

BOC/INEOS PACKAGED CHLORINE MERGER INQUIRY

Provisional findings report

Published: 18 September 2008

The Competition Commission has excluded from this published version of the provisional findings report information which the inquiry group considers should be excluded having regard to the three considerations set out in section 244 of the Enterprise Act 2002 (specified information: considerations relevant to disclosure). The omissions are indicated by ✂. Some numbers have been replaced by a range. These are shown in square brackets. Non-sensitive alternative wording is also indicated in square brackets.

Provisional findings report

Anticipated acquisition by BOC Limited of the packaged chlorine business and assets of Ineos Chlor Limited

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Glossary

Summary

1. On 29 May 2008, the Office of Fair Trading (OFT) referred to the Competition Commission (CC), for investigation and report, the anticipated acquisition of the chlorine packaging and distribution business of Ineos Chlor Limited (Ineos Chlor) by BOC Limited (BOC). The reference requires us to determine:
 - whether arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation; and, if so,
 - whether the creation of that situation may be expected to result in a substantial lessening of competition (SLC) within any market or markets in the UK for goods or services.
2. We are required to report by 12 November 2008.
3. Chlorine is a key building block of modern chemistry. It is a hazardous gas which is subject to a range of health and safety regulations. Depending on the volume required and the application, chlorine may be supplied in bulk (either via a pipeline or in a tanker) or as 'packaged' chlorine, ie in drums or cylinders. Around one per cent of the chlorine produced in the UK is sold as packaged chlorine. A substantial proportion of the packaged chlorine sold in the UK is sold to water companies for water disinfection.
4. The supply structure for packaged chlorine in the UK has three levels (*a*) production of bulk chlorine, (*b*) packaging, and (*c*) distribution. The activities of BOC and Ineos Chlor only overlap at the distribution level:
 - Ineos Chlor produces chlorine, chlorine derivatives and PVC in several European countries. Ineos Chlor is 100 per cent owned by Ineos Group Ltd, the holding company of a large international group of chemical companies. Ineos Chlor is the sole manufacturer of chlorine in the UK and all of the chlorine

produced by Ineos Chlor is produced at its site at Runcorn, Cheshire. Ineos Chlor also packages chlorine at the Runcorn site. Ineos Chlor distributes packaged chlorine to customers in Great Britain and to one customer in Northern Ireland from the Runcorn site.

- BOC is a UK-based industrial gases provider. BOC is a subsidiary of Linde AG (Linde), a multinational industrial gases and engineering company. BOC does not currently produce or package chlorine itself. It sources most of its drum and cylinder packaged chlorine from Albion Chemicals Ltd (Albion) which has a chlorine packaging facility at Sandbach in Cheshire (and which is also itself a distributor of packaged chlorine). BOC also imports some of its packaged chlorine cylinders from Germany. BOC distributes packaged chlorine to customers in Great Britain and to one customer in Northern Ireland (which is serviced using BOC's Irish depot network).

5. BOC proposes to purchase Ineos Chlor's chlorine packaging and distribution business (hereafter 'the Target Business'). We found that arrangements were in contemplation which, if carried into effect, would result in the creation of a relevant merger situation, and no party disputed this during our inquiry.

6. Before assessing the competitive effects of the proposed merger, we considered what was likely to have happened in the absence of the merger. This is known as the counterfactual and provides the baseline against which the effects of the merger can be compared. In this inquiry we were also aware of possible future events which meant that, even in the absence of the merger, the structure of the industry was likely to have changed, and we took these into account as well.

7. We found that:

- a suitable counterfactual period in this inquiry would be until late 2012, and that it would not be possible to assess the competitive effects of the merger beyond that date;
 - Albion would exit packaging at some time between 2009 and late 2012, regardless of the merger (but would remain in distribution during this period); and
 - the proposed merger and the resulting loss by Albion of its chlorine packaging business with BOC might bring forward Albion's withdrawal from packaging, but would not affect Albion's ultimate decision to exit.
8. As a result, we concluded that, following the proposed merger and before Albion's exit from packaging, BOC's newly acquired packaged chlorine business (hereafter 'BOC/Target Business') and Albion would be the only two UK chlorine packagers and BOC/Target Business, Albion and Air Products PLC¹ would be the only UK distributors of packaged chlorine. Following Albion's exit from packaging, BOC/Target Business would be likely to increase the price for wholesale packaged chlorine above the current levels, but to a level below the constraint imposed by the possibility of imports.
9. In the absence of the merger, we found that:
- Ineos Chlor would not have sold the Target Business in 2008 and the Target Business (whether owned by Ineos Chlor or another company) would have remained an independent competitive constraint in the relevant market(s) during the counterfactual period (hereafter 'Independent Target Business');

¹Air Products PLC is a large UK manufacturer of industrial and specialty gases. It is owned by Air Products and Chemicals, Inc of the USA.

- Independent Target Business would have continued to package chlorine at Runcorn during the counterfactual period, leaving it as the sole UK packager following Albion's exit;
 - competing distributors during the counterfactual period would be Independent Target Business, Albion, BOC and Air Products; and
 - following Albion's exit from packaging, Independent Target Business would be likely to increase the price for wholesale packaged chlorine above the current levels, but to a level below the constraint imposed by imports.
10. We next considered the definition of the relevant markets. We concluded that:
- drum distribution and cylinder distribution were distinct markets. On the demand-side the containers were not sufficiently close substitutes to be within a single market. On the supply-side, while there were some shared features in the distribution of the two different types of container, some key requirements (namely purchasing containers and purchasing or contracting vehicles to deliver packaged chlorine to customers) were distinct;
 - for the purposes of this inquiry water company and non-water company customers could be considered together;
 - alternative water disinfection methods did not act as a sufficient competitive constraint to be included in the relevant product market; and
 - the geographic market was no wider than Great Britain (although we analysed the market as if its geographic scope were the UK because this did not alter our conclusions).
11. We found that, both before and after Albion's exit from packaging, entry into the relevant distribution markets by distributors of other chemicals and/or industrial gases or European distributors of packaged chlorine was unlikely. This was because of barriers to entry associated with sourcing competitively priced packaged chlorine in

the UK, the fact that imports were not economically viable, other additional costs of entry and the evidence from the possible entrants themselves.

12. We found that, regardless of Albion's exit from packaging, any future expansion by existing UK distributors would be unlikely to be sufficient to prevent BOC/Target Business exercising any market power in the relevant markets following the merger.
13. We also found that any buyer power would be unlikely to be sufficient to prevent BOC/Target Business exercising any market power in the relevant markets following the merger.
14. We examined the extent of competition between BOC and Ineos Chlor in the relevant markets. We considered that this was an appropriate proxy for the extent of competition between them in the counterfactual before Albion's exit from packaging, given that we believed that the Target Business would have remained an independent competitive constraint in the relevant markets during the counterfactual period. We concluded that BOC and Ineos Chlor were the leading suppliers in the relevant markets, and, on a tender by tender basis, they were usually each other's principal rival.
15. We assessed the overall competitive effects of the proposed merger in two phases, Phase 1 and Phase 2. Phase 1 covered the period of time from the proposed merger up until Albion's likely exit from packaging following the proposed merger.
16. We found that during Phase 1 compared with the counterfactual the merger would reduce the number of competing distributors from three to two in each relevant market, making each market even more concentrated. We also found that the merger would end the close rivalry between BOC and Ineos Chlor and would remove the

only competing distributor to the Target Business that currently supplies both drums and cylinders. In each relevant market, BOC/Target Business would attain a very high market share. Further, we noted that BOC planned to introduce a cylinder rental charge for the generality of its customers following the proposed merger, which we considered to be additional evidence that, following the merger, BOC would be subject to fewer competitive constraints than currently.

17. Phase 2 covered the period between the exit of Albion from packaging in the counterfactual and late 2012, ie the period when we thought that Albion would have exited as a packager whether or not the merger proceeded.

18. We found that during Phase 2 the scope for competition might be reduced both following the merger and in the counterfactual as a result of likely increases in the wholesale packaged chlorine price and the fact that all distributors would be sourcing from a single vertically integrated chlorine packager and distributor. However, we concluded that some scope for competition would remain based on price (for example on the basis of the efficiency of distribution operations) and on other factors (such as additional services or the range of other chemicals and/or gases supplied). Further, compared with the counterfactual, (i) the merger would reduce the number of competing distributors from three to two in each of the relevant markets, (ii) the merger would reduce the number of distributors currently supplying both drums and cylinders from two to one, and (iii) in each relevant market, BOC/Target Business would attain a very high market share.

19. Since it was possible that the proposed merger might accelerate Albion's exit from chlorine packaging, we also assessed the effect of the proposed merger on competition during any such period of acceleration (ie the time, if any, between

Albion's exit from packaging following the merger and its exit from packaging in the counterfactual).

20. We found that there would be a loss of competition in the relevant markets compared with the counterfactual during any such 'acceleration' period for the same reasons as during Phase 1. There would also be an additional loss of competition associated with reduced scope for price-based competition between the remaining distributors following the merger due to the reduced rivalry at the packaging level of the supply chain during this period.

21. Taking our competitive assessments in Phase 1, Phase 2 and any period of accelerated Albion exit from packaging together, we therefore expect that the proposed merger will lead to higher prices and/or lower service levels than would otherwise be the case in the markets for the distribution of packaged chlorine in cylinders and in drums in the UK, and thus that the proposed merger may be expected to result in an SLC in those markets.

Provisional findings

1. The reference

1.1 On 29 May 2008, the OFT, in exercise of its duty under section 33(1) of the Act, referred to the CC for investigation and report the anticipated acquisition of the chlorine packaging and distribution business of Ineos Chlor by BOC. The reference requires us to determine:

- (a) whether arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation; and, if so,
- (b) whether the creation of that situation may be expected to result in an SLC within any market or markets in the UK for goods or services.

1.2 We are required to report by 12 November 2008. Our terms of reference are in Appendix A, together with an explanation of how we have conducted our inquiry.

1.3 This document (together with its appendices) constitutes the provisional findings that we are required to notify to the parties and publish under the CC's rules of procedure. Non-commercially sensitive versions of the main party and third party written submissions are on our website,² along with other documents relevant to this inquiry. We cross-refer to them where appropriate.

2. The product and the companies

Packaged chlorine

2.1 Chlorine is a key building block of modern chemistry used in three principal ways: as a raw material for chlorine-containing products (eg plastics, pharmaceuticals, pesticides); as an intermediate to manufacture non-chlorinated products (eg

²<http://www.competition-commission.org.uk/inquiries/ref2008/ineos/index.htm>.

polycarbonates and polyurethanes) and direct use (eg to disinfect water).³ It is a hazardous gas which is subject to a range of health and safety regulations.

2.2 Depending on the volume required and the application, chlorine may be supplied in bulk (either via a pipeline or in a tanker) or as 'packaged' chlorine, ie in drums or cylinders. Ineos Chlor told us that around 1 per cent of the chlorine produced in the UK is sold as packaged chlorine and is distributed in drums of up to 1,000kg capacity and in cylinders up to 71kg capacity. Cylinders and drums both contain liquid chlorine under pressure.⁴ Around [X] per cent by volume of this packaged chlorine is sold to water companies for water disinfection. We also estimate that around [X] per cent by volume of the packaged chlorine sold in the UK is sold in cylinders.

BOC

2.3 BOC is a UK-based industrial gases provider. Its business includes: (a) the manufacture, distribution and sale of industrial, medical and speciality gases to a wide range of industries and customers throughout the UK;⁵ and (b) the bulk supply of liquefied gases, such as oxygen, nitrogen, hydrogen and carbon dioxide.

2.4 BOC is an indirectly wholly owned subsidiary of Linde of Munich, Germany, which acquired The BOC Group plc in 2006. Linde is a multinational industrial gases and engineering company which in 2007 had global sales of about €12.3 billion.

2.5 BOC had a turnover of £1,192 million⁶ in the 15-month financial reporting period ended 31 December 2006 (implying annual turnover of about £960 million). Of this turnover, £468 million (39.2 per cent) was from its Industrial and Special Products business, of which packaged chlorine forms a small part.

³www.eurochlor.org.

⁴The chlorine from a cylinder is always used in gaseous form, but chlorine from a drum is used in either gas or liquid form.

⁵The distribution of packaged chlorine is part of this area of BOC's business.

⁶The BOC Group plc reported group turnover of £4,222.6 million for these 15 months.

- 2.6 BOC told us that it had been selling packaged chlorine for 25 years, although it began to expand its packaged chlorine business in the UK more actively in the early part of this decade. BOC's packaged chlorine business had an annual turnover of £[redacted] in 2007. It has no dedicated staff, trucks or assets with the exception of drums and cylinders.
- 2.7 BOC does not currently package chlorine itself. It sources most of its drum and cylinder packaged chlorine from Albion which has a chlorine packaging facility at Sandbach in Cheshire (and which is also itself a distributor of packaged chlorine). Albion is a UK-based bulk and packaged chemical distributor, rather than being a provider of industrial gases like BOC. It is a wholly owned subsidiary of Brenntag Holding GmbH (Brenntag), the largest chemical distribution company in the world.
- 2.8 BOC also imports some of its packaged chlorine cylinders[redacted].
- 2.9 The distribution of packaged chlorine is integrated into BOC's arrangements for distribution of its wider portfolio of packaged gases. BOC loads packaged chlorine on to trucks together with other packaged gases and is therefore able to deliver a variety of products to customers in one delivery. Empty packages are picked up at the same time.
- 2.10 BOC operates a depot network for the distribution of cylinders of packaged chlorine and other gases. It 'trunks' (ie transports to a central distribution point) cylinders of chlorine and other gases from its site at Immingham to its site at Wolverhampton and then to its other depots. Chlorine accounts for only a small part of this cylinder traffic.
- 2.11 BOC distributes drums of chlorine directly to customers from its site at Immingham, using trucks that can hold several drums of different products.

- 2.12 Water companies account for nearly all of BOC's sales value and volume of packaged chlorine ([REDACTED] per cent of total volume).
- 2.13 BOC has a single customer for chlorine in Northern Ireland ([REDACTED], a dairy business), which is serviced using BOC's Irish depot network.⁷ Cylinders containing chlorine as well as other industrial and special gases are trunked from Immingham to Dublin, and then to Belfast for final delivery to the customer.

Ineos Chlor

- 2.14 Ineos Chlor produces chlorine, chlorine derivatives and PVC in several European countries. One of its sites (shared with several other Ineos businesses) is at Runcorn, Cheshire. Ineos Chlor is 100 per cent owned (through a long chain of intermediate holding companies) by Ineos Group Ltd, which is the holding company of an international chemical group with a global annual turnover of £18.1 billion. The group operates 76 manufacturing facilities across 20 countries.
- 2.15 Ineos Chlor is the sole manufacturer of chlorine in the UK and all of the chlorine produced by Ineos Chlor is produced at its Runcorn site. Ineos Chlor also packages chlorine at two locations on the Runcorn site, one for cylinders, the other for drums. Bulk chlorine is delivered for packaging from the chlorine plant to the respective filling bays by pipeline.⁸
- 2.16 Ineos Chlor distributes packaged chlorine to customers in Great Britain and to Northern Ireland [REDACTED] from the Runcorn site, using a 'milk round' distribution model for both drums and cylinders. Lorries are loaded exclusively with chlorine cylinders (or

⁷With depots in Dublin, Belfast and Cork.

⁸At current packaging rates [REDACTED] Ineos Chlor fills [REDACTED] cylinders and [REDACTED] drums a day; [REDACTED] cylinders and [REDACTED] drums per [REDACTED] week. Current levels of capacity could be expanded at little additional cost and with relative ease. [REDACTED].

chlorine drums) and make deliveries to (and pick up empty cylinders and drums from) different geographic areas on different days of the week. [REDACTED].

2.17 Ineos Chlor's packaged chlorine business had a turnover of £4.13 million in 2007. It currently supplies, by volume, [REDACTED] per cent of its packaged chlorine to water companies and [REDACTED] per cent to industrial customers.

2.18 Appendix D contains further data for BOC and Ineos Chlor, showing how sales of packaged chlorine break down by geographic region and customer type. Appendix D also includes margin and price data.

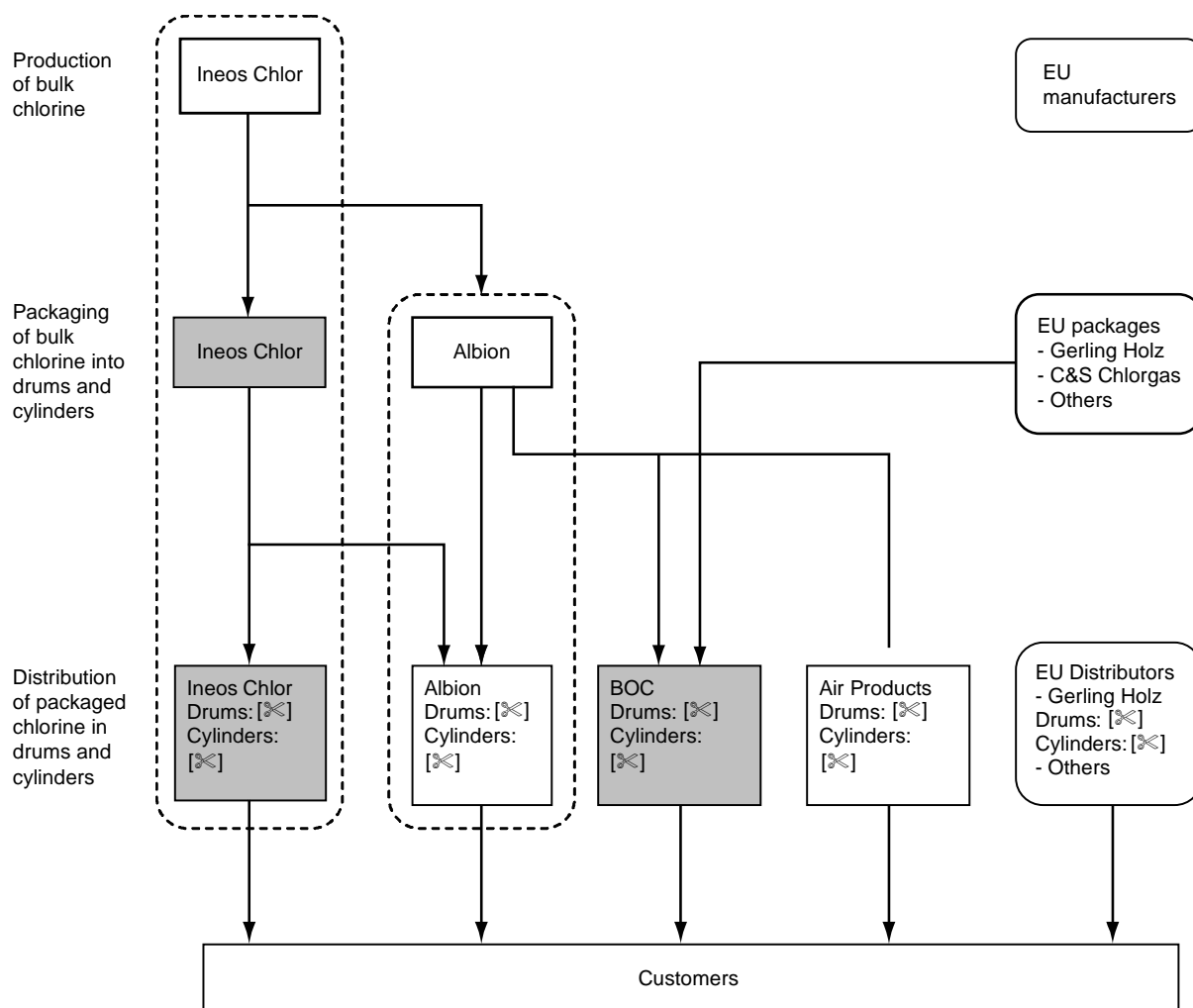
The current packaged chlorine supply structure in the UK

2.19 The supply structure for packaged chlorine in the UK has three levels (a) production of bulk chlorine, (b) packaging, and (c) distribution. Some distributors specialize in distributing either drums or cylinders while others distribute both drums and cylinders.⁹ For reference, this supply structure and the main participants at each level of the supply structure are set out in Figure 1. The activities of BOC and Ineos Chlor only overlap at the distribution level.

⁹For simplicity, our analysis of the future structure of the industry and the counterfactual in Section 4 does not draw a distinction between distributors of drums and distributors of cylinders. However, our market definition analysis in Section 5 considers whether there are separate relevant markets for the distribution of drums and the distribution of cylinders.

FIGURE 1

The current supply structure for packaged chlorine in the UK



Source: CC estimates based on data from third parties.

Note:

1. The percentages shown on the figure are shares of supply by volume.
2. Gerling Holz supplies one industrial user with chlorine in drums of a different grade and moisture content to that which can be sourced from the UK.
3. Air Products supplied a single customer with a small volume of drums in 2007 and has otherwise withdrawn from supplying drums.

3. The proposed transaction and the relevant merger situation

3.1 This section describes the transaction and its rationale, and sets out why we consider that the CC has jurisdiction in relation to this transaction.

The proposed transaction

3.2 As a result of the sales process described in Appendix B, BOC proposes to purchase Ineos Chlor's chlorine packaging and distribution business (hereafter 'the Target

Business'). The proposed transaction is governed by six documents: (i) a Business Purchase Agreement (BPA); (ii) a side letter; (iii) a Disclosure Letter; (iv) a Chlorine Supply Agreement under which Ineos Chlor will supply bulk chlorine to BOC; (v) a Services and Utilities Supply Agreement; and (vi) a Lease of part of Ineos Chlor's Runcorn site.

3.3 The BPA was signed on 19 March 2008 and sets out the main provisions of the proposed merger. The assets transferred as part of the Target Business include¹⁰ [REDACTED] for a total consideration of [REDACTED].¹¹

3.4 The Target Business' assets are each ascribed a value in the BPA, adding up to the total consideration. [REDACTED]¹²

3.5 [REDACTED]¹³

The rationale for the proposed transaction

Ineos Chlor's reasons for selling the Target Business

3.6 [REDACTED] The main reason that Ineos Chlor wanted to sell the Target Business was because it was a relatively small part of its total business and was not part of its core business, which is the large-scale production of chemicals. Further, the Target Business was not very profitable, given the disproportionate amount of management time it required.

3.7 In information given to its employees, Ineos Chlor said that following a thorough review of the strategic options for the packaged chlorine business, it was felt that the Target Business was better suited to a company which was directly involved in the

¹⁰BPA 3.2.

¹¹BPA Schedule 12.

¹²BPA Schedule 8.

¹³BPA 8.1.

industrial gases sector, and had the necessary expertise to take the business forward.

BOC's reasons for buying the Target Business

3.8 BOC has a large industrial gases business. As described in Appendix B, it was one of the recipients of the Information Memorandum produced by Ineos Chlor to invite bids for the Target Business.

3.9 In November 2007, BOC made a presentation to the Executive Board of its parent Linde which set out the investment rationale for its bid, comprising:

[X]

3.10 Appendix B also describes BOC's valuation model for the Target Business and its plans for integrating the Target Business with its existing operations.

Jurisdiction

3.11 Under our terms of reference (see Appendix A), we must investigate and report on whether arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation.

3.12 Under section 23 of the Act, a relevant merger situation is created if two or more enterprises have ceased to be distinct and if either the share of supply test or the turnover test is satisfied.

3.13 Given the assets proposed to be transferred (see paragraph 3.3), we are satisfied that the Target Business is an enterprise for the purposes of the Act. If the merger proceeds, it will cease to be distinct from enterprises carried on by, or under the control of BOC.

- 3.14 The share of supply test is met if, as a result of the merger, BOC increases its share of the supply of goods or services of any description in the UK, or in a substantial part of the UK to at least one-quarter.
- 3.15 The main parties overlap in the distribution of packaged chlorine in the UK. In their initial submission, they provided figures to show that BOC had a [X] per cent share¹⁴ of the supply of packaged chlorine in the UK, and that the Target Business had a share of supply of [X] per cent. On that basis, the proposed transaction would increase BOC's share of supply of packaged chlorine in the UK to [X] per cent, and the share of supply test is satisfied.
- 3.16 As the share of supply test is satisfied, under our terms of reference we are not required to consider the application of the turnover test.
- 3.17 We therefore concluded that arrangements were in contemplation which, if carried into effect, would result in the creation of a relevant merger situation. No party disputed this during our inquiry.

4. Market developments, market structure following the merger and the counterfactual

- 4.1 Before assessing the competitive effects of the proposed merger, we considered what was likely to have happened in the absence of the merger. This is known as the counterfactual and provides the baseline against which the effects of the merger can be compared.
- 4.2 However, in this inquiry we were aware of possible future events which meant that, even in the absence of the merger, the structure of the industry was likely to have

¹⁴Share of supply figures in this paragraph are based on an assessment of 2007 sales by volume.

changed, and we took these into account, in accordance with the CC's merger guidelines (the Guidelines).¹⁵

4.3 In this section we therefore consider:

- (a) future developments that are likely to affect competitive conditions in the relevant markets regardless of the transaction;
- (b) the likely structure of the market following the proposed merger; and
- (c) what would have been likely to happen if BOC had never attempted to buy the Target Business.

Market developments: Albion's chlorine packaging business

4.4 There are currently only two chlorine packaging facilities in the UK. One is part of the Target Business and is located at Ineos Chlor's Runcorn site. The other belongs to Albion and is located at Albion's site at Sandbach, Cheshire.

4.5 Albion's site at Sandbach has been used for the manufacture of chlorine and related products since the 1950s. In recent years there have been three important events at the site which are relevant to our inquiry. The first was the decision by Albion [§] to cease chlorine manufacture at Sandbach (it ceased in November 2005) and to buy bulk chlorine from Ineos Chlor's plant in Runcorn instead.¹⁶ The second was Albion's sale of the Sandbach site to land developers in 2006. The third was the acquisition of Albion by Brenntag, also in 2006.

4.6 We noted that Albion sold the chlorine it packaged at Sandbach to two distributors: BOC and Air Products PLC (Air Products)¹⁷ and filled some drums for itself. BOC and Air Products differ from Albion in that they are distributors of industrial gases

¹⁵See *CC2—Merger References: Competition Guidelines, June 2003*, paragraphs 1.22 and 1.23

¹⁶See further discussion at paragraphs 4.8 to 4.10.

¹⁷Air Products PLC is a large UK manufacturer of industrial and specialty gases. It is owned by Air Products and Chemicals, Inc of the USA.

whereas Albion is a bulk and packaged chemical distributor. Albion told us that its Sandbach packaging facility would become uneconomic once BOC purchased the Target Business and began to package its own chlorine at Runcorn rather than sourcing it from Sandbach. However, Albion also told us that this would only affect the timing of its decision about the future of its packaging operations at Sandbach, rather than decision itself, because of the terms of Albion's lease of the Sandbach site from land developers (see paragraph 4.11).

4.7 The main parties argued that Albion was likely to exit chlorine packaging (and close its chlorine packaging facility at Sandbach) regardless of the merger. They pointed out that there were indications that [REDACTED] and [REDACTED]. Albion's complete exit was likely, according to the main parties, in the next [REDACTED] months.

4.8 In Appendix C we:

(a) describe Albion's operations at Sandbach and their financial performance;

(b) discuss the effect on Albion's packaging business of the loss of sales of packaged chlorine to BOC;

(c) outline the arrangements ('the Chlor-alkali Supply Agreement') under which Ineos Chlor supplies chlorine to Albion both in bulk (part of which Albion packages for sale to other packaged chlorine distributors) and in drums¹⁸ (which Albion distributes directly to end-user customers itself); and

(d) provide details of Albion's sale of the Sandbach site to land developers in 2006 and the subsequent lease back of the site to Albion.

¹⁸It is financially possible for Albion to purchase drums of packaged chlorine from Ineos for this purpose rather than packaging the drums itself as a result of the terms of the Chlor-alkali Supply Agreement and because of the location and requirements of its customers. Both Ineos Chlor and Albion told us that this arrangement would not be affected by the proposed merger because Albion's contract with Ineos Chlor would remain in place, and Ineos Chlor would simply make contractual arrangements with BOC to service that part of its contract with Albion. We therefore considered that Albion would remain as a distributor of packaged chlorine in drums until at least late 2012 regardless of the proposed merger.

- 4.9 We note that Albion has for several years been packaging chlorine for other distributors who compete with Albion's own distribution business downstream, with adequate levels of profit both for itself and the distributors. Our view, in light of the evidence from Ineos Chlor, is that this is possible due to the terms under which Albion is currently purchasing bulk chlorine from Ineos Chlor under the Chlor-alkali Supply Agreement.¹⁹
- 4.10 The Chlor-alkali Supply Agreement is due to expire at the end of October 2012 whether or not the proposed merger takes place. On the basis of the evidence we received, we found it likely that Albion would be able to negotiate a continuation of chlorine supply from Ineos Chlor at that time, although probably on less advantageous terms. This calls into question the ongoing viability of Albion's chlorine packaging business beyond the end of October 2012 at the latest.
- 4.11 The duration of the lease of the Sandbach site and the intentions of the land developer are discussed in Appendix C. Albion told us that it was currently under no pressure to leave the Sandbach site. Albion's departure from the Sandbach site ultimately would be dictated by the plans of the developer to use the site for alternative purposes. We noted that no planning application had yet been submitted to the relevant local authority for the site. Further, we believed that the current uncertainty in the housing market would be likely to reduce the impetus for the land developer to require Albion to vacate the site in the near future, given that part of the land developer's plans for the site included residential housing.
- 4.12 As the packaging assets at Sandbach are old and, according to Albion, cannot be moved economically, Albion would need to acquire or finance the construction of a new facility elsewhere to continue its chlorine packaging activities, once its lease of

¹⁹Ineos Chlor told us that the original rationale behind the Chlor-alkali Supply Agreement was that [REDACTED].

the Sandbach site expires. Albion told us that the only viable way for it to continue as a packager would be to purchase Ineos Chlor's packaging facility at Runcorn. We agreed with Albion that it was unlikely to be economically viable for it to build a new packaging facility.

4.13 As a result, we concluded that:

- (a) it was highly likely that Albion would have ceased packaging chlorine by late 2012, regardless of the merger (but would remain in distribution during this period);
- (b) Albion might have to leave the Sandbach site and so exit packaging much earlier than this. However, given the inevitable uncertainties around the developer's plans to redevelop the Sandbach site, we did not have sufficient evidence to decide precisely when this would be. We therefore concluded that Albion would exit packaging at some time between 2009 and late 2012;
- (c) the proposed merger and the resulting loss by Albion of its chlorine packaging business with BOC might bring forward Albion's withdrawal from packaging, but would not affect Albion's ultimate decision to exit; and
- (d) Albion's future in the distribution of packaged chlorine beyond late 2012 depended on its ability to source packaged chlorine from Ineos Chlor (or any new owner of the Runcorn packaging facility).

The likely structure of the industry following the proposed merger

4.14 We found it likely that, following the proposed merger and before Albion's exit from packaging, BOC's newly acquired packaged chlorine business (hereafter 'BOC/Target Business') and Albion would be the only two UK chlorine packagers. BOC/Target Business, Albion and Air Products would be the only UK distributors.

- 4.15 We also found that, following Albion's exit from packaging, BOC/Target Business would be the sole UK packager, based at Runcorn.²⁰ BOC/Target Business would be a distributor, and Albion and Air Products would also be distributors if BOC/Target Business agreed to supply packaged chlorine to them.²¹ BOC told us that it would agree to do so, and pointed out that its valuation model for the purchase of the Target Business (prepared before the OFT and CC investigations to help in justifying its bid to its parent company) reflected this.
- 4.16 We considered that, with the exit of Albion from packaging, BOC/Target Business would be likely to increase the price for wholesale packaged chlorine above the current levels. However, in our view this would be to a level below the constraint imposed by the possibility of imports because, as our analysis in Appendix F demonstrates, the economics of importing are sufficiently uncertain that BOC/Target Business would not have the necessary information to raise prices precisely to a point just below those of potential imports. Further, it would not want to allow imports to gain a significant foothold in the UK market or import supply routes to become more firmly established. Therefore, to avoid the risk of losing significant sales to imported packaged chlorine, it would be likely to retain a gap between the price of its product and the imported alternative.
- 4.17 Other than any chlorine that BOC/Target Business chose to import, only small volumes of packaged chlorine would be supplied in the UK that would not be dependent on bulk supplies from Ineos Chlor. These would include deliveries of about 100 tonnes from Gerling Holz to one UK industrial customer requiring chlorine

²⁰[REDACTED]

²¹Under the Chlor-alkali Supply Agreement which runs until the end of October 2012, Albion can take some of its chlorine requirements in the form of packaged chlorine in drums. Ineos has made the necessary arrangements with BOC to allow Ineos to fulfil its part of the Chlor-alkali Supply Agreement following the merger and Albion does not need to have any direct packaging relationship with BOC until after the end of October 2012. [REDACTED]

of a higher purity than that offered by Ineos Chlor. We looked at the possibility of an increased level of imports of packaged chlorine in paragraphs 5.30 to 5.41.

The counterfactual

4.18 In this section, we consider what would have been likely to happen if, for any reason, BOC had never attempted to buy the Target Business.

4.19 First, we consider the appropriate time period for the counterfactual. Second, we explain the process we followed and the evidence we took into account in determining the counterfactual itself. Third, we set out the views of the main parties on our counterfactual analysis. Fourth, we conclude on the likely structure of the industry in the counterfactual.

The counterfactual period

4.20 In the context of this inquiry, we considered that an appropriate counterfactual period would be a period of time over which the future of the relevant market(s) was reasonably foreseeable. We noted that:

(a) packaged chlorine is part of a generally stable industry;²²

(b) the Chlor-alkali Supply Agreement between Ineos Chlor and Albion, which gives Albion a supply of chlorine at prices that enable it to package and distribute chlorine profitably, would run until the end of October 2012; and

(c) as set out at paragraph 4.13, we found it highly likely that Albion would have ceased packaging chlorine by late 2012 (and that it might exit earlier), regardless of the merger, but that it would remain in distribution of drums until at least late 2012 by virtue of its existing Chlor-alkali Supply Agreement with Ineos.

²²We note that there was significant consolidation at the production level of the supply chain when Albion and Rhodia ceased manufacturing chlorine in the mid-2000s and that BOC expanded its presence at the distribution level of the supply chain in the early 2000s. However, we consider these to be one-off events that do not change our view that the industry is relatively stable compared with many other industries. Further, as set out in Appendix J, sales volumes of packaged chlorine (in both drums and cylinders) have been generally stable during the period from 2004 to 2007.

4.21 In light of these matters, we concluded that a suitable counterfactual period in this inquiry would be until late 2012, and that it would not be possible to assess the competitive effects of the merger beyond that date.

The counterfactual: our view

4.22 As noted in Appendix B, the Target Business was sold by means of a competitive bidding process. Ineos Chlor received [REDACTED] final bids for the packaged chlorine business from: BOC for [REDACTED]. We thought it correct to consider other possible outcomes of the bidding process as counterfactual scenarios. This was because there was no evidence to suggest that Ineos Chlor only launched the bidding process because it knew in advance that BOC would be the successful bidder.

4.23 We considered detailed information about the sales process (including bid values) as set out in Appendix B. We also considered evidence from Ineos Chlor, BOC and other bidders about their intentions had BOC not bid for the Target Business. We examined various counterfactual scenarios including:

- (a) separate scenarios for a successful bid from each of the other bidders;
- (b) a successful bid from another bidder not currently active in the relevant market(s); and
- (c) Ineos Chlor not selling the business.

4.24 Ineos Chlor told us, and we agreed on the basis of the evidence we received, that it would not have accepted the other bids it received during the sales process because they were too low.

4.25 [REDACTED]

4.26 We did not think it was likely that another bidder not currently active in the relevant market(s) would have made a successful bid for the Target Business during this sales process. This is because, as set out in Appendix B, the only company to which Ineos Chlor sent its Information Memorandum for the sale of its packaged chlorine business that was not already active in any of the relevant markets was [REDACTED] did not submit a bid for the business. Further, non-trade and overseas buyers would not even have been aware of the opportunity to acquire the Target Business as a result of the limited distribution of the Information Memorandum.

4.27 We found that, had Ineos Chlor not sold the Target Business in 2008, the Target Business would have remained an independent competitive constraint in the relevant market(s) during the counterfactual period (hereafter 'Independent Target Business') – either under Ineos Chlor's ownership or the ownership of another company not already active in the relevant market(s). This is because:

(a) [REDACTED];

(b) Ineos Chlor told us that without BOC's bid it would not have sold the Target Business in 2008. Instead, it would have explored other ways (including via its future pricing strategy for the supply of packaged chlorine to distributors and end customers) to improve the value of the business in order to sell it in due course.²³

In our view, it would not have been possible for Ineos Chlor to implement any such new strategy effectively until Albion ceased packaging chlorine; and

(c) as set out at paragraph 4.13, although we thought Albion's exit from packaging was likely at some point between 2009 and late 2012, we could not say precisely when this would be. Following Albion's exit, we considered that it was likely that any new strategy would take the remainder of the counterfactual period to take effect. This would preclude the sale of the Target Business to any of the other bidders in the 2007/8 sales process during the counterfactual period, as they

²³[REDACTED]

would have no reason to increase their bids (which were previously unacceptable to Ineos Chlor). Since [REDACTED] this means that only companies not already so competing would be likely to make acceptable bids for the Target Business during the counterfactual period.

4.28 We considered that Independent Target Business would continue to package chlorine at Runcorn during the counterfactual period. With Albion likely to close its Sandbach operation by late 2012 (if not earlier) and [REDACTED] Independent Target Business would be left as the sole UK packager. We considered it likely that it would package chlorine for BOC and Air Products at Runcorn if they so required. [REDACTED] As explained in footnote 18, Independent Target Business would be likely to continue to package chlorine for Albion, at least until the end of October 2012. During the counterfactual period, competing distributors would therefore be Independent Target Business, Albion, BOC and Air Products.

4.29 For the same reasons as in the case of BOC/Target Business set out at paragraph 4.16, we found that, with the exit of Albion from packaging, Independent Target Business would be likely to increase the price for wholesale packaged chlorine above the current levels, but to a level below the constraint imposed by the possibility of imports.

Views of the main parties

4.30 The main parties submitted that the relevant counterfactual involved either:
[REDACTED]

4.31 The main parties argued that the second of these two scenarios was the most likely counterfactual but that, in either case, it was highly unlikely that the merger could result in an SLC.

4.32 More specifically, Ineos Chlor told us:

(a) [REDACTED];

(b) once Albion ceased packaging, even if the number of distributors were the same in the counterfactual as in the pre-merger situation, these distributors would have a more limited choice of suppliers of packaged chlorine and that would reduce their ability to differentiate themselves in terms of price (according to Ineos Chlor this was by far the most important factor for downstream customers);

(c) once Albion had ceased packaging, [REDACTED],²⁴

(d) it would consider putting the Target Business up for sale again [REDACTED]; and

(e) the fact that Ineos Chlor did not offer the Target Business to anyone other than the companies set out in Appendix B did not preclude it from inviting a broader range of bidders to participate in a future auction, including companies not already active in the relevant market(s).

4.33 In response to the points in 4.32 (and using the same numbering), we noted that:

(a) [REDACTED];

(b) we address the issue of the extent of competition between distributors in our assessment of the effects of the proposed merger on competition (see Section 9);

(c) this is consistent with our view set out in paragraph 4.29;

(d) and (e) for the reasons set out in paragraph 4.27, we found that, had Ineos Chlor not sold the Target Business in 2008, it would have either retained it or sold it to a company not already active in the relevant market(s) during the counterfactual period.

4.34 BOC told us that, had it not bid for the Target Business:

[REDACTED]

²⁴[REDACTED]

4.35 As set out in paragraph 4.29, we found that it was likely that the price of wholesale packaged chlorine would increase following Albion's exit from packaging above the current levels, but to a level below the constraint imposed by the possibility of imports. We therefore considered it likely that BOC would source its packaged chlorine from Independent Target Business in the absence of the merger (and continue to import chlorine as well if it wished to) and it would not cease the distribution of either drums or cylinders.

Conclusions on the counterfactual

4.36 As a result of our analysis set out in paragraphs 4.20 to 4.29, we concluded that:

- (a) the appropriate counterfactual period was until late 2012;
- (b) in the absence of BOC's bid, Ineos Chlor would not have sold the Target Business in 2008 and the Target Business would have remained an independent competitive constraint in the relevant market(s) during the counterfactual period (whether owned by Ineos Chlor or another company);
- (c) Independent Target Business would have continued to package chlorine at Runcorn during the counterfactual period, leaving it as the sole UK packager following Albion's exit;
- (d) competing distributors during the counterfactual period would be Independent Target Business, Albion, BOC and Air Products; and
- (e) following Albion's exit from packaging, Independent Target Business would be likely to increase the price for wholesale packaged chlorine above the current levels, but to a level below the constraint imposed by imports.²⁵

²⁵Given the likely effect of Albion's exit from packaging on the competitive conditions for packaged chlorine distribution, we carried out our competitive assessment both before and after Albion's exit (see Section 9).

5. Market definition

Introduction

5.1 The Guidelines state that the key to market definition is substitutability.²⁶ In defining the market we seek to identify the extent to which customers can readily switch between products, or suppliers can readily switch between the supply of alternative products in response to a change in price imposed by a hypothetical monopolist of the relevant product. The Guidelines note that market definition is not an end in itself, but rather a framework within which to analyse the effects of a merger on competition. As such, market definition is a useful tool for identifying the competitive constraints that would affect BOC/Target Business.

5.2 As shown in Figure 1, the supply structure for packaged chlorine in the UK has three levels: (a) distribution, (b) packaging, and (c) production of bulk chlorine. The focus of our analysis is on distribution, which is the only area of horizontal overlap between BOC and Ineos Chlor. However, access to wholesale sources of packaged chlorine affects barriers to entry and expansion at the distribution level. Further, wholesale supply of packaged chlorine depends on an ability to source bulk chlorine. We therefore also consider market definition at the packaging and production levels of the supply chain.

Distribution of packaged chlorine

The procurement process

5.3 Depending on the customer and size of the contract, delivered prices of packaged chlorine are set either via a public tender process or by individual negotiation. Different customers have different requirements in terms of the volume of packaged chlorine purchased and delivery locations, as well as other factors such as the type

²⁶Paragraph 2.1.

of additional services demanded. Therefore delivered prices vary between different customers.

- 5.4 Water companies account for the majority of packaged chlorine sales (by volume)²⁷ and generally award contracts by public tender, with many contracts falling within EU public procurement rules.²⁸ These contracts are typically framework agreements with supply terms varying between customers.²⁹ The typical length of these agreements is between three and five years with prices typically reviewed annually (although terms of supply differ between contracts and so in some cases prices may be fixed for part or all of the contact period).
- 5.5 BOC told us that some of the smaller water companies use annual contracts which do not always go through the public tender process and so are subject to normal commercial negotiations.
- 5.6 Industrial customers are not required to follow EU public procurement rules and prices for such customers are subject to individual negotiations. Ineos Chlor told us that larger industrial customers often use a tender process, but smaller customers typically just seek quotes from a number of sources. BOC told us that their industrial customers generally purchase on an ad hoc basis, with no fixed supply contracts. They also tend to require delivery to single sites.

²⁷The sales mix of each distributor varies.

²⁸The water companies are regulated utilities for the purposes of the EU public procurement regime and so, when purchasing packaged chlorine, must comply with certain requirements of the Utilities Contracts Regulations 2006. Provided that the appropriate threshold is reached, a water company must either place a notice in the *Official Journal of the European Union* or advertise the tender through a recognized qualification system such as Achilles <http://www.achilles.com/en/>. The current threshold is £279,785 for each contract for the purchase of goods, and the threshold is adjusted every two years to ensure that it maintains a stable value.

²⁹Ineos Chlor and BOC told us that customers did not typically switch volumes within a contract. However, BOC also emphasized that customers using framework agreements could switch between suppliers at any stage as they were not committed to take set volumes, nor did BOC impose notice periods.

Product market definition

- 5.7 To assess the product dimension of the market at the distribution level we considered:
- (a) whether the containers in which packaged chlorine is delivered are demand- or supply-side substitutes or both;
 - (b) whether the product market is segmented by customer group (ie, water companies and industrial customers), by considering whether there is scope for price discrimination between them; and
 - (c) whether alternative treatments that disinfect water, such as sodium hypochlorite, chlorine dioxide, ultraviolet light and ozone are demand-side substitutes for chlorine.
- 5.8 There is also scope for potential supply-side substitution from distributors of other commodity chemicals. The Guidelines state³⁰ that it is not always straightforward to distinguish supply-side substitution from potential new entry. The difference between supply-side substitution and potential new entry is typically one of timing and/or investment: supply-side substitution occurs in the short run with little or no investment required, whereas new entry is likely to occur over a longer period and may require more significant investment. To consider a competitor's response as supply-side substitution, therefore, it should be likely to occur within a short period from the price rise³¹ and should not involve significant investment in plant, equipment, skills or marketing. In this case, given that some (non-trivial) investment was required to start distributing packaged chlorine, even if already distributing other commodity chemicals, we found that distributors of other commodity chemicals did not fall under supply-side substitution but we looked at them instead as potential entrants (see paragraphs 6.16 and 6.17).

³⁰Paragraph 2.21.

³¹Ibid. The Guidelines note that the exact time period will depend on the nature of the market considered.

Chlorine packaged in different containers

- 5.9 Packaged chlorine can be distributed to end-users (water companies and industrial customers) in drums (of up to 1,000kg capacity) and in cylinders (up to 71kg capacity).³²
- 5.10 We first considered whether different sizes of cylinders and drums were demand- or supply-side substitutes. Since (i) customers tend to procure all cylinders together and all drums together (ii) the same vehicles and manual handling techniques are used for different sizes of the same container type (ie, cylinders or drums), and (iii) the distribution method does not vary between container size, we do not differentiate by drum and cylinder sizes.³³
- 5.11 We then considered substitution between drums and cylinders. The main parties said that segmentation between distribution in drums and cylinders was not meaningful as they were directly substitutable from a supply-side perspective, due to ease of switching.
- 5.12 In Appendix D we present data on prices and margins for customers in Great Britain. The data shows that cylinders were more than twice as expensive (per kilogramme of chlorine purchased) as drums. Data on gross margins is mixed. [✂] We place little weight on BOC's margin data, as BOC did not provide costs on a customer level and was not able to split the costs associated with chlorine distribution from the costs associated with the distribution of other gases at the transaction level. We were unable to conduct a rigorous analysis on relative price and volume movements between drums and cylinders as we were unable to incorporate the entire market's

³²Chlorine may also be distributed to end-users via bulk supply. Although bulk supply to water companies is not unknown, for many of these sites the requirements are quite low and deliveries are infrequent. Accordingly water companies normally purchase packaged chlorine. BOC said that it did not supply bulk chlorine and had never tendered for it.

³³Air Products told us that its vehicles could deliver all sizes of container. Ineos uses the same vehicle for different cylinder sizes and different drum sizes.

data into the analysis. However, we did observe an increase in cylinder prices without a corresponding increase in BOC and Ineos Chlor's combined drum sales.

- *Demand-side substitution*

5.13 We found that drums and cylinders were not close demand substitutes:³⁴

(a) the main parties did not collect information on price elasticities but stated that a small change in price would not result in material customer switching;

(b) customers³⁵ and competitors told us there was limited or no such substitution between containers and there was no historic evidence of switching;

(c) the customer's choice of container appeared to be driven by the extent of its chlorine demand, the size of site and the facilities at the site where the chlorine was to be used. Water companies with sites with sufficiently high demand used drums at those sites;

(d) customers told us they would not switch between the two if the price of one increased by 5 per cent, in the manner envisaged in the SSNIP test.³⁶

- *Supply-side substitution*

5.14 In this section we examine whether a supplier active in the distribution of packaged chlorine in cylinders could and would switch sufficiently easily to the distribution of packaged chlorine in drums to prevent a hypothetical monopolist distributor from profitably increasing price by 5 per cent (and vice versa).³⁷

5.15 Although BOC and Ineos Chlor distribute both types of containers, there is evidence that other distributors specialize. Albion distributes packaged chlorine entirely in

³⁴The main parties told us that they did not have sufficient information on industrial customers to comment on any possible distinction that might exist for them. We incorporated responses from industrial customers in our analysis but we primarily focused on water companies given the responses we received.

³⁵All customers (both water companies and industrial customers).

³⁶The SSNIP test (also known as the hypothetical monopolist test) is an economic test for market definition. SSNIP stands for a small but significant non-transitory increase in price. The SSNIP test involves considering whether a hypothetical monopolist of a certain product or set of products which might constitute a market could profitably impose a SSNIP.

³⁷The discussion applies to all customers as the main parties told us that they provide the same service to water companies and industrial customers.

drums while Air Products distributes almost entirely in cylinders. Customers told us that they were also prepared to purchase drums of packaged chlorine separately from cylinders of packaged chlorine.

5.16 The key differences between drum and cylinder supply are:

- (a) a distributor of cylinders must acquire drums (and vice versa) just as a new entrant must. The main parties told us that, depending on the type of distributor considered, the distributor could purchase new or second-hand containers, it could convert containers previously used for other products, it might have access to spare containers previously used for chlorine or it could rent them from a third-party packager. However, we did not see significant evidence of an active and regular second-hand market or rental agreements for containers. In addition, we saw limited evidence that existing distributors of other chemicals might have access to cylinders and drums used for other products as an alternative to buying new packages. We also noted that even if this substitution were feasible, a necessary condition for such distributors to enter the packaged chlorine market without partially exiting the other chemicals markets was having enough spare package capacity. We explore these options and costs in the context of entry at paragraphs 6.13 to 6.15;
- (b) the vehicles and manual handling techniques differ between cylinders and drums: trucks with tail lifts tend to be used for cylinders whilst flat-bed vehicles tend to be used for drums. In addition, drums require heavy lifting equipment for vehicle loading and unloading. Switching between the distribution of different container types requires the purchase or modification of vehicles, which again is something a new entrant would be required to do; and
- (c) distribution methods vary between container types. BOC uses its distribution network of depots when distributing cylinders but delivers drums directly from Immingham to customer sites.

- *Conclusion on substitution between container type*

5.17 The evidence we received indicates that drum and cylinder distribution are distinct markets. On the demand side the containers are not sufficiently close substitutes to be considered to be in the same market. On the supply side, while there are some commonalities in the distribution process between the two different types of container some (non-trivial) investment (namely purchasing containers and purchasing or contracting vehicles to deliver packaged chlorine to customers) was required to switch between the distribution of cylinders and drums.

Different customer types

5.18 We considered whether the relevant market should be segmented by customer type, ie whether water companies and industrial customers are in separate markets. If distributors of packaged chlorine can price discriminate between different groups this may indicate narrow product markets, ie one group of customers may not be able or willing to switch to substitutes following a price rise.³⁸ Price discrimination can only be sustained if distributors can effectively identify differences between customers and if the product could not easily be resold by purchasers (or if middlemen would arbitrage the price differential away).³⁹

5.19 Chlorine contracts are individually negotiated, so distributors know what type of customer they are dealing with. Arbitrage is unlikely as chlorine is a dangerous chemical requiring special procedures for safe handling. Although price discrimination is in principle possible, both customer segments (industrial and water companies) are likely to be harmed by a price increase in a similar way, as both are

³⁸Price discrimination is said to exist when prices vary across customer segments and this variation cannot be entirely explained by variations in marginal cost, ie there is price discrimination between customer groups when the price difference between them is not attributed to any cost differences in supplying them. The objective of price discrimination is to obtain higher prices from customers that are willing to pay more for the product, while supplying, at lower prices, those customers that would be extremely resistant to price increases. This discussion focuses on third degree price discrimination—segmenting customers by some observable characteristics which affect or are associated with different demand elasticities and charging different prices to these segments.

³⁹Chlorine can be sold in varying degrees of purity but Ineos does not offer different strengths or grades of chlorine therefore we do not consider segmentation by purity any further.

served by the same distributors, both appear to have an inability to switch to alternative products and both will be affected by potential constraints (such as entry) in the same way.

- 5.20 For these reasons, and recognizing that market definition is simply a tool we use to frame our competitive analysis, we deemed it sufficient for the purposes of this inquiry to consider both customer groups together.

Substitution to alternative treatments to disinfect water

- 5.21 The main parties argued that, on the demand side, there were several substitutes for packaged chlorine in its main application (ie the disinfection of water). They contended that the principal substitute for packaged chlorine was sodium hypochlorite and that other substitutes (such as chlorine dioxide, ultraviolet light and ozone) would continue to develop in the next five years.

- 5.22 Only water companies use chlorine for disinfecting drinking water (not industrial customers) so the discussion below is limited to the supply of chlorine to water companies. Industrial customers that responded to our questionnaire told us that there is no substitute for packaged chlorine for their purposes.⁴⁰

- 5.23 Our detailed analysis of the potential for sodium hypochlorite to substitute for packaged chlorine in water disinfection is set out in Appendix E, along with a similar analysis for other water disinfection methods. We considered:
- (a) a review of the different types of disinfection method, including a description of each technology and a table listing some of the major tradeoffs;
 - (b) evidence from the main parties about substitutability;

⁴⁰Based on two respondents—[REDACTED] did not respond saying that it only purchased tiny quantities.

- (c) third-party evidence and views, including evidence of water companies switching away from packaged chlorine to alternative disinfection methods;
- (d) differentials in price between alternative disinfection methods and packaged chlorine;
- (e) switching costs and potential cost savings; and
- (f) in light of these factors in the round, the likelihood that a SSNIP would induce switching.

5.24 Overall, on the basis of our analysis set out in Appendix E, we considered that sodium hypochlorite and other alternative disinfection methods did not act as sufficient constraints to prevent a hypothetical monopolist distributor of chlorine profitably imposing a SSNIP. Such switching between different disinfection methods as did occur appeared to be driven by factors such as health and safety considerations rather than price. We therefore concluded that these alternative disinfection methods were not in the same product market as packaged chlorine.

Conclusion on product market at the distribution level

- 5.25 On the basis of the evidence we received we found that:
- (a) drum distribution and cylinder distribution were distinct markets. On the demand side the containers were not sufficiently close substitutes to be within a single market. On the supply side, while there were some shared features in the distribution of the two different types of container, some key requirements (namely purchasing containers and purchasing or contracting vehicles to deliver packaged chlorine to customers) were distinct;
 - (b) for the purposes of this inquiry water company and industrial customers could be considered together; and
 - (c) alternative disinfection methods did not act as a sufficient competitive constraint to be included in the relevant product market.

Geographic market definition

5.26 The geographic market is the area over which a hypothetical monopolist could profitably increase prices by 5 per cent in the manner envisaged in the SSNIP test without losing customers to suppliers outside that geographic area.⁴¹

Great Britain

5.27 In assessing the geographic dimension of the market, we first considered whether the market was narrower than supply to all customers in Great Britain. We found that packaged chlorine distributors served the whole of Great Britain, which suggested that the relevant market was not narrower than Great Britain.

Northern Ireland

5.28 We next considered whether the market should include Northern Ireland. The evidence we received showed that there was no chlorine production or packaging facility in Ireland ('Ireland' includes the Republic of Ireland and Northern Ireland) and that all packaged chlorine in Northern Ireland was imported. In light of this, the prices of packaged chlorine in Northern Ireland (or, indeed, the Republic of Ireland, since there was no packaging facility there either) were unlikely to be a constraint on Great Britain prices. This suggested that Northern Ireland did not form part of the relevant market for supply in Great Britain.

5.29 The fact that Northern Ireland was served by imports from Great Britain meant that prices in Northern Ireland might have been constrained by prices of packaged chlorine in Great Britain. Although this implied a separate relevant market for supply to customers in Northern Ireland (from distributors based elsewhere), we did not consider this market further. This was because the question of whether there could be an SLC in Northern Ireland was linked to the competitive effects of the merger in

⁴¹The Guidelines, paragraphs 2.24 and 2.25.

Great Britain. There would be no SLC in Northern Ireland if there were none in Great Britain. And addressing any SLC in the Great Britain market would also address competition concerns in Northern Ireland.

Europe

- 5.30 We next considered whether imports from neighbouring European countries were part of the relevant market. The main parties submitted that the geographic market for the distribution of packaged chlorine extended beyond the UK to include other countries in Western Europe (in particular Ireland, France, Benelux and Germany). They argued that distributors of packaged chlorine active in mainland Europe could supply UK customers profitably.
- 5.31 We again used the framework of the hypothetical monopolist. A 5 per cent price increase by a hypothetical monopoly producer in Great Britain as envisaged in the SSNIP test would not be profitable if customers could switch away from distributors of packaged chlorine in Great Britain with relative ease. The factors that we thought might determine the constraint from imports on producers in Great Britain were:
- (a) price and non-price factors affecting switching; and
 - (b) transport costs.
- 5.32 Although Northern Ireland did not form part of the relevant market for supply in Great Britain, analyzing the market as if its geographic scope were the UK would not alter our conclusions. For convenience, we therefore refer to the UK from this point onwards.
- *Factors affecting switching to imported packaged chlorine*
- 5.33 On the demand side, none of the customers (whether water companies or industrial customers) that responded to our questionnaire had ever purchased packaged

chlorine from an overseas distributor.⁴² Most of them said that they needed a distributor to have a UK presence so that it could provide them with local support such as service and maintenance.⁴³ [Customer B] told us that a UK presence was not necessary, but it still noted that some form of emergency technical support was required. This was supported by the evidence relating to Gerling Holz's attempted entry strategy. [X] and Gerling Holz told us Gerling Holz tried to supply packaged chlorine direct from Europe but this was not viable. Albion then approached Gerling Holz to discuss a partnership arrangement.

5.34 The main parties pointed out that water companies generally awarded contracts for packaged chlorine by public tender, with many falling within the EU public procurement rules. We received mixed evidence on the degree to which water companies would search for new suppliers of packaged chlorine. Some customers said that they considered European supply options, while other customers maintained that they typically only searched within the UK.⁴⁴ Further, there was limited evidence that they had threatened to switch to foreign distributors.⁴⁵ Scottish Water had previously threatened to switch to a supplier using a non-UK source of packaged chlorine but remained with Ineos Chlor. Ineos Chlor told us that [X] and [X] threatened to switch cylinder purchases to a foreign supplier. Customers told us that they requested non-UK sourced packaged chlorine to meet their concerns over security of supply by ensuring access to a second source.

5.35 Eighteen water companies responded to our questionnaire, ten of whom (just over half) said they would not switch⁴⁶ to foreign suppliers in response to a 5 per cent

⁴²Have not purchased from suppliers outside UK: [X]. Industrial customers: [X].

⁴³Industrial customers: [X]. Water companies: [X].

⁴⁴[X] had been approached by a European distributor (the main parties maintain it was [X]) and explored this option. [X] was prepared to review mainland Europe. [X] and [X] used the EU procurement process. [X] searched the UK and Europe. The following water companies searched the UK only: [X] issued European tenders but generally searched only the UK.

⁴⁵Customers that said that they had not threatened to switch: [X]. Industrial customers: [X].

⁴⁶Water customers that said they would not consider switching to foreign distributors if the UK price increased by 5 per cent: [X]. Industrial customers: [X].

price increase in the UK, three ⁴⁷ told us that they would consider this option whilst five did not respond to the question.

- *Transport costs*

5.36 We consider the feasibility of importing packaged chlorine from continental Europe in detail in Appendix F, and this analysis is summarized below.

5.37 The main parties told us that lower production costs in continental Europe—primarily electricity costs—would offset the additional costs incurred in transporting packaged chlorine from Europe to the UK. We therefore analysed electricity costs in Europe and the likely effect of these costs on the production of chlorine in Europe, but did not find that the data supported the main parties' argument. [REDACTED] We considered that it was more relevant to examine the price of packaged chlorine as delivered to the UK in assessing the viability of imports.

5.38 We looked at the cost of transporting both drums and cylinders of packaged chlorine using data supplied by the main parties and third parties. We found that, even if prices rose by 10 per cent, importing chlorine in drums was unlikely to be a viable source of competition, while importing chlorine in cylinders would cause substantial margin erosion compared with sourcing cylinders in the UK. Further detailed evidence on transport costs from a third party also indicated that importing its small cylinders would not be economically viable, even assuming a 10 per cent price rise. For large cylinders, the data indicated that the third party's large cylinders might be able to be imported profitably, but with a small margin. However, we noted that additional costs such as sales and marketing, storage and the cost of cylinders were not included in the analysis and that, in any event, only about [REDACTED] per cent by volume of the packaged chlorine sold in the UK was sold in cylinders.

⁴⁷[REDACTED]

5.39 BOC provided figures that it said showed that imports of cylinders were viable at current UK prices and that imports of drums would be viable if prices rose by 10 per cent, and BOC pointed out that it currently imported cylinders. However, we did not agree with BOC's figures because:

(a) it used an unduly advantageous pound-euro exchange rate;

(b) another company without BOC's existing UK infrastructure would not be able to match the distribution costs suggested by BOC, precluding drawing general conclusions from the analysis; and

(c) when we adjusted BOC's analysis using the current exchange rate and the distribution cost information provided by a third party involved in transporting packaged chlorine in volume in the UK, we found that importing drums would be uneconomic unless prices rose substantially from current levels and that there was no compelling case for importing cylinders.

5.40 In addition to the above we noted that [REDACTED]. We also found that imports had been very limited to date. Further, all the most likely potential importers stated that it was not possible to compete in the UK by importing packaged chlorine (see Appendix F).

5.41 We therefore found that importing packaged chlorine, whether in drums or cylinders, was unlikely to be feasible in response to a 5 per cent rise from current prices in the UK as envisaged in the SSNIP test.

Conclusion on geographic market definition

5.42 We found that the geographic scope of the relevant market(s) differed depending on the starting point for the SNNIP analysis (ie, Great Britain or Northern Ireland), but we noted that the question of whether there could be an SLC in Northern Ireland was linked to the competitive effects of the merger in Great Britain.

5.43 In Appendix F we examine the financial case for importing packaged chlorine to distribute in Great Britain and conclude that it is unlikely to be feasible at current prices, or in the face of a SSNIP. Taken with the evidence on demand-side substitution set out at paragraphs 5.33 to 5.35, we concluded that the geographic market for the distribution of packaged chlorine was no wider than Great Britain (although we decided to analyse the market as if its geographic scope were the UK because this would not alter our conclusions).

Packaging of chlorine

Introduction

5.44 Distribution of packaged chlorine is where the main parties' activities overlap; however, access to wholesale sources of packaged chlorine affects barriers to entry and expansion at the distribution level. We therefore also consider market definition at the packaging level of the supply chain.

Product market definition

5.45 Demand for packaged chlorine from distributors is a derived demand and this applies to both cylinders and drums.⁴⁸ We discuss the downstream demand-side substitution possibilities at paragraph 5.13.

5.46 As at the distribution level, we addressed whether the containers in which chlorine is packaged were demand and/or supply-side substitutes, and whether distributors of other chemicals could and would easily switch into the distribution of packaged chlorine in response to a price rise.

⁴⁸Derived demand arises where demand for one good occurs as a result of demand for another. This may occur if one product is required to produce another. For example, demand for coal leads to derived demand for mining, as coal must be mined for coal to be consumed.

- 5.47 Although slightly different equipment is used, packaging of chlorine into cylinders is technically a very similar process to packaging it into drums and there appeared to be many shared features in the packaging process (ie sourcing bulk chlorine, regulatory compliance and storage capacity). We also noted that all packagers of drums also packaged cylinders and vice versa. Given a distinction between drums and cylinders would not reflect the practical reality we saw no need to explore supply-side substitution between drums and cylinders at this level further.
- 5.48 Similar to our discussion in paragraphs 5.23 and 5.24, there is also limited scope for potential supply-side substitution from packagers of other commodity chemicals. In this case, given that some (non-trivial) investment was required to start filling chlorine into packages, we concluded that supply-side substitution was unlikely in response to a SSNIP and therefore that the packaging of other chemicals was unlikely to be in the same market as the packaging of chlorine. Instead, we considered whether packagers of other commodity chemicals were potential entrants (see paragraphs 6.16 and 6.17).

Geographic market definition

- 5.49 Our analysis of the geographic market at the packaging level was closely aligned to our analysis of the geographic market at the distribution level. At the distribution level the customer is the end-user whereas at the packaging level the customer is a UK distributor. Customer preferences and price sensitivity may differ but transport costs and a European supplier's willingness to export from a non-UK site will be similar. On the basis of the evidence discussed in Appendix F we considered imports of packaged chlorine from Europe to be uneconomic at current selling prices. Further, there was no packaging facility in Ireland.

Conclusion on market definition at the packaging level

- 5.50 We concluded that there was no demand-side substitution and limited scope for supply-side substitution with other products at the packaging level, indicating that there was a separate product market for packaging chlorine.
- 5.51 The geographic market was considered to be Great Britain as we considered imports of packaged chlorine from Europe to be uneconomic at current selling prices. As with the geographic scope of the market at the distribution level of the supply chain, analysing the market as if its geographic scope were the UK rather than Great Britain would not alter our conclusions.

Production of chlorine

- 5.52 We considered the market definition for the production of chlorine because the ability to source bulk chlorine influences potential entry at the packaging level of the supply chain. We found that the product market was likely to be limited to the production of chlorine as there did not appear to be any scope for demand-side substitution for chlorine from chlorine packagers and we had no reason to believe that there was scope for supply-side substitution. We found that the geographic scope of the market was limited to Great Britain as importing chlorine in bulk was unlikely given the regulatory constraints over the transport of bulk chlorine and the associated risks, even in the event of a significant price rise.⁴⁹

6. Market entry and expansion

Introduction

- 6.1 In this section, we summarize our analysis of the potential for entry and expansion at the distribution level. We assess whether the threat of entry by a new competitor or expansion by an existing competitor at the distribution level in response to a price

⁴⁹European suppliers are either prohibited from exporting, or are extremely reluctant to export, bulk chlorine due to transport legislation and perceived safety concerns.

increase would be sufficient to constrain price rises or reductions in service levels by the merged BOC/Target Business following the merger.

6.2 The main parties argued that there were low barriers to entry, in particular for those new entrants to the relevant markets that could make use of their existing assets in other markets. They submitted that entry was less risky than it might otherwise be because new entrants would not need to make any significant investments until after they had won a contract to supply a customer, given the timescales for commencement of supply after contract award.

6.3 To examine these arguments and conclude on barriers to entry and expansion at the distribution level, we first considered the availability of packaged chlorine (ie wholesale supply) by looking at supply either from current packagers or a potential new entrant. We then assessed the existence of other potential barriers to entry at the distribution level, the costs and time required for entry and the views of potential entrants on the likelihood of such entry. Finally we considered barriers to expansion by existing distributors of packaged chlorine active in the UK (see Appendix G).⁵⁰

6.4 We use the following distinction between entry and expansion: entry is by companies active in other product markets or suppliers of packaged chlorine based in continental Europe; expansion refers to a business already active in the distribution (or packaging) of packaged chlorine in the UK increasing its sales volumes.

Alternative sources of packaged chlorine

6.5 Actual and potential competitors told us that a key problem in entering or expanding as a distributor was sourcing packaged chlorine at competitive prices, due to the very high concentration of the UK chlorine manufacturing and packaging levels of the

⁵⁰The likelihood of a customer sponsoring expansion or entry at the distribution level is considered in Section 7.

supply chain and the transport costs for packaged chlorine imports from continental Europe.

6.6 Apart from BOC/Target Business, there will be three other potential sources of packaged chlorine following the merger: (i) Albion, the only other UK packager; (ii) new entrants into the packaging business in the UK; and (iii) importers of packaged chlorine from continental Europe. We considered imports of packaged chlorine from Europe to be uneconomic at current (and likely future) selling prices. This was because, as set out in Appendix F, our detailed analysis of cost data from the main and third parties did not support BOC's claims that imports of cylinders were viable at current UK prices and that imports of drums would be viable if prices rose by 10 per cent. In addition, we noted that imports had been very limited to date and that all the most likely potential importers stated that it was not possible to compete in the UK by importing packaged chlorine.

6.7 We found that entry on the basis of securing supplies of packaged chlorine from BOC/Target Business following the merger might not be attractive, since any such new entrant distributor would be competing directly against BOC/Target Business. The main parties argued that distributors sourcing from a vertically integrated supplier/distributor was not uncommon in the chemical industry. However, whilst we noted that this might be the case, we considered that such an arrangement would be an additional risk from the perspective of a potential new entrant.

Packaging expansion by Albion

6.8 We found it likely that Albion, the sole competing packager in the UK, would exit chlorine packaging by late 2012 (see paragraph 4.13). Albion also told us that it was unlikely that investment to build a new packaging facility could be justified financially.

6.9 Given the considerable uncertainty over Albion's future in packaging, we consider that it is unlikely that, in the period relevant to our inquiry, there would be any entry at the distribution level that depended on Albion's packaging capability and thus Albion's expansion of its packaging capacity.

New entry into packaging

6.10 None of the third parties we contacted [redacted] appeared willing to build a new packaging facility in the UK (see Appendix G). The main problems highlighted by third parties on the costs side concerned sourcing bulk chlorine, given that Ineos Chlor was the sole UK producer and that imports of bulk chlorine from Europe were extremely difficult. In addition, there was the cost and regulatory approval process involved (ie COMAH registration), especially in relation to the storage infrastructure. Overall, the financial return to such investment does not appear to be adequate.

Conclusion on post-merger sources of packaged chlorine

6.11 We previously found that Albion was highly likely to exit as a packager (but not as a distributor) during the counterfactual period, and that imports appeared uneconomic. Further, we did not consider it likely that a new packaging plant would be set up, due to its likely lack of profitability as a result of the costs of infrastructure and regulatory approval and the uncertainty over packaging volumes. We therefore found that obtaining economic supplies of packaged chlorine would hinder entry at the distribution level.

Other barriers to and costs of entry in distribution of packaged chlorine

6.12 Although we found that obtaining economic supplies of packaged chlorine would hinder entry at the distribution level, for completeness we also assessed other possible barriers and costs.

6.13 We noted that, other than economic supplies of packaged chlorine, the distribution of packaged chlorine to UK customers required:

- (a) a source of packages (ie drums and/or cylinders), if not provided by the customer;
- (b) securing storage capacity (ie a depot network and/or central depot);
- (c) regulatory compliance (ie a COMAH registration if needed);
- (d) purchasing or contracting vehicles to deliver packaged chlorine to customers;
- (e) customer relationships and the ability to offer appropriate service levels (ie the ability to win contracts, offer training, provide an emergency response etc); and
- (f) hiring trained staff capable of handling packaged chlorine and a sales force.

6.14 Appendix G sets out our analysis of the first four of these issues. We did not consider points (e) and (f) further as we found that they were not likely to represent barriers to entry. This was because we found that these were ordinary costs of business and that there was no evidence that these resources were hard to find or that entrants would face greater costs in these respects than an incumbent.

6.15 Overall we found that, as well as difficulties in obtaining economic supplies of packaged chlorine, there were other costs of entry in terms of both money and time at the distribution level, such as complying with regulatory requirements surrounding chlorine (ie securing a COMAH registration) and the sunk and asset-specific investment needed in drums and cylinders.

Likelihood of entry at the distribution level

- 6.16 As described in Appendix G, we contacted several potential entrants, including those identified in a growth strategy report prepared for BOC by Chemagility.⁵¹ None expressed a strong interest in distributing packaged chlorine in the UK.
- 6.17 While entry by a distributor active in other chemicals or gases appeared feasible in theory (subject to guaranteed access to competitively priced chlorine), we were told by potential entrants that this was unlikely in practice because of the barriers and costs identified and the relatively small size and lack of strategic importance of the relevant markets. In this context, we also noted that sales volumes of packaged chlorine in Great Britain were not growing (see Appendix I). On the basis of the evidence, we found that some (non-trivial) investment was required to start distributing packaged chlorine, even for those distributors already distributing other commodity chemicals, and we considered it unlikely that potential entry would be sufficient to prevent BOC/Target Business exercising any market power following the merger.
- 6.18 Equally, the likelihood of entry by a European distributor of packaged chlorine appeared low for the reasons set out in Appendix F.

Barriers to expansion at the distribution level

- 6.19 The main parties argued that there were no substantial barriers constraining expansion by the existing packaged chlorine distributors. In particular, they emphasized that these distributors already had the know-how, facilities and infrastructure (eg depots and vehicles) to expand without much additional investment. The main parties told us that the only cost that these distributors would need to incur would be for additional drums and cylinders.

⁵¹Chemagility describes itself on its website as an information services and marketing outsourcing company specializing in chemical-related markets.

6.20 BOC told us that Albion had never mentioned constraints on the volume of packaged chlorine that BOC could receive and that anyway it could increase its imports of packaged chlorine from continental Europe.

6.21 We considered that the current distributors competing with BOC and Ineos Chlor, namely Albion and Air Products, were not facing any insurmountable barriers to expanding their distribution activities. However, with the doubt over Albion's continued presence at the packaging level of the supply chain, and the staggered nature of contracts, Air Products might be reluctant to take on new contracts and invest in new packages because of its lack of certainty over the terms for its future packaged chlorine supply. Albion told us that it wished to maintain its current overall volumes and revenues for packaged chlorine distribution (but would target new business if existing customers were lost). On this basis we found that any future expansion would be unlikely to be sufficient to prevent BOC/Target Business exercising any market power following the merger.

Conclusions on barriers to and likelihood of entry and expansion at the distribution level prior to Albion's exit

Entry at the distribution level

6.22 We concluded that there were three different types of barrier to entry at the distribution level. First, there were barriers associated with sourcing competitively priced packaged chlorine in the UK. In this context, we noted our earlier finding that Albion was highly likely to exit as a packager regardless of the proposed merger and that no company we contacted considered entry as a packager in the UK to be an attractive prospect. Second, there were barriers to imports as a result of which imports were uneconomic. Third, there were other additional costs (both financial and in terms of time) for a new entrant, ranging from complying with regulatory requirements surrounding chlorine (ie securing a COMAH registration) to the sunk and asset-specific investment needed in drums and cylinders. We noted that the

magnitude of these costs would depend on the extent to which any new entrant could exploit any relevant pre-existing assets.

- 6.23 As a result of these barriers and the evidence from possible entrants themselves, we found that entry by distributors of other chemicals and/or industrial gases or European distributors of packaged chlorine was unlikely.

Expansion at the distribution level

- 6.24 We found that any future expansion by existing UK distributors prior to Albion's exit would be unlikely to be sufficient to prevent BOC/Target Business exercising any market power in the relevant markets following the merger.

Barriers to entry and expansion following Albion's exit from packaging

- 6.25 Following Albion's exit from packaging, we considered that the barriers to entry using UK-sourced chlorine would be the same as before Albion's exit, except that there would then only be one such source. This would strengthen the barrier to entry related to sourcing of packaged chlorine, and therefore make new entry less likely. We recognized that if (as we considered likely) wholesale packaged chlorine prices rose following Albion's exit from packaging (see paragraphs 4.16 and 4.29), imports would become relatively more attractive compared with UK-sourced packaged chlorine. However, for the reasons also set out in paragraphs 4.16 and 4.29, we did not consider that prices would rise sufficiently that imports would become economically viable.
- 6.26 The exit of Albion from packaging would change the barriers to expansion at the distribution level. However, we remained of the view that significant expansion would be unlikely following Albion's exit for the following reasons:

(a) in the case of Albion (as a distributor), it seemed likely that it would continue to source drums of chlorine from Ineos Chlor under the terms of the Chlor-alkali Supply Agreement until late 2012 (which would be likely to be at prices better than the wholesale prices available to other distributors). However, Albion would still be capacity constrained, as it can only source [certain volumes] of chlorine drums under this agreement and [§]. Also, as set out in paragraph 6.21, Albion also told us that it wished to maintain its current overall volumes and revenues for packaged chlorine (but would target new business if existing customers were lost); and

(b) in the case of Air Products, there appeared to be a distinction between its situation following Albion's exit (i) following the merger and (ii) in the counterfactual. Following the merger, it would be relying on BOC/Target Business (also a downstream competitor across a range of industrial gases) for its UK supplies of packaged chlorine and it told us that this would be difficult.⁵² In the counterfactual, Air Products would be relying on Independent Target Business for its UK supplies of packaged chlorine, which may make reliance on a single source less problematic for Air Products (for example, if Independent Target Business were, unlike BOC, not an industrial gases competitor to Air Products).

6.27 As a result, we concluded that, following Albion's exit from packaging, entry and expansion would still be unlikely to be sufficient to prevent BOC/Target Business exercising any market power in the relevant markets following the merger.

7. Buyer power

7.1 In this section, we summarize our analysis of whether buyer power will provide a sufficient constraint on BOC/Target Business following the merger to prevent any increase in price or reduction in service levels as a result of the merger.

⁵²However, Air Products also noted that it had a number of product supply agreements with BOC despite intense competition in UK markets between the two companies.

- 7.2 The main parties argued that BOC/Target Business would be constrained following the merger by the countervailing buyer power of its customers. In particular, they claimed: [✂]. The main parties argued that there were many ways that customers could encourage new entrants to enter the market without having to go as far as sponsoring entry.
- 7.3 Appendix H contains our detailed analysis of the following issues:
- (a) whether there was any evidence of buyer power before the merger;
 - (b) if there were customers that enjoyed buyer power, whether they could protect those customers that did not; and
 - (c) the extent to which buyers could influence the terms of supply.
- 7.4 Our analysis indicated that prices of packaged chlorine are negotiated individually and, as such, there is no market price. Further it seemed unlikely that buyers would sponsor new entry and the scope for arbitrage was low. On this basis therefore there was no reason that buyer power held by some customers would necessarily affect the price (and non-price) terms available to other customers.
- 7.5 In relation to how buyers could influence their terms of supply, we found that sponsoring entry was unlikely, as was the prospect that all smaller customers would form consortia. Further, although theoretically feasible, water companies exercising their ability to 'punish' BOC/Target Business by reducing purchases of other products seemed unlikely in practice.
- 7.6 We therefore concluded that buyer power would be unlikely to be sufficient to prevent BOC/Target Business exercising any market power in the relevant markets following the merger.

8. Competition between Ineos Chlor and BOC before the merger

8.1 To find an SLC we need to be satisfied that it is likely that, among other things, BOC and Ineos Chlor would be exerting a competitive constraint on one another in the absence of the merger and that this constraint would be removed or substantially weakened as a result of the merger.

8.2 As set out in paragraph 4.36, we considered it likely that, in the absence of the merger, the Target Business would have remained an independent competitive constraint in the relevant markets during the counterfactual period, and that competing distributors during the counterfactual period would be Independent Target Business, Albion, BOC and Air Products. Therefore the industry structure at the distribution level of the supply chain in the counterfactual would be very similar to the structure before the merger, namely four independent distributors. As a result, it is appropriate to consider the extent of competition between BOC and Ineos Chlor in the distribution of packaged chlorine before the merger as a proxy for the extent of competition between them in the counterfactual, prior to Albion's exit from packaging.⁵³

8.3 Appendix J details our analysis of competition in packaged chlorine distribution between BOC and Ineos Chlor prior to the merger. We looked at:

- (a) evidence of price competition between BOC and Ineos Chlor;
- (b) evidence of non-price competition between BOC and Ineos Chlor;
- (c) the ability of customers to switch distributors and the extent of such switching;

and

- (d) which companies the distributors monitored, which indicated who they considered to be their rivals.

⁵³As set out at paragraph 4.29, following Albion's exit from packaging, we found that it was likely that Independent Target Business would increase the price for wholesale packaged chlorine above the current levels, but to a level below the constraint imposed by the possibility of imports. The effect of this on competition between distributors is discussed further at paragraphs 9.18 and 9.19.

8.4 We found that BOC and Ineos Chlor competed directly for all recent water company tenders, and were frequently identified as the top two bidders. We considered that for many customers it was the competition between BOC and Ineos Chlor that set the terms of supply. In this context, we noted that:

- (a) price was identified by the main parties and customers as the most important factor in agreeing terms of supply. Different customers have different requirements and so delivered prices vary between customers. We saw evidence that [REDACTED];
- (b) while there were some differences in terms of the product range and packaging characteristics, delivery lead times and other services supplied by each of the distributors, it would appear that these differences for the majority of customers were less important than price considerations. We considered that one of the most significant differences might be the range of different chemicals and/or industrial gases each distributor could supply in a single delivery. This would give some distributors the ability to offer enhanced service levels, for example to customers preferring a single delivery of multiple chemicals or gases, particularly at unmanned sites;
- (c) BOC and Ineos Chlor were the only distributors selling both drums and cylinders of chlorine to the generality of their customer base prior to the merger, which would, in our view, give them an advantage in supplying those customers who bought both drums and cylinders and who preferred to source all their packaged chlorine requirements from one supplier;
- (d) there were switching costs for customers who wish to change their distributor but they were not insurmountable. We saw evidence of customers switching between distributors. [REDACTED]; and
- (e) there was evidence that BOC, Ineos Chlor and Albion monitored each other's competitive behaviour via feedback from customers.

8.5 We concluded that BOC and Ineos Chlor were the leading suppliers in the relevant markets, and, on a tender by tender basis, they were usually each other's principal rival.

9. Assessment of the competitive effects of the proposed merger

9.1 In this section we assess the competitive effects of the proposed merger in each of the relevant markets in comparison with the counterfactual. First, we explain how our competitive effects assessment relates to the theories of harm set out in our Issues Statement.⁵⁴ Second, we set out the main parties' views on the likely effects of the merger. Third, we summarize the likely structure of the industry, both following the proposed merger and in the counterfactual, as established earlier in this report. Fourth, we assess the effect of the proposed merger on competition by comparing the competitive situation in the relevant markets following the merger with the counterfactual.

9.2 There were two starting points for our assessment:

(a) as set out at paragraph 4.21, we considered that it was not possible to assess the competitive effects of the merger beyond late 2012; and

(b) as set out at paragraph 4.13, we concluded that Albion was highly likely to exit packaging at some time between 2009 and late 2012. We were not able to form a view as to precisely when this would be. We found that the proposed merger might bring forward the timing of Albion's decision to exit but would not affect Albion's ultimate decision to exit.

Theories of harm

9.3 Our Issues Statement identified four theories of harm. Our assessment focused on two of these:

⁵⁴http://www.competition-commission.org.uk/inquiries/ref2008/ineos/pdf/issues_statement.pdf.

(a) unilateral horizontal effects: whether the reduction in the number of packaged chlorine distributors in the UK as a result of the merger might be expected to lead to an SLC; and

(b) unilateral vertical effects: whether the merger might lead to the exit of any competing business, thereby creating or increasing market power in any relevant market with implications for competition elsewhere in the supply chain, ultimately leading to higher prices, or lower levels of service or innovation than would otherwise be the case.

9.4 We did not pursue the other two theories of harm relating to coordinated effects, given our findings on the unilateral effects of the proposed merger (see paragraphs 9.16, 9.20 and 9.23).

Main parties' views

9.5 The main parties' views on the counterfactual, barriers to entry and buyer power are set out at paragraphs 4.30 to 4.35, 6.2 and 7.2. The main parties argued that, taken together, these factors meant the proposed merger would not lead to an SLC when compared with the counterfactual.

Summary of the structure of the relevant markets following the merger

9.6 As set out at paragraphs 4.14 to 4.17, and in light of the specialization of some distributors in drum or cylinder distribution as described in paragraph 5.15, we found that the likely structure of the packaged chlorine industry in the UK following the proposed merger would be:

(a) BOC/Target Business and Albion would be the only two UK chlorine packagers before Albion's exit from packaging. After Albion's exit, BOC/Target Business would be the only packager;

- (b) in the drum distribution market competing distributors would be BOC/Target Business and Albion;
- (c) in the cylinder distribution market competing distributors would be BOC/Target Business and Air Products; and
- (d) after Albion's exit from packaging, BOC/Target business would be likely to increase the price for wholesale packaged chlorine above the current levels, but to a level below the constraint imposed by the possibility of imports of packaged chlorine.

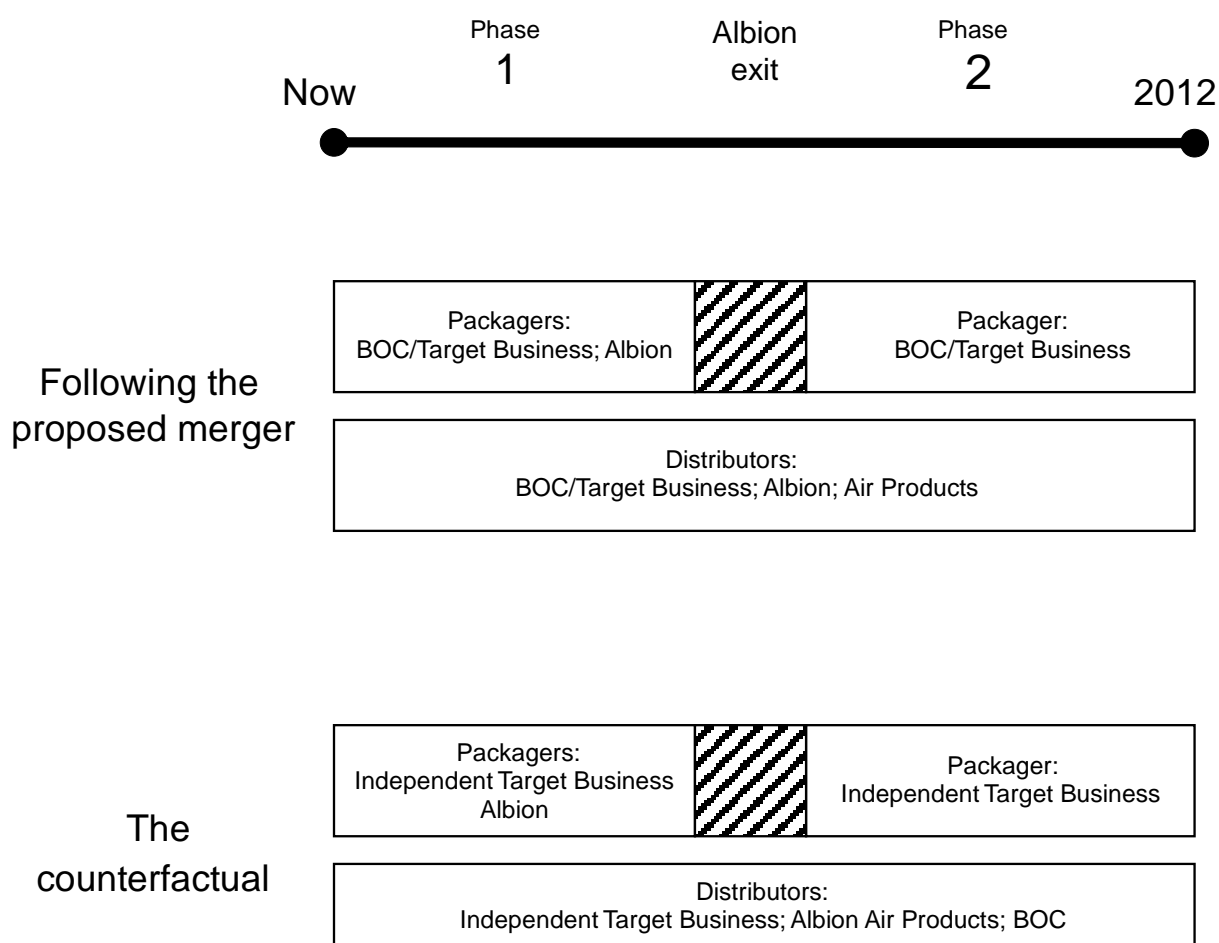
Summary of the structure of the relevant markets in the counterfactual

9.7 As set out at paragraph 4.36 and in light of the specialization of some distributors in drum and cylinder distribution as described in paragraph 5.15, we found that, in the absence of the merger:

- (a) Independent Target Business would have continued to package chlorine at Runcorn during the counterfactual period, leaving it as the sole UK packager following Albion's exit;
- (b) in the drum distribution market competing distributors during the counterfactual period would be Independent Target Business, Albion and BOC;
- (c) in the cylinder distribution market competing distributors during the counterfactual would be Independent Target Business, BOC and Air Products; and
- (d) following Albion's exit from packaging, Independent Target Business would be likely to increase the price for wholesale packaged chlorine above the current levels, but to a level below the constraint imposed by the possibility of imports.

9.8 The difference between the structure of the industry following the proposed merger and in the counterfactual is summarized in Figure 2.

FIGURE 2



Source: CC.

Competitive assessment

9.9 We carried out our assessment of the competitive effects of the merger during two separate phases shown in Figure 2. However, we noted the following points at the outset.

9.10 First, as set out in Appendix I, the merger would make the markets for drums and cylinders, which are already highly concentrated, even more concentrated. It would immediately create:

- (a) in the market for the distribution of cylinders of packaged chlorine, a combined market share of [70–90] per cent (an increment of [10–30] per cent). In 2007

there was an Herfindahl-Hirschman Index (HHI) of [X] in this market, and the merger would result in a very large increase in the HHI of [X], leading to a post-merger HHI of [X];⁵⁵ and

(b) in the market for the distribution of packaged chlorine in drums, a combined market share of [60–80] per cent (an increment of [0–10] per cent). In 2007, there was an HHI of [X] in this market, although the merger will result in a smaller increase in the HHI than in the case of cylinders: [X], leading to a post-merger HHI of [X].⁵⁶

9.11 Second, following the proposed merger in both Phases 1 and 2 as set out at paragraphs 6.22 to 6.26, entry and expansion (or the threat of these) would be unlikely to be sufficient to prevent BOC/Target Business exercising any market power in the relevant markets following the merger.

9.12 Third, following the proposed merger in both Phases 1 and 2 as set out at paragraph 7.6, buyer power would be unlikely to be sufficient to prevent BOC/Target Business exercising any market power in the relevant markets following the merger.

Phase 1

9.13 Phase 1 covers the period of time from the proposed merger up until Albion's likely exit from packaging following the proposed merger.⁵⁷ During Phase 1:

(a) both Albion and BOC/Target Business would be packaging chlorine in the UK, while in the counterfactual, both Albion and Independent Target Business would be packaging chlorine; and

⁵⁵CC merger guidelines state that a combined market share of 25 per cent or above would normally be sufficient to raise concerns regarding the effect of the merger on competition. In its guidelines, the OFT states that it is likely to regard any market with an HHI in excess of 1,800 as highly concentrated.

⁵⁶In addition to Albion, Gerling Holz supplies one industrial customer with a grade of chlorine not currently available from Great-Britain-based distributors. Air Products also continues to supply a small volume of drums to a single customer.

⁵⁷We believed that this might be earlier than Albion's likely exit from packaging in the counterfactual for the reasons set out in paragraph 4.13.

(b) BOC/Target Business and Albion would be the only UK distributors of drums and BOC/Target Business and Air Products would be the only UK distributors of cylinders. In the counterfactual, Independent Target Business, Albion and BOC would be active in the drum market and Independent Target Business, Air Products and BOC would be active in the cylinder market.

9.14 We found that during this period compared with the counterfactual:

- (a) as set out at paragraph 9.10, the relevant distribution markets would become even more concentrated as a result of the merger. The merger would reduce the number of competing distributors from three to two in each relevant market; and
- (b) as set out at paragraphs 8.4 and 8.5, BOC and Ineos Chlor were each other's closest competitors in each of the relevant markets before the merger. The merger would end this rivalry and would remove the only competing distributor to the Target Business that currently supplies both drums and cylinders. In each market, BOC/Target Business would attain a very high market share.

9.15 We noted that BOC planned to introduce a cylinder rental charge for the generality of its customers following the proposed merger, and that BOC's valuation model for the purchase of the Target Business included the gradual phasing in of a revenue stream from such charges. We also noted that BOC did not seek cylinder rental charges from its packaged chlorine customers across the board currently, that customers told us this was something they did not want and that BOC confirmed that this effectively amounted to a price increase for customers. [REDACTED] BOC also argued that such rental charges could be price-neutral to customers that managed their cylinders efficiently. However, we found it likely that BOC was able to plan to introduce such charges was because it would be subject to fewer competitive constraints following the proposed merger.

9.16 For the reasons set out in paragraphs 9.14 and 9.15, we therefore expect that the proposed merger will lead to higher prices and/or lower service levels than would otherwise be the case during Phase 1.

Phase 2

9.17 Phase 2 covers the period between the exit of Albion from packaging in the counterfactual and late 2012, ie the period when we think that Albion will have exited as a packager whether or not the merger proceeds.

9.18 During Phase 2:

(a) only BOC/Target Business would be packaging chlorine following the merger, and only Independent Target Business would be packaging chlorine in the counterfactual;

(b) BOC/Target Business (following the merger) and Independent Target Business (in the counterfactual) would be likely to raise the price for wholesale packaged chlorine to a level above the current level but below the constraint imposed by imports for the reasons set out in paragraphs 4.16 and 4.29. This would reduce (but not eliminate) the scope for price-based competition between distributors in both cases (see paragraph 9.19);

(c) BOC/Target Business and Air Products would be the only UK distributors of chlorine cylinders following the merger whereas in the counterfactual, Independent Target Business, Air Products and BOC would be active in the cylinder market; and

(d) BOC/Target Business and Albion would be the only UK distributors of chlorine drums following the merger whereas in the counterfactual, Independent Target Business, Albion and BOC would be active in the drum market.

9.19 We found that:

(a) although the scope for competition might be reduced both following the merger and in the counterfactual as a result of likely increases in the wholesale packaged chlorine price and the fact that all distributors would be sourcing from a single vertically integrated chlorine packager and distributor,⁵⁸ some would remain based on price (for example on the basis of the efficiency of distribution operations) and on other factors (such as additional services or the range of other chemicals and/or gases supplied); and

(b) compared with the counterfactual:

- (i) the merger would reduce the number of competing distributors from three to two in each of the relevant markets;
- (ii) the merger would reduce the number of distributors currently supplying both drums and cylinders from two to one; and
- (iii) in each relevant market, BOC/Target Business would attain a very high market share.

9.20 We therefore expect that the proposed merger will lead to higher prices and/or lower service levels than would otherwise be the case during Phase 2.

The period of any accelerated exit of Albion from packaging

9.21 As set out in paragraph 4.13, we found that the proposed merger might accelerate Albion's exit as a packager. We did not have sufficient evidence to form a view as to how long this period of acceleration (ie the time, if any, between Albion's exit from packaging following the merger and its exit from packaging in the counterfactual) might be. However, during any such period, we found that there would be a loss of competition in the relevant markets following the merger compared with the counterfactual for the reasons set out below.

⁵⁸Although Albion would obtain packaged chlorine in drums from Ineos Chlor under the Chlor-alkali Supply Agreement both following the merger and in the counterfactual, there is limited scope for Albion to increase the amount of packaged chlorine it obtains in this way (see Appendix C).

9.22 During any such period:

- (a) only BOC/Target Business would be packaging chlorine following the merger whereas both Independent Target Business and Albion would be packaging chlorine in the counterfactual;
- (b) BOC/Target Business would be likely following the merger to raise the price for wholesale packaged chlorine to a level above the current level but below the constraint imposed by imports for the reasons set out in paragraph 4.16. This would reduce (but not eliminate) the scope for price-based competition between distributors following the merger (see paragraph 9.19);
- (c) BOC/Target Business and Air Products would be the only UK distributors of chlorine cylinders following the merger whereas in the counterfactual, Independent Target Business, Air Products and BOC would be active in that market; and
- (d) BOC/Target Business and Albion would be the only UK distributors of chlorine drums following the merger whereas in the counterfactual, Independent Target Business, Albion and BOC would be active in that market.

9.23 We noted that the reasoning set out in paragraph 9.14 in relation to the loss of competition in Phase 1 would also apply to this time period. We also noted that there would be reduced scope for price-based competition between the remaining distributors compared with that in the counterfactual as a result of the reduced rivalry at the packaging level of the supply chain during this period.

9.24 Therefore, in addition to our conclusions in paragraphs 9.16 and 9.20, if there were any period of time between Albion's exit from packaging following the proposed merger and its exit from packaging in the counterfactual, we expect that the proposed merger will lead to higher prices and/or lower service levels than would otherwise be the case during this period.

10. Provisional findings

- 10.1 On the basis of paragraphs 9.16, 9.20 and 9.24, we expect that the proposed merger will lead to higher prices and/or lower service levels than would otherwise be the case in the markets for the distribution of packaged chlorine in cylinders and in drums in the UK, and that the proposed merger may be expected to result in an SLC in those markets.