samples of AHA batches by redoing the HPLC test. This found the AHA to be within the required testing by HPLC in the Amended Specification. This was confirmed by Sitec Labs PVT Ltd. Simson Pharma Services performed mass spectrum tests but these were inconclusive and, in any event as BHL's own expert Mr Forsythe admitted, they had used the wrong chemical structure of AHA.

The November 2014 Audit of Vadodara

148. I have dealt above, in the section on Mr Jain's credibility as a witness, on the visit by Dr Christie and Dr Parkinson to the Vadodara facility on 14 November 2014. The purpose of the visit was to discuss the problems with the 2014 AHA and FOL's claim for the extra expenses it had incurred. Both Dr Christie and Dr Parkinson said in their evidence that Mr Jain specifically confirmed to them that manufacture had taken place

[21] Scanning Electron Microscope – Energy Dispersive X-Ray: this showed that carbon, oxygen, aluminium, silicon and chlorine were all present. This indicated that it was an inorganic substance related to clay or similar. Iron was also detected in one sample.

[22] This is a test involving ionisation using a super heated plasma and resulting ions measured by Mass Spectrometry. This found silicon present in the largest concentration, aluminium, calcium, iron, potassium, magnesium, sodium and sulphur present in next highest concentration, then chromium, copper, phosphorous, titanium and zinc.

at Vadodara. Further the production records that were shown to them had plant and equipment numbers that corresponded with the plant and equipment at Vadodara.

149. Mr Jain confirmed in his oral evidence that he did not say anything about Nigam to Dr Christie or Dr Parkinson. He said that this was because they knew that already. This is evidence that is so extraordinary that it contributed to my finding that Mr Jain's evidence was generally not to be believed. Mr Jain was deliberating maintaining the pretence to FOL that manufacture had taken place at Vadodara and he had concocted false records to support that story. Now those records and the true records are not available because they have all been destroyed by FOL. The only conclusion that I can draw is that Mr Jain was concealing both that manufacture had taken place at an unaudited facility and also that something had happened at that facility or in the course of the manufacturing process that was probably the cause of the problems with the 2014 AHA.

150. Dr Christie and Dr Parkinson concluded at the time that the records had been falsified and their serious concerns as to the manner in which BHL had manufactured the AHA. In emails of 14 November 2014, Dr Christie and Dr Parkinson reported on their findings to their colleagues at FOL, including the following comments:

> "This once again backed up our fears that the documents were being manufactured rather than the product."
> "Overall for plant, it could make it but doubt the volume they were claiming. Paperwork clearly not right. Handwriting for same operator was different even on same shift on a different batch card. All batch cards signed and completed with same pen."
> "Clearly you can not trust anything recorded."
> "Clearly if you want cheap then he can do it, but it is made with little regard for quality."

Visit to Nigam Pharmachem in July 2015

151. In July 2015, Dr Christie, together with a colleague, Ian Lowes, visited Nigam Pharmachem in Ankleshwar. This was on the pretext of considering possible future supplies of AHA but was actually to see where the 2014 AHA had allegedly been manufactured. Dr Christie's conclusion was that the plant and equipment was in poor condition and there were no obvious quality and safety procedures in place. Furthermore, they were distinctly unimpressed by the three brothers who operated the facility and who did not respond when asked whether they had ever made AHA. Dr Christie said that: "*Nigam team appeared decidedly dodgy*" – they appeared to have two baseball bats in their car and were filming the meeting by a mobile phone that could be seen in one of the brother's shirt pockets. Dr Christie concluded in paragraph 27 of his witness statement:

> "If the AHA supplied to FOL in 2014 or any part of it was manufactured at either of the Nigam Pharmachem sites that we saw then the fact that it was contaminated is not surprising."

E. THE GREEN CONTAMINANT

152. I have already expressed my general misgivings about the expert evidence and the limited reliance that I feel I can place on it. There is no dispute between the parties that the 2014 AHA met the seven tests set out in the Amended Specification. The impurity levels measured by HPLC would only pick up soluble organic impurities. A big question in this case is whether insoluble inorganic material later found in the AHA is an impurity that puts BHL in breach of contract. The HPLC test could not and did not detect the Green Contaminant.

153. The 2014 AHA also met the Sulphated Ash test which is meant to pick up inorganic impurities, such as dirt and debris that found their way into the material and was introduced after FOL was unhappy with the state of the Vadodara facility on its January 2012 audit.

154. However, neither the parties nor the experts have been able to identify the precise chemical composition of the Green Contaminant and Mr Claes said it would be a disproportionately expensive process to do so. Neither expert disputed that the 2014 AHA was indeed AHA; nor was there any real dispute that the Green Contaminant had in some way inhibited the hydrogenation process, even if they could not explain why that was so.

(a) Mr Forsythe's evidence

155. Unhelpfully, Mr Forsythe did not set out in his report the documents that he had read or the source of certain statements that he had made therein. For example, in paragraph 2.5 of his report he says that "*A review of production records shows that*…" but he does not identify those records, they were not exhibited and he told me that he did not keep a list of the documents he looked at. In paragraph 2.3, he said that "*BHL subsequently confirmed that:…*" but he could not explain how this was confirmed save by a vague recollection that certain unidentified "*folders had been made available to me*". There are similar problems with paragraphs 1.3.10, 3.1.1 and 3.8.1.

156. There were a number of paragraphs in Mr Forsythe's report that he accepted in the course of cross-examination were not correct:

(1) In paragraph 2.3(ii) he said "*Water-insoluble residue was also present in the historic batches at a similar level and not unique to AHA manufactured in 2014*." This, he accepted, he had no evidence of and could not support.

(2) In paragraph 3.2.1, Mr Forsythe attempted to summarise the FOL Report of 14 October 2014 by saying that it proposed "*that the impurity is a 2,5-pyrazine that is the dehydrated dimer of AHA*". Mr Forsythe accepted in cross-examination that this was not a fair summary of what FOL had found because FOL had actually concluded that there must be another component to the green substance that had

caused the problems with the hydrogenation. In other words, FOL had concluded the opposite, namely that it was not the dimer that had caused this.

(3) In paragraph 3.4.2, Mr Forsythe said:

> "If the suspected dimer or other impurity is insoluble, it will not be transported through the instrument. Neither the FOL nor the SITEC tests would, in these circumstances identify the impurity. If the AHA contained an impurity that was insoluble in the carrier solvent, such as an inorganic material, FOL and SITEC would have observed an insoluble residue in its sample containers or blocking of its HPLC column"

Mr Forsythe withdrew this whole paragraph during cross-examination and accepted that such an impurity would not be observable on the HPLC test. This sort of mistake really shows Mr Forsythe's lack of expertise in these matters.

(4) In paragraph 1.3.4 Mr Forsythe made what appeared to be his central finding as follows:

> "The 2,5-pyrazine dimer would have two effects. The nitrogen atoms in the pyrazine compete with AHA at the palladium surface. The dimer is also a larger molecule than the AHA and will partially block the charcoal pores, thereby retarding the reaction rate."

Mr Forsythe was effectively saying that the dimer, which arose naturally in the manufacturing process of the AHA, caused the slow-down in the hydrogenation process. However, Mr Forsythe admitted that he is not a catalyst specialist and that this paragraph had been drafted on the basis of a conversation with an unnamed third party. Significantly, Mr Forsythe conceded that the last sentence was wrong and he withdrew it. He said "*whatever was causing the blockage, it was not the dimer.*"

157. Mr Forsythe also accepted that the Simson report, upon which he had relied in his report, had made a "*basic error*" as to the structure of the AHA. He had not picked up the error when compiling his report. In his oral evidence he admitted that this was "*totally wrong*" and that he was now concerned about the reliability of Simson's work and that all the conclusions in Simson's report could be "*put to one side*", even though much of it was outside his "*skill set*". I am afraid to say that I think that all of this was outside of his expertise. The withdrawal of the Simson report means that paragraphs 1.3.7 and 2.3(i) of Mr Forsythe's report are wrong.

158. Mr Forsythe agreed that there were 3 main variables in the manufacture of AHA, namely: (i) the raw materials; (ii) the process; and (iii) the site of manufacture. If any of these vary, then the end-product may vary. Even if all three are strictly complied with, the AHA might still have small differences, for instance because of weather conditions. But with FOL's expertise from manufacturing AHA over many years, major changes would be very unlikely if all three main variables were strictly adhered to by the manufacturer. Mr Forsythe accepted that a significant change in one of the

variables or a less significant change in all of them is likely to be the explanation for the existence of the Green Contaminant in the 2014 AHA.

159. It does seem to me that there is substance to Mr Cameron's submission that Mr Forsythe was put up as BHL's expert in order to try to establish that the hydrogenation problems were caused by the dimer which was itself merely a natural by-product of the process specified by FOL. In other words, that the hydrogenation problems were not caused by any other material that had somehow found its way into the AHA produced in 2014. However, if that was the intention, it has backfired, in particular by the withdrawal of the last sentence of paragraph 1.3.4 of his report and by my general reluctance to accept any of Mr Forsythe's findings.

(b) Mr Claes' evidence

160. I have dealt above with Mr Claes' lack of independence and candour, both of which are troubling. By contrast with Mr Forsythe he does at least seem to have some expertise in these matters, in particular concerning the use and effectiveness of catalysts, and he also conducted his own experiments, albeit using FOL's facilities.

161. The main contentious matter from Mr Claes' evidence is the meaning of "impurity" and "purity" in the context of this dispute. This turns on the legal question as to whether the wording of the purchase orders – the AHA must "*be of similar quality of previously received (must meet all acceptance criteria and have a similar impurity profile etc)*" – are terms of the contract between the parties and whether the reference to impurity is limited to impurities identified by the specified HPLC test or whether it includes any impurity. Clearly Mr Claes cannot opine on that question and he was at least careful to point out that his conclusions on the level of impurity depended on "*impurity*" being defined generally rather than by reference to HPLC testing.

162. Mr Claes accepted that all the 2014 AHA passed the HPLC test as set out in the Amended Specification. But as explained above, HPLC only identifies water soluble organic impurities. Mr Claes' experiments were designed to establish the quantity of extraneous matter, not detectable by HPLC, in the AHA. His experiments showed that on average the 2014 AHA contained 0.96% m/m[23] of extraneous matter. When that is added to the average organic impurities found by the HPLC method of 0.25% m/m, Mr Claes said that the total average impurity level is 1.2% m/m (0.96% + 0.25%). He also found that the average level of extraneous matter in the 2012 and 2013 AHA was 0.22% m/m. In other words, there was about 5 times the level of extraneous matter in the 2014 AHA as compared to the earlier batches.

[23] This is the ratio of mass of extraneous matter to the total mass of the AHA.

163. Mr Claes went on to test the hydrogenation rates of the AHA both with and without the extraneous matter and he compared the results with those for the 2012 and 2013 AHA. Mr Claes concluded that the extraneous matter in both sets of AHA reduced the reaction rates and that the "*presence of extraneous matter at the level and potency found in AHA BB*[24] *has a severe effect on the hydrogenation rate*."

164. It did not seem to me that these findings were seriously challenged by BHL. It does of course maintain that the 2014 AHA complied with the Amended Specification (as Mr Claes confirmed) and that this was all it needed to do to comply with the terms of the contract. But despite my doubts about his independence and his worrying lack of candour, I consider that I can properly rely on Mr Claes' broad findings as set out above.

(c) Conclusion on the Green Contaminant

165. Based on the expert and other evidence as to the 2014 AHA, I conclude as follows:

(1) The 2014 AHA contained on average between 0.96% and 1.25% of extraneous matter that constitutes the Green Contaminant;

(2) The 2014 AHA contained nearly 5 times as much extraneous matter as the earlier 2012 and 2013 AHA;

(3) The Green Contaminant included the by-product dimer but that this did not inhibit the hydrogenation process;

(4) The other material making up the Green Contaminant has seriously inhibited the hydrogenation process.

F. THE TERMS OF THE CONTRACT

166. Both parties say that this is a straightforward case. BHL says that it should be paid in full because it complied with the contractual specification and delivered AHA of the requisite quality. FOL says that it is obviously a breach of contract to provide AHA that is contaminated with some extraneous material.

167. In its Amended Defence and Counterclaim, FOL relied on a series of "*additional terms*" and "*implied terms*" in the contract between the parties and Mr Nersessian on behalf of BHL in both his written and oral submissions sought to address whether these were properly terms of the contract. Mr Cameron, however, on behalf of FOL,

[24] This is a reference to the contaminated 2014 AHA.

hardly touched on the terms of the contract in his submissions, seemingly on the basis that Mr Jain's evidence should be rejected in total and BHL had knowingly supplied contaminated AHA that caused the hydrogenation process to stall and slow to an unacceptable rate. This, so Mr Cameron submitted, must be a breach of contract.

168. I propose to examine what the parties say were the terms of the contract by which the 2014 AHA was supplied and decide what those terms were.

(1) The Express Terms

169. BHL's primary case is that the contract was entered into in February 2011 when the original laboratory process outline for the manufacture of AHA was sent by FOL to BHL. Thereafter the First Specification provided in September 2011 and the Amended Specification in February 2012 constituted the particular terms of the contract that had already been agreed in February 2011, as I understand BHL's case. In paragraph 3 of the Particulars of Claim, BHL pleads that:

> "Shortly thereafter in or around February 2011, the parties entered into a contractual agreement for the supply of AHA by BHL to FOL (the "Agreement")."

And in paragraphs 3 and 3A of the Amended Reply, BHL pleads:

> "3. …The Agreement entered into in or around February 2011 was for the supply of AHA by BHL to FOL in accordance with the agreed specification. The purchase orders were issued at a time when the Agreement had already been entered into, subject to its amendment on 2 February 2012, as averred in paragraph 9 of the Particulars of Claim. The purpose and effect of the purchase orders were limited to specifying the quantity of AHA to be purchased by FOL in accordance with the said Agreement.
>
> 3A …The agreement to supply was entered into in or around February 2011, after which the specification was also agreed. The specification was varied by agreement on 2 February 2012, as set out in paragraph 9 of the Particulars of Claim."

170. BHL's case has been put in this way because it is keen to exclude the purchase orders from providing terms of the contract. However, its position is unsustainable by reference to the chronology and the factual context. There was no agreement between the parties in February 2011. No price had been agreed and they were merely in the preliminary stage of negotiations. In fact, in March 2011, FOL decided that it was not going to use BHL. In an effort to persuade FOL to change its mind, BHL produced a small laboratory sample of AHA in April 2011 and sent it to FOL. It was only after Dr Gokhale had given FOL adverse information about Arch, one of the other potential suppliers, that FOL sought further laboratory samples from BHL and resumed discussions on price. The first purchase orders were issued on 12 September 2011 in a

total amount of 1,500 kg for the trial factory production and this was to be manufactured in accordance with the First Specification. Then the purchase orders for the full commercial quantities of AHA (30 MT) were issued on 2 February 2012 pursuant to the Amended Specification (to which they referred).

171. In relation to the 2014 AHA, there were amended purchase orders issued on 6 and 13 December 2013 so as to include the words "*must be manufactured at same site as previous*" and changing "*same quality*" to "*similar quality*". These amendments indicate that the purchase orders were not merely specifying the quantity to be supplied but were also adding terms to the contract.

172. In my judgment, therefore, the express terms of the contract were contained in the purchase orders, which incorporated the terms set out in the Amended Specification. Accordingly, the relevant express terms upon which the 2014 AHA was to be supplied were as follows:

(a) "*Agreed Spec As agreed with T. Christie (addition of sulphated ash)*".
This incorporated the Amended Specification with the requirement that the AHA satisfy the seven benchmark tests together with a "*report only*" Sulphated Ash test.

(b) "*Material must be manufactured at same site as previous*"
This new term was included because Dr Gokhale had hinted in his email of 25 November 2013 that BHL may not have been manufacturing at the Vadodara facility. In my judgment this is a term that required BHL to manufacture the AHA at its Vadodara facility which was the only site that FOL knew about and which it had been told would be used and which had been audited. I reject Mr Nersessian's submission that FOL deliberately did not mention Vadodara by name because it was only interested in having the AHA produced at the same site that the previous good quality AHA had been produced at. In any event, there is no evidence, save for Mr Jain's, that manufacture took place at Nigam between 2011 and 2013 as all the production records have been destroyed.

(c) "*Material must … be of similar quality of previously received (must meet all acceptance criteria and have similar impurity profile etc)*"

The meaning of this term is the most contentious and I deal with it below.

173. BHL says the references to "*quality*" and "*impurity*" mean nothing more than that the AHA must comply with the quality and impurity tests in the Amended Specification. Mr Nersessian argued forcefully and impressively that FOL had all the expertise and knowledge as to the manufacture of AHA, in particular as to the quality and testing required so that the AHA could be used for whatever purpose FOL intended to use it. BHL knew nothing about AHA until it had been approached by FOL and FOL therefore was not relying on any expertise of BHL in setting the specifications and the necessary tolerances. It was not, as Mr Nersessian put it, a

collaborative process. FOL prescribed exactly what it wanted in terms of quality and purity and this was reflected in the specification.

174. Mr Nersessian submitted that the specifications set by FOL and agreed to by BHL were the foundation of the commercial agreement between the parties, meaning that the parties' pricing of the transaction was premised on the agreed specifications and nothing else. If FOL had required higher benchmarks of quality or different testing to be done by BHL then this might have increased the price of the AHA. Conversely, if FOL was prepared to accept say wider tolerances in the specifications, the price might have been less. Mr Dunn accepted in his evidence that FOL did not choose to contract with BHL because of its expertise but it was largely driven by the fact that it had come up with the cheapest offer. FOL therefore set the specification as the basis for agreeing the commercial terms, namely the price.

175. Mr Nersessian continued by submitting that therefore FOL should be bound by its own specification and should not be allowed retrospectively to disturb the commercial deal between the parties by insisting on some other requirement as to the quality of the AHA that is not within the agreed specification. The purchase orders cannot widen the meaning of quality or purity beyond that which is contained in the agreed specifications. Otherwise the risk of FOL making an error in the specification has been unfairly shifted from FOL to BHL.

176. Conversely Mr Cameron says that the purchase orders do precisely that and require the quality and impurity of the 2014 AHA to be similar to the quality and impurity of the 2012 and 2013 AHA, all of which performed well in the conversion process to Octopamine. Mr Cameron submitted that the agreed specifications were not to be used as an excuse for allowing any extraneous material to find its way into the AHA. As to commercial risk, Mr Cameron said that this was a highly prescribed process in which FOL sought to ringfence three broad matters in order to achieve the quality that it was after. Those three matters were: the raw materials; the manufacturing process; and the site, including the plant and equipment to be used for that process. FOL's risk was if those three ringfenced matters were complied with but something still went wrong. If however BHL did not comply with any of those three matters, then the risk was on its side.

177. Mr Cameron's submission was essentially that, apart from the site of manufacture which BHL has admitted was not Vadodara, BHL could not have complied with either or both of the raw materials and process requirements. It is not possible to prove in what respects BHL failed so to comply because there has been a cover-up and the production records that would have been evidence of this have all been destroyed.

178. While I understand Mr Nersessian's attractive arguments about BHL being unable sensibly to carry out any other testing than was prescribed by the Amended Specification, I do have to interpret the words used in accordance with the now well-established principles of contractual interpretation, namely "*what a reasonable person*

having all the background knowledge which would have been available to the parties at the time would have understood them to be using the language in the contract to mean" – see *Chartbrook Ltd v Persimmon Homes Ltd* [2009] UKHL 38 at para.14.

179. The bracketed section in the purchase orders refers first to the Amended Specification – "*the acceptance criteria*" – but then continues by adding that it "*must have a similar impurity profile etc.*" In my judgment, "*similar*" cannot be a reference to the Amended Specification or to the tolerances within the Amended Specification. A reasonable person would read "*similar*" as only sensibly referring to the quality of the previous orders. Those previous orders had worked to FOL's satisfaction in terms of their efficient conversion to Octopamine and it wanted to ensure that the 2014 AHA worked similarly. FOL's covering email dated 6 December 2013 also referred to the "*same quality as previous*".

180. I therefore hold that the purchase orders required BHL to supply AHA that had a similar quality and impurity profile as that supplied by it in 2012 and 2013 and that this was not limited to the Amended Specification.

(2) The Additional Term

181. In paragraph 4(d) of the Amended Defence, FOL pleads that there was an additional term to the contract namely:

> "That the AHA would pass a laboratory-based usage test, by which FOL might test a sample from each consignment of AHA to ensure that it would undergo the conversion process efficiently and/or in accordance with FOL's expectations and procedures."

182. Mr Nersessian submitted that this is an extraordinary assertion and I agree with him. Mr Cameron did not make any submissions in support of this additional term. He did not explain how or when it became an additional term or even how this was communicated to BHL. Even though FOL did a laboratory usage test on the laboratory samples that were provided in 2011, there is no evidence that FOL did any such usage test on any of the commercial batches supplied in 2012 and 2013. Such a term is impossibly vague as to the required measure of efficiency and FOL's "*expectations and procedures*". Dr Chalton and Mr Dunn even accepted in their oral evidence that this would not have been a term of the contract.

183. I therefore hold that this was not an additional term of the contract.

(3) The Implied Terms

184. In subparagraphs 4(g) to (j) of its Amended Defence, BHL placed reliance on four implied terms pursuant to the SGA. At the hearing, Mr Cameron, however, withdrew reliance on the sale by description term implied by s.13(1) of the SGA. I will deal with the other three alleged implied terms in turn.

(a) Section 14(2) SGA - Satisfactory Quality

185. Subsections 14(2), (2A) and (2B) of the SGA provide relevantly as follows:

> "(2) Where the seller sells goods in the course of a business, there is an implied term that the goods supplied under the contract are of satisfactory quality.
>
> (2A) For the purposes of this Act, goods are of satisfactory quality if they meet the standard that a reasonable person would regard as satisfactory, taking account of any description of the goods, the price (if relevant) and all other relevant circumstances.
>
> (2B) For the purposes of this Act, the quality of goods includes their state and condition and the following (among others) are in appropriate cases aspects of the quality of goods –
> (a) fitness for all purposes for which goods of the kind in question are commonly supplied,
> (b) appearance and finish,
> (c) freedom from minor defects,
> (d) safety, and
> (e) durability."

186. There is no dispute that this term is to be implied into the contract. The dispute is as to what is meant by "*satisfactory quality*" and whether, because of the presence of the Green Contaminant, BHL was in breach of this implied term. I will deal with breach below.

187. As to the meaning of "*satisfactory quality*", I doubt whether this is, in reality, any different from the "*similar quality*" term in the purchase orders that I have found to be a term of the contract. Mr Nersessian submitted that in the circumstances where FOL had set the exact specification for the AHA, the hypothetical reasonable person would consider that this was the relevant standard for testing whether the AHA was of satisfactory quality. He also submitted that FOL's case that there was some sort of absolute quality that the AHA should possess wrongly conflates the question of "*satisfactory quality*" with "*fitness for purpose*". Subsection (2B) does not help FOL because there is no evidence that conversion of AHA into Octopamine is a purpose for which AHA is commonly supplied. Mr Nersessian referred to the Court of Appeal decision in *Jewson Ltd v Boyhan (PR of the estate of Kelly)* [2003] EWCA Civ 1030 in which Clarke LJ (as he then was) said:

> "47. I would accept those submissions. It seems to me that under the statutory scheme set out in section 14 it is the function of section 14(3), not section 14(2), to impose a particular obligation tailored to the particular circumstances of the case. The problem with which we are faced in this case is what the overlap is between subsections (2) and (3). It is important to note that this is not a case in

> which it is said that there was anything unsatisfactory about the intrinsic qualities of the boilers. What has been held to be unsatisfactory about them is their impact on the SAP ratings for the flats, which depends upon a number of factors which relate to the particular characteristics of the flats as well as the boilers. In these circumstances, it seems to me that it would be a startling result if Jewsons were liable for breach of the implied terms in section 14(2) and not of the implied terms in section 14(3)."

188. Mr Cameron took a broad brush view as to the requirement for the AHA to be of a satisfactory quality: that it is obvious that the quality required of the AHA could not be limited merely to passing the tests set out in the Amended Specification. The Amended Specification prescribed tests to identify impurities that FOL anticipated would be likely to arise if the specified raw materials were used and the specified process followed. Hence the impurities tested for by HPLC would only be soluble organic impurities because the test cannot pick up anything else. If some other extraneous matter enters into the mix, FOL cannot prescribe a test for something it knows nothing about. It did not prescribe a test that could have picked up the Green Contaminant because it could not anticipate that such material might be present in the AHA if BHL had properly followed the process and used the correct raw materials. The fact that it is still unknown what the Green Contaminant is shows that it would have been impossible for FOL to have devised, in advance, a test for its existence.

189. Mr Dunn in his evidence relied on an analogy with the food industry and this was also relied upon by Mr Cameron in his submissions. Mr Dunn said as follows:

> "If a retailer orders a consignment of meat pies from a food manufacturer, it is likely to specify the necessary ingredients and the recipe to be followed. It is also likely to carry out quality control tests on the meat pies supplied to ensure that they meet the required specification and contain the appropriate ingredients. However, occasionally a meat pie supplied may contain other ingredients which would not show up on the tests that a customer may have specified (for example other parts of the animal from which the pie is made or, perhaps human hair or a similar contaminant which finds its way into the finished pie supplied). The pie concerned may pass the contractually specified tests as to quality but both parties would have to accept that the pie was not of the agreed quality because it was contaminated by material which should not have been part of the ingredients which, accordingly, the customer did not test for or there may have been no tests available. In that case it is so obvious that the meat pie should not have contained the contaminating material that the retailer and the manufacturer would not have to have set that out in any order for both parties to be taken to have understood and intended the contamination to be a breach of their contract. It is no different with AHA."

190. Mr Nersessian dismissed the analogy on the basis that the human food industry has stringent quality standards prescribed in laws concerned with fitness for human consumption. Mr Cameron submitted however that the analogy was apposite in that the specification of the product being supplied cannot be the only benchmark of whether it is of satisfactory quality. If a foreign object enters the finished product,

such as a human finger nail in the meat pie, even if the product satisfies the specification, it cannot possibly be considered to be of satisfactory quality. I find that a compelling argument.

191. The Green Contaminant clearly should not have been in the AHA supplied in 2014 but none of the tests in the Amended Specification could have picked up its presence. I do not believe it comes down to the commercial basis of the contract between the parties and the expertise being all on FOL's side. Having found that the terms of the purchase orders as to similar quality and impurity were terms of the contract that went wider than the Amended Specification, I believe that a reasonable person taking into account those circumstances would regard the requisite standard of quality of the AHA to be whether it was of similar quality to the 2012 and 2013 AHA, neither of which contained such a level of extraneous matter.

(b) Section 14(3) SGA – Fitness for Purpose

192. Section 14(3) of the SGA provides as follows:

> "(3) Where the seller sells goods in the course of a business and the buyer, expressly or by implication, makes known –
>
> (a) To the seller, …
>
> (b) …
>
> any particular purpose for which the goods are being bought, there is an implied term that the goods supplied under the contract are reasonably fit for that purpose, whether or not that is a purpose for which such goods are commonly supplied, except where the circumstances show that the buyer does not rely, or that it is unreasonable for him to rely, on the skill or judgment of the seller…"

193. Mr Nersessian submitted that this term should not be implied into the contract for the following reasons:

(i) FOL did not make known to BHL, either expressly or by implication, any particular purpose for which the AHA was being bought;
(ii) FOL did not rely on the skill and judgment of BHL; and
(iii) Insofar as FOL did so rely, it was unreasonable of it to have done so.

194. As to (i), Mr Nersessian submitted that there is no evidence of FOL specifically disclosing that it would be converting the AHA into Octopamine nor the fact that the AHA would be subjected to a hydrogenation process by FOL. All there was, so it was said, were "*vague and cryptic snippets of information*" on certain documents that the AHA would be converted into Octopamine but these were insufficient to disclose the particular purpose. In support of the requirement for particularity, Mr Nersessian referred me to the dictum of Lord Diplock in *Ashington Piggeries v Christopher Hill Ltd* [1972] AC 441, 506F:

> "To attract the condition to be implied by subsection (1)[25] the buyer must make known the purpose for which he requires the goods with sufficient particularity to enable a reasonable seller, engaged in the business of supplying goods of the kind ordered, to identify the characteristics which the goods need to possess to fit them for that purpose."

195. FOL's witnesses accepted that they had not disclosed to BHL any sort of detailed description of the conversion process; nor had they expressly told Mr Jain that FOL would be converting the AHA into Octopamine for onward sale to Evonik. FOL says that Dr Gokhale knew this but I have already decided that I am not prepared to attribute Dr Gokhale's alleged knowledge to either party.

196. Mr Jain insisted in his evidence that he did not know the purpose for which the AHA was being manufactured. I do not believe him on this. The laboratory process outline disclosed at the outset on 2 February 2011 referred clearly to the manufacturing process continuing to a "*stage 4*". The First Specification referred a number of times to "*Octopamine stage 3*" and the first purchase orders originally referred to "*Octopamine stage 3*", but BHL asked them to be changed to refer to AHA. I do not accept that these are mere "*snippets*" of information; these were documents that required to be scrutinised very carefully by BHL in order to work out whether it could manufacture the AHA and specifically how to do so. Mr Jain said that he knew that the AHA was an "*intermediate*" and I do not believe that he did not pick up on the references to Octopamine set out above or that he was so incurious as not to investigate what the AHA was being used for.

197. Furthermore, BHL specifically knew that the 1,500 kg of factory samples ordered in September 2011 were to be subjected to a factory usage test in which FOL would be checking whether the conversion process operated efficiently and in accordance with its expectations. Therefore, BHL knew that FOL had to be satisfied not only with the fact that the AHA passed the tests set out in the First Specification but also that it performed as well as the AHA previously manufactured by FOL in the conversion process. It was only when FOL was so satisfied that it was prepared to place the orders for commercial quantities of AHA to be manufactured by BHL and which would convert similarly well into Octopamine.

198. Mr Cameron pointed me to a reference in an email from Dr Gokhale of 12 March 2013 in which it was said that Mr Jain had been discussing with the managing director of Evonik Germany that BHL had a product called "*Octopamine*" which it could offer to Evonik. However I place no reliance on that given that it was from Dr Gokhale who has not given evidence at this trial. Mr Cameron also said that BHL was now offering Octopamine for sale, but this too does not seem to me to be relevant as it is well after the material time.

[25] This is s.14(1) of the Sale of Goods Act 1893, which in material respects was the same as s.14(3) of the SGA.

199. Nevertheless I find that BHL was aware of the "*particular purpose*" for which the AHA was being bought, namely for conversion into Octopamine, and that this had been made known to it "*expressly or by implication*" by FOL. As experienced chemical manufacturers, I also find that BHL would have known in broad terms that the process required to convert the AHA was a form of hydrogenation. Accordingly, unless the "*skill or judgment*" exception applies, there is an implied term that the AHA would be reasonably fit for the purpose of efficiently converting into Octopamine.

200. As to (ii) and (iii) above of Mr Nersessian's submissions on this, he said that there is no evidence that FOL was relying on BHL's skill or judgment that the AHA would be fit for such a purpose. On the contrary, he submitted, FOL knew that BHL had no prior experience of manufacturing AHA and it could not properly rely on BHL when it had not given BHL any details of the hydrogenation process. Furthermore, the First and Amended Specifications indicate that FOL was placing no reliance on BHL's skill or judgment as it was relying on its own technical knowledge in prescribing the benchmarks and testing methods that would ensure the AHA would be fit for its particular purpose.

201. Mr Nersessian relied heavily on the Court of Appeal's judgments in *Rotherham MBC v Frank Haslam Milan & Co Ltd* [1996] CLC 1378 which in part concerned whether the contractors in a building contract were liable to the employer for breach of the implied term that certain hardcore used in the building was fit for the purpose for which it had been supplied. The hardcore that was used was within the contractual specification as approved by the employer's architect. The Court of Appeal allowed the contractors' appeal on the basis that the employer relied on its own architect's judgment as to appropriate materials that could be used in the building and not on the contractors' skill and knowledge.[26] Leggatt LJ said as follows (at pages 1388-1389):

> "As soon as it is recognised that Rotherham[27] thought they knew all the relevant properties of the types of hardcore which they specified it becomes apparent that they did not rely on the contractors because they thought that in the light of the specifications there was nothing to rely on them for. All the scope for defects which Rotherham believed to exist was met by the specifications and by the provisions for approval by the architect. In view of the specifications it is idle to suppose that Rotherham looked to the contractors (and so to any suppliers from whom they might obtain the hardcore) for any protection against a defect that they did not know existed. In my judgment the terms of the contracts show Rotherham comprehensively stipulating for hardcore which they believed would, if provided in accordance with the description in the bills of quantities, as the architect could ensure, inevitably fulfil their requirements. In short, so far as Rotherham were concerned, there was nothing else for which they thought they needed to rely on the contractors, let alone their suppliers; and they did not do so.

[26] As this was a contract for work and materials, it should be pointed out that the statutorily implied term as to fitness for purpose was applied by way of analogy.
[27] The employers.

> In my judgment therefore the circumstances show that Rotherham did not rely on the contractors' skill or judgment."

At page 1391, Roch LJ said:

> "In effect the employers are saying that despite the fact that the use of steel slag arose from and was within the wording of their specification of hardcore, and despite the fact that they had the means, of knowledge that the steel slag was not inert (albeit the judge found that they were not at fault in not knowing) that nevertheless the contractors who complied with the contractual specification should pay for the damage because a term as to fitness of purpose should be implied. In my judgment the proposition only has to be stated in that way for it to be seen that the implication of the term in the circumstances of this case would be both unreasonable and unjust."

202. Mr Nersessian submitted that by analogy exactly the same happened in this case. FOL did not rely on BHL and, if it did, it was unreasonable for it to do so in the circumstances where FOL was in the best position to know the specifications required to make the AHA fit for the purpose of converting into Octopamine.

203. In my view *Rotherham* is distinguishable from this case on the basis that BHL was actually manufacturing the product that was being supplied and FOL was entitled to rely on BHL's skill in manufacturing the AHA in accordance with its specifications so as to produce AHA that could be efficiently converted into Octopamine. In *Rotherham*, the contractors did not manufacture the hardcore; the hardcore was supplied to them and this was in accordance with the employer's specifications as to the type of hardcore that could be used. The fact that the hardcore that was used by the contractors turned out to be unfit for purpose was the fault of the employer's architect and not the contractors. In this case however, it seems to me that FOL was entitled to rely on BHL's skill to prevent extraneous material being added to the AHA and in following the specifications and terms of the contract as to quality.

204. In my judgment therefore there was an implied term in the contract as to fitness for purpose.

(c) <u>Section 15(2) SGA – Sale by Sample</u>

205. Section 15(2) of the SGA provides as follows:

> "(1) A contract of sale is a contract for sale by sample where there is an express or implied term to that effect in the contract.
>
> (2) In the case of a contract for sale by sample there is an implied term –
>
> (a) that the bulk will correspond with the sample in quality;
>
> …

> (c) that the goods will be free from any defect, making their quality unsatisfactory, which would not be apparent on reasonable examination of the sample."

206. Mr Nersessian submitted that reliance on this implied term is inconsistent with FOL's contention that each purchase order was a fresh contract for the supply of AHA. He also submitted that the focus should be on the Specifications with which both the samples and the "bulk" complied and the notion of sale by sample is not an appropriate way to categorise this contract.

207. Mr Cameron made no specific submissions on this but maintained that FOL did indeed rely on this implied term.

208. In my view, this actually adds little to FOL's case, particularly as I have already found that it was an express term of the contract that BHL had to supply AHA of "*similar quality*" to the previous, including the samples. Therefore, even if this is a sale by sample, the AHA had to correspond in quality to the samples and the previous orders to comply with the contract.

G. BREACH OF CONTRACT

209. I have found that Mr Jain deliberately destroyed the production records relevant to all the AHA manufactured by BHL. Furthermore, he falsified such records in order to try to satisfy Dr Christie and Dr Parkinson when they visited in November 2014 that production had taken place at Vadodara. Such actions are fairly clear indications both that Mr Jain knew that BHL had done something wrong in relation to the manufacture of the AHA in 2014 and also that he was determined to cover that up.

210. Mr Cameron submitted that there were four possibilities as to how the Green Contaminant got into the AHA:

(1) The use of substandard raw materials;
(2) The specified process was not followed;
(3) The audited site was not used; or
(4) It was an unexplained by-product of the manufacturing process.

211. Mr Forsythe, BHL's expert, agreed with Mr Cameron during cross-examination that (4) was not what happened and that it had to be one or more of possibilities (1), (2) or (3). In relation to (4), my conclusion on the expert evidence was that the dimer, which is the only element that could be considered a by-product of the process, was a small part of the extraneous material and that it was not the cause of the problems with the hydrogenation.

212. In relation to (1), (2) and (3), it is impossible for me to determine which one or more of these caused the damaging Green Contaminant to be present. That is because there are no records in existence that show precisely what raw materials were used or the process that was followed. There is an indication from the 12 June 2014 email from Dr Gokhale to Mr Jain (referred to in paragraph [17] above) that Mr Jain knew that substandard raw materials had been used in breach of contract and that the use of the Nigam facility was unauthorised. The destruction of the production records was, in all likelihood, to conceal all these three possibilities.

213. Mr Nersessian maintained his general submission that the only appropriate measure of quality is whether the AHA satisfied the prescribed tests in the Amended Specification and everyone, including the experts, agreed that the 2014 AHA did pass those tests. It was therefore within the contractual tolerances that FOL had required and BHL could not be expected to test for an unknown quality – efficient conversion to Octopamine – or bear the risk of FOL not prescribing appropriate tests. He also submitted that even if BHL was contractually bound to manufacture at Vadodara, there was no evidence that manufacture at Nigam caused any loss to FOL.

214. The trouble with these submissions is that they overlook the reality of what happened and in particular the consequences of Mr Jain's actions and untruthful evidence. It could very well have been because Nigam was dirty, that extraneous matter found its way into the AHA. Dr Christie was unimpressed with the Nigam site when he visited in 2015. If there was no problem with it, I do not understand why Mr Jain would fabricate records and maintain the pretence to FOL that Vadodara was being used.

215. I have found against BHL as to the terms of the contract, in particular as to the measure of quality not being limited to the Amended Specification. I agree with Mr Cameron's submission that compliance with the Amended Specification cannot be "*an excuse for dropping any rubbish into the AHA*". FOL could not sensibly include a test designed to establish if the Green Contaminant was there as it could not anticipate that that sort of material could be present in the AHA if all three elements of the contract were followed (ie raw materials, process and site). It is akin to the meat pie analogy in that compliance with the specification does not prove that the product is of satisfactory quality and uncontaminated by an unknown substance.

216. The previous supplies of AHA had a maximum of 0.22% of extraneous matter and they all hydrogenated efficiently and in accordance with FOL's expectations. The 2014 AHA had far more extraneous matter within it and this fundamentally changed the quality of the AHA so that it did not hydrogenate efficiently or at all and certainly did not perform in a similar way to the previous supplies.

217. In my judgment therefore BHL was in breach of contract in the provision of the AHA in 2014 in the following respects:

(1) The 2014 AHA was not of a "*similar quality*" and/or did not have a "*similar impurity profile*" to the previous supplies of AHA in 2012 and 2013 in breach of the express terms of the contract;

(2) The 2014 AHA was not of "*satisfactory quality*" in breach of the implied term in section 14(2) of the SGA;

(3) The 2014 AHA was not fit for its purpose of converting efficiently into Octopamine in breach of the implied term in section 14(3) of the SGA;

(4) The 2014 AHA was not manufactured at Vadodara in breach of the express term of the contract.

218. I should add that Mr Nersessian, in his oral submissions, suggested that there was some sort of waiver of these breaches by FOL in that it had accepted the 2014 AHA despite knowing that it was possible it had been manufactured at Nigam and that BHL had been found by the Finnish Medicines Agency to have falsified documents. Rather than questioning Mr Jain, FOL accepted the AHA that had been delivered and endeavoured to convert it to Octopamine. Mr Nersessian did not cite any authority for the proposition that this would amount to a waiver of FOL's right to claim for breach of contract and I do not consider that acceptance in such circumstances can constitute a waiver of this sort. As Mr Cameron submitted, FOL might have waived its right to reject the AHA but it could not possibly thereby waive its right to sue in respect of breaches of contract once it had appreciated the losses caused thereby.

219. In the premises, BHL is liable in damages for any losses suffered by FOL as a result of these breaches of contract. I now turn to consider those losses.

H. LOSS

220. In paragraph 18 of the Counterclaim, FOL claims to have suffered the following losses by reason of BHL's breaches of contract:

(a) Cost of extra Palladium Catalyst that would not otherwise have been necessary	£53,463.85
(b) Loss of revenue due to reduced yield from the AHA supplied	£325,029.50
(c) Extra cost of production arising from the AHA Supplied having a retarded rate of hydrogenation	£265,704.80
(d) Extra technical support	£24,400.00
(e) External analysis costs	£1,748.00
Total	**£670,346.15**

221. The evidence of FOL's losses was principally dealt with by Dr Parkinson and in paragraph 28 of his witness statement he calculated a total additional cost to FOL of the contaminated AHA of £671,283.39, less than £1000 more than the above calculation. The differences came in the first three above amounts as can be seen from Dr Parkinson's figures below:

(a) Loss of Octopamine yield	£292,526.64
(b) Increased production costs	£291,658.10
(c) Extra technical support	£24,400.00
(d) Extra charcoal on palladium costs	£60,950.65
(e) External analyst fees	£1,748.00
Total	**£671,283.39**

222. At the start of the trial, Mr Nersessian was reluctant to have to deal with the evidence of loss and suggested that it should be dealt with later if I found in favour of FOL. Mr Cameron objected to that course of action and I ruled that all issues should be decided at this trial. Accordingly, Mr Nersessian had to challenge FOL's evidence as to loss if BHL wished to do so. That challenge proved to be somewhat muted and there were no submissions that these heads of loss were not claimable as a matter of principle.

223. Taking each in turn:

(1) Loss of Octopamine Yield

Dr Chalton analysed the Octopamine yield in 2012 and 2013 and compared that to 2014. This showed that on average each batch of the contaminated AHA converted into 72kg less of Octopamine than was achieved by the 2012 and 2013 AHA. FOL therefore lost a sum of £4,643.28 per batch leading to a total loss of yield on 63 batches of £292,526.64. Mr Nersessian did not challenge this evidence or methodology and in my view it is a sum that FOL has lost as a result of the contaminated AHA.

(2) Increased Production Costs

(a) Dr Parkinson calculated what he called the Vessel Rate which is the hourly cost, by reference to FOL's total fixed costs and depreciation, of operating its vessels for the conversion of AHA into Octopamine. The Vessel Rate is £52.66. Dr Parkinson then calculated the number of extra hours of use of FOL's vessels in order to convert the 2014 AHA as compared to the time taken in 2012 and 2013. He worked out that the total fixed costs that should have been incurred in converting the 2014 AHA is £462,689.55. The total fixed costs actually incurred was £754,348.10. Therefore the increased production costs as a result of the contaminated AHA are £291,658.55 (£754,348.10-£462,689.55).

(b) Mr Nersessian said that FOL's analysis under this head of loss was flawed because it was simply a *pro rata* measure of its annual fixed costs (including

for instance marketing costs and depreciation), which would invariably have been incurred by FOL anyway and were not a consequence of the longer period spent by FOL hydrogenating the AHA. To the extent that FOL alleged that it had missed out on other lucrative contracts as a result of the delay in hydrogenating AHA and the additional use of vessels, Mr Nersessian also said that there was no evidence of any such contracts that FOL had been unable to fulfil as a result of such delay or their value and that, in any event, the measure of loss for any such contracts could not properly be reflected in the Vessel Rate.

(c) I do not consider that these are valid objections to this calculation of loss which seems to me to be a reasonable and fair way to quantify FOL's wasted expenditure in dealing with the contaminated AHA that was caused by BHL's breaches of contract. Furthermore, FOL is not claiming for any loss of profits in relation to lost contracts, so the absence of such evidence is not relevant to this head of loss.

(3) Extra Technical Support

This is principally concerned with the extra time that Dr Stefaniuk and a Quality Control Analyst, Steven Barugh, had to spend on dealing with the technical problems of the contaminated 2014 AHA. Dr Chalton explained that FOL also advises customers upon and creates manufacturing processes for which FOL charges its customers. Part of Dr Stefaniuk's role is to render such advice and create such manufacturing processes and he is charged out at a rate of £500 per day for the first 20 days and thereafter £450 per day. Mr Barugh's work was not charged out in this way. Dr Chalton claimed that they "*would have had more than sufficient work to keep them busy*" had they not had to deal with the contaminated AHA. However, no such specific work has been identified and I accept Mr Nersessian's objections to this head of loss on the basis that there is no evidential support for this lost work and it is very unclear whether FOL's only real costs in this respect was the payment of Dr Stefaniuk's salary which would have been incurred anyway. I therefore disallow the £24,400 claimed in this respect.

(4) Extra Charcoal on Palladium Costs

There was no challenge to these costs, which were clearly caused by the contaminated AHA. The carbon on palladium catalyst that is used for the AHA hydrogenation is partly leased for the duration of the Octopamine production campaign. At the end of such a campaign, the remains of the catalyst are sent to a palladium recovery company which burns off the carbon and recovers the palladium. The combined costs of an extended lease, extra recovery costs and lost palladium amounted to £60,950.65.

(5) External Analysts Fees

Similarly there was no challenge to the costs of the external analysts used by FOL to investigate the Green Contaminant, namely: Sembcorp; Chemispec; and Edwards Analytical. These costs are a total of £1,748.00.

224. In the premises, I find that BHL is liable to FOL for damages for breach of contract in the total sum of £646,883.39 (£671,283.39 – £24,400). This sum is to be partially used by way of set off against BHL's outstanding invoices and the rest is payable by BHL.

I. DISPOSITION

225. Accordingly, I order as follows:

(1) Subject to the set off in subparagraph (2) below, FOL is liable in respect of BHL's outstanding invoices in the sum of US$513,946.23. Save as aforesaid, BHL's claim is dismissed;

(2) BHL is liable to pay damages for breach of contract to FOL on its counterclaim in the sum of £646,883.39, such sum to be set off in part against BHL's outstanding invoices in the sum of US$513,946.23;

(3) BHL is liable to pay interest on the damages pursuant to section 35a Senior Courts Act 1981.

226. I will hear the parties at a convenient time in relation to any consequential matters including costs and the calculation of sums due, if they cannot be agreed between the parties.

227. Finally, I am grateful to Counsel for their clear and helpful submissions and their efficient conduct of the case.