

PUBLIC

UNITED STATES OF AMERICA
BEFORE THE FEDERAL TRADE COMMISSION
OFFICE OF ADMINISTRATIVE LAW JUDGES



In the Matter of

Tronox Limited
a corporation,

National Industrialization Company
(TASNEE)
a corporation,

National Titanium Dioxide Company
Limited (Cristal)
a corporation,

And

Cristal USA Inc.
a corporation.

Docket No. 9377

COMPLAINT COUNSEL'S POST-TRIAL BRIEF

INTRODUCTION	1
ARGUMENT	5
I. BACKGROUND.....	7
A. The Proposed Transaction and The Merging Parties.....	7
B. Titanium Dioxide (TiO₂).....	8
II. THE PROPOSED ACQUISITION IS PRESUMPTIVELY UNLAWFUL IN A MARKET FOR SALES OF CHLORIDE TiO₂ TO NORTH AMERICAN CUSTOMERS	9
A. The Relevant Market Is the Sale of Chloride TiO₂ to North American Customers.....	10
1. The Relevant Product Market is Chloride TiO ₂	11
2. The Relevant Geographic Market is North America	18
i. TiO ₂ Suppliers Price Discriminate Based on Customer Location.....	18
ii. North American Customers Cannot Arbitrage Chloride TiO ₂	22
iii. Respondents' Criticisms of a North American Market Are Unavailing	26
B. The Proposed Acquisition Is Presumptively Unlawful Because It Would Substantially Increase Concentration In The Relevant Market.....	28
C. The Documented History of Coordination in the TiO₂ Industry Strengthens the Presumption.....	30
III. EVIDENCE OF LIKELY HARM BOLSTERS THE PRESUMPTION.....	33
A. The Proposed Acquisition Would Increase the Likelihood of Coordination in an Already Vulnerable Market.....	36
B. The Merger Would Increase Tronox's Incentive and Ability to Reduce Output Unilaterally	45
1. North American TiO ₂ Producers Already Have a History of Reducing Output to Support Pricing and Those Incentives Will Grow With the Merger.....	46
2. Sound Economic Models Also Predict that the Merged Firm Will Reduce Output.....	51
3. Respondents' Criticisms of the Unilateral Effects Evidence Are Unavailing.....	53
IV. RESPONDENTS DID NOT REBUT THE STRONG PRESUMPTION OF ILLEGALITY	59
A. Entry and Expansion Would Not Be Timely, Likely, and Sufficient	60
B. Respondents Have Failed to Demonstrate Their Efficiencies Claims.....	68
1. The Legal Standard to Demonstrate Cognizable Efficiencies is High.....	68
i. Verifiability.....	70
ii. Merger Specificity.....	71
2. Respondents' Experts Fail to Conduct a Guidelines Analysis.....	71
3. Respondents' Claimed Efficiencies Are Not Cognizable	72
i. Yanbu.....	73
ii. Jazan.....	75
iii. Cost Savings.....	78
4. Respondents' Claimed Efficiencies Will Not Impact North American Consumers.....	79
V. REQUESTED RELIEF	80
CONCLUSION	81

TABLE OF AUTHORITIES**Cases**

<i>Brown Shoe Co. v. United States</i> , 370 U.S. 294 (1962)	5, 6, 28
<i>Chicago Bridge & Iron Co. v. FTC</i> , 534 F.3d 410 (5th Cir. 2008)	5
<i>FTC v. Cardinal Health, Inc.</i> , 12 F. Supp. 2d 34 (D.D.C. 1998)	17, 35, 44
<i>FTC v. CCC Holdings Inc.</i> , 605 F. Supp. 2d 26 (D.D.C. 2009)	<i>passim</i>
<i>FTC v. Elders Grain, Inc.</i> , 868 F.2d 901 (7th Cir. 1989)	<i>passim</i>
<i>FTC v. H.J. Heinz</i> , 246 F.3d 708 (D.C. Cir. 2001).....	<i>passim</i>
<i>FTC v. Penn State Hershey Med. Ctr.</i> , 838 F.3d 327 (3d Cir. 2016)	10, 68, 70, 77
<i>FTC v. Staples, Inc.</i> , 190 F. Supp. 3d 100 (D.D.C. 2016).....	<i>passim</i>
<i>FTC v. Staples, Inc.</i> , 970 F. Supp. 1066 (D.D.C. 1997)	6, 33
<i>FTC v. Sysco Corp.</i> , 113 F. Supp. 3d 1 (D.D.C. 2015).....	<i>passim</i>
<i>FTC v. Univ. Health</i> , 938 F.2d 1206 (11th Cir. 1991).....	69, 70, 78, 79
<i>Hosp. Corp. of Am. v. FTC</i> , 807 F.2d 1381 (7th Cir. 1986)	6
<i>In re Delta/AirTran Baggage Fee Antitrust Litigation</i> , 733 F. Supp. 2d 1348 (N.D. Ga. 2010)	32
<i>In re Polypore Int'l, Inc.</i> , FTC Dkt. No. 9327, Initial Decision (FTC, Mar. 1, 2010)	25
<i>In re Polypore Int'l, Inc.</i> , 150 FTC 586 (2010)	<i>passim</i>
<i>In re The B.F. Goodrich Co.</i> , 1988 WL 1025464 (F.T.C. Mar. 15, 1988)	45
<i>In re Titanium Dioxide Antitrust Litig.</i> , 959 F. Supp. 2d 799 (D. Md. 2013).....	<i>passim</i>
<i>Jacob Siegel Co. v. FTC</i> , 327 U.S. 608 (1946).....	80
<i>St. Alphonsus Med. Ctr.–Nampa Inc. v. St. Luke’s Health Sys., Ltd.</i> , 778 F.3d 775 (9th Cir. 2015).....	70, 75, 78
<i>Tampa Elec. Co. v. Nashville Coal Co.</i> , 365 U.S. 320 (1961).....	17
<i>Times-Picayune Publ'g Co. v. United States</i> , 345 U.S. 594 (1953).....	11
<i>United States v. Aetna Inc.</i> , 240 F. Supp. 3d 1 (D.D.C. 2017)	29
<i>United States v. Anthem, Inc.</i> , 236 F. Supp. 3d 171 (D.D.C. 2017), <i>aff'd</i> , 855 F.3d 345 (D.C. Cir. 2017)	11, 35, 69, 70
<i>United States v. Baker Hughes Inc.</i> , 908 F.2d 981 (D.C. Cir. 1990).....	6, 33, 59
<i>United States. v. BazaarVoice, Inc.</i> , No. 13-00133 2014 U.S. Dist. LEXIS 3284 (N.D. Cal. Jan. 8, 2014)	68

<i>United States v. Citizens & S. Nat'l Bank</i> , 422 U.S. 86 (1975)	59
<i>United States v. E.I. du Pont de Nemours & Co.</i> , 366 U.S. 316 (1961)	80
<i>United States v. General Dynamics Corp.</i> , 415 U.S. 486 (1974)	36
<i>United States v. H&R Block</i> , 833 F. Supp. 2d 36 (D.D.C. 2011)	<i>passim</i>
<i>United States v. Philadelphia Nat'l Bank</i> , 374 U.S. 321 (1963)	5, 17, 28, 79
<i>Valspar Corp. v. E. I. Du Pont De Nemours & Co.</i> , 152 F. Supp. 3d 234 (D. Del 2016)	30
<i>Valspar Corp. v. E. I. Du Pont De Nemours & Co.</i> , 873 F.3d 185 (3d Cir. 2017).....	<i>passim</i>

Statutes and Regulations

Clayton Act § 7, 15 U.S.C. § 18	<i>passim</i>
Federal Trade Commission Act § 5, 15 U.S.C. § 45	2, 5, 81
Sherman Act, 15 U.S.C. §§ 1-7	32, 38, 44

Other Authorities

Phillip E. Areeda, Herbert Hovenkamp & John L. Solow, <i>Antitrust Law</i> (rev. ed. 1998).....	31
<i>U.S. Dep't of Justice & Fed. Trade Comm'n, 2010 Horizontal Merger Guidelines</i>	<i>passim</i>

INTRODUCTION

At the trial of this case, Complaint Counsel presented testimony from TiO₂ customers and producers—including Respondents' own employees. We presented contemporaneous documents from Respondents' files. And we presented expert testimony based on Respondents' own data, documents, and testimony. All of that evidence was consistent in demonstrating that:

1. North American customers have a strong preference for chloride TiO₂ and are willing to pay substantially higher prices for it;
2. North American TiO₂ customers are unable to defeat those higher prices by buying chloride TiO₂ outside North America and bringing it home;
3. The merger will create the largest supplier of chloride TiO₂ in North America, resulting in a significant increase in concentration. Indeed, the top two firms (Tronox and Chemours) will control almost 75% of the market;
4. Tronox and Cristal have reduced output in the past, recognize that doing so results in higher prices for chloride TiO₂, and will have even greater incentives to reduce output if they merge;
5. The merger will make it easier for the remaining TiO₂ suppliers to tacitly coordinate in a market with a history of coordination;
6. Entry or expansion that would counteract the competitive harm is unlikely because of the time needed, expense, and significant barriers to entry; and
7. Any efficiencies from the merger are highly uncertain, and unlikely to benefit North American customers. Even Respondents' CEO acknowledges that any efficiencies from the merger will come in foreign markets.

This case goes to the heart of what Section 7 of the Clayton Act was intended to prohibit. The merger will result in a significant increase in concentration in a market with a history of anticompetitive conduct, making such conduct easier and more likely to harm customers in the future. Complaint Counsel's strong *prima facie* case established a presumption of anticompetitive effects, and then bolstered that presumption with additional evidence. By contrast, Respondents have relied on self-serving testimony from Tronox employees, and paid expert testimony that is inconsistent with the fact testimony and Respondents' own documents. This Court should block the proposed merger as unlawful under Section 7 of the Clayton Act and Section 5 of the FTC Act.

Indeed, the evidence showed that this merger will have direct, and predictable, anticompetitive effects. But the Court does not need to try to predict what will happen if this merger goes through; Tronox has already said what will happen: prices will go up. It said so *directly* to one of its customers, PPG. As PPG's witness Paul Malichky testified at trial, he met with two Tronox executives—John Romano and Ian Mouland—shortly after the merger was announced. Mr. Romano told him directly that Tronox planned to increase PPG's prices:

- Q. And what specifically did Mr. Romano tell you about what they were planning to do with price?
- A. They were planning on raising the Cristal price at PPG. After the -- and let me -- after the transaction is complete, obviously, but after the transaction, they were going to raise the Cristal price.
- Q. And did Mr. Romano explain why?
- A. We had a long conversation about that that day and we've had other conversations with him. And it relates to market discipline.

Q. What do you mean by "market discipline"?

A. Market discipline, as the way it was explained to me during that meeting and other meetings, is to be able to sell the product at a reasonable price and modulate production accordingly, and Cristal didn't have market discipline.

Q. So what specifically did Mr. Romano tell you about Cristal's behavior in the market?

A. He used words like "give it away." They were giving it away. He thought their price was too low in the market.¹

(CCFF ¶ 699 (Malichky, Tr. 280–81)). Notably, although both Mr. Romano and Mr. Moulard testified at trial, neither contradicted or rebutted any of Mr. Malichky's testimony about the meeting. (CCFF ¶ 712).

Moreover, Tronox's statements to PPG are consistent with Tronox's business strategy in general. Numerous Tronox documents show that Tronox *avoids* price competition with other TiO₂ suppliers to prevent such competition from lowering prices in the market:

[REDACTED]
[REDACTED] (CCFF ¶ 452).

[REDACTED]
[REDACTED] } (CCFF ¶ 455).

[REDACTED]
[REDACTED] } (CCFF ¶ 457).

[REDACTED]
[REDACTED] } (CCFF ¶ 444).

¹ Mr. Malichky's testimony tracked a contemporaneous internal email that he sent to his supervisor at PPG. (CCFF ¶ 710).

This merger is consistent with that strategy. Indeed, Tronox is well aware that its acquisition of Cristal will reduce competition in the market—to the benefit of all TiO₂ suppliers. Just after the acquisition was announced, Tom Casey and Peter Huntsman (the Chairman of Tronox competitor Venator) congratulated each other on the deal, noting that it would benefit not only Tronox, but all of the other TiO₂ competitors as well. (CCFF ¶ 706).

Respondents cannot rebut Complaint Counsel's *prima facie* case. Instead, they primarily argue that the anticompetitive effects will be outweighed by efficiencies. But their claimed efficiencies are nothing more than self-serving statements and assumptions from Tronox executives. They do not document any alleged efficiencies with actual evidence. Nor can they show that any alleged efficiencies would benefit customers, and in particular *North American* customers. By their own admission, most of their alleged output improvements would occur at plants in Saudi Arabia that export little to North America. Even Tronox's CEO admits that few, if any, of Tronox's proposed efficiencies would flow to customers here: "[T]he synergies that are tied to a geographic location are the operational synergies . . . and I would agree with you that the overwhelming majority of those synergies are related to ex – you know, non-U.S. assets." (CCFF ¶ 1011). None of these alleged efficiencies can overcome the substantial likely anticompetitive harm from the merger.

Likewise, Respondents' argument that TiO₂ producers based in China have the capability to offset the competitive harm from the Acquisition is contrary to the evidence. The evidence shows that Chinese TiO₂ does not have a meaningful competitive presence in North America today, that there is very little chloride TiO₂ produced in China, that China-based producers have struggled to operate chloride TiO₂ facilities, that Chinese chloride TiO₂ does not meet the quality standards of North American customers for most applications, and that North American

customers are unable to turn to TiO₂ produced in China to defeat a price increase. Therefore, entry or expansion by Chinese TiO₂ producers is unlikely to offset the competitive harm from the acquisition.

As a result, Complaint Counsel asks this Court for a ruling that the Proposed Acquisition, if consummated, would violate Section 5 of the FTC Act and Section 7 of the Clayton Act and for an Order requiring that Tronox and Cristal cease and desist from consummating the Proposed Acquisition.

ARGUMENT

On February 21, 2017, Tronox agreed to acquire Cristal from National Industrialization Company, Cristal's parent company in Saudi Arabia, in a transaction valued at \$2.3 billion.² The high market share and concentration levels establish the Acquisition as presumptively unlawful. *See United States v. Phila. Nat'l Bank*, 374 U.S. 321, 363 (1963); *In re Polypore Int'l, Inc.*, 150 FTC 586, *23 (2010); *see also FTC v. H.J. Heinz Co.*, 246 F.3d 708, 715 (D.C. Cir. 2001); *FTC v. Staples, Inc.*, 190 F. Supp. 3d 100, 115 (D.D.C. 2016) (*Staples 2016*); *FTC v. Sysco Corp.*, 113 F. Supp. 3d 1, 52 (D.D.C. 2015). Complaint Counsel has presented evidence that the relevant market is primed for coordination, that the Acquisition makes coordination more likely, and that the Acquisition also increases Tronox's incentives to suppress output on its own, bolstering that presumption.

Section 7 of the Clayton Act prohibits mergers or acquisitions "the effect of [which] may be substantially to lessen competition, or to tend to create a monopoly" in "any line of commerce or . . . activity affecting commerce in any section of the country." 15 U.S.C. § 18. "As the statutory language suggests, Congress enacted Section 7 to curtail anticompetitive harm in its incipency." *Polypore*, 150 FTC at *8 (citing *Chicago Bridge & Iron Co. v. FTC*, 534 F.3d 410,

² The consideration from Tronox includes cash of \$1.7 billion and a 24% interest in the combined company.

423 (5th Cir. 2008)). “Congress used the words ‘*may* be substantially to lessen competition’ . . . to indicate that its concern was with probabilities, not certainties.” *Heinz*, 246 F.3d at 713 (quoting *Brown Shoe Co. v. United States*, 370 U.S. 294, 323 (1962)); *Staples 2016*, 190 F. Supp. 3d at 115; see *California v. Am. Stores*, 495 U.S. 271, 284 (1990) (“Section 7 itself creates a relatively expansive definition of antitrust liability: To show that a merger is unlawful, a plaintiff need only prove that its effect ‘may be substantially to lessen competition.’”). As a result, “certainty, even a high probability, need not be shown.” *FTC v. Elders Grain, Inc.*, 868 F.2d 901, 906 (7th Cir. 1989). Instead, an acquisition violates Section 7 if it “create[s] an appreciable danger of [collusive practices] in the future. A predictive judgment, necessarily probabilistic and judgmental rather than demonstrable, is called for.” *Heinz*, 246 F.3d at 719 (quoting *Hosp. Corp. of Am. v. FTC*, 807 F.2d 1381, 1389 (7th Cir. 1986)) (second alteration in original). Where uncertainty exists as to the likelihood of harm, “doubts are to be resolved against the transaction.” *Elders Grain*, 868 F.2d at 906; see *Brown Shoe*, 370 U.S. at 323.

Courts often analyze whether an acquisition creates a danger of anticompetitive consequences by determining “(1) the ‘line of commerce’ or product market in which to assess the transaction, (2) the ‘section of the country’ or geographic market in which to assess the transaction, and (3) the transaction’s probable effect on competition in the product and geographic markets.” *FTC v. Staples, Inc.*, 970 F. Supp. 1066, 1072 (D.D.C. 1997) (*Staples 1997*); see *Polypore*, 150 FTC at *9. Complaint Counsel may show “undue concentration in the market for a particular product in a particular geographic area.” *FTC v. CCC Holdings Inc.*, 605 F. Supp. 2d 26, 36 (D.D.C. 2009) (quoting *United States v. Baker Hughes Inc.*, 908 F.2d 981, 982 (D.C. Cir. 1990)); see also *Staples 2016*, 190 F. Supp. 3d at 115; *Sysco*, 113 F. Supp. 3d at 23. Such a showing “entitles the government to a presumption that the merger will substantially

lessen competition.” *Staples 2016*, 190 F. Supp. 3d at 115; *see Polypore*, 150 FTC at *9. The burden of production for rebutting that presumption then shifts to Respondents. *See Heinz*, 246 F.3d at 715. Because the Third Circuit’s decision in *Valspar*³ and the Maryland District Court’s decision in *In re Titanium Dioxide Antitrust Litigation*⁴ have already established that the market is prone to anticompetitive conduct, Respondents’ burden is substantial. *See Elders Grain*, 868 F.2d. at 906 (explaining that a history of collusion makes an acquisition unlawful in absence of “special circumstances”).

I. BACKGROUND

A. The Proposed Transaction and The Merging Parties

On February 21, 2017, Tronox announced a definitive agreement to acquire Cristal’s titanium dioxide business for \$1.673 billion in cash plus Class A ordinary shares representing 24 percent ownership in Tronox post-transaction. (CCFF ¶ 2). The transaction, including equity, was valued at \$2.215 billion on February 17, 2017, the last trading day prior to the public announcement of the Proposed Transaction. (CCFF ¶ 3).

Tronox is a publicly traded company headquartered in Stamford, Connecticut. (CCFF ¶ 4). Tronox owns and operates three chloride TiO₂ plants, which are located in Hamilton, Mississippi, Botlek, Netherlands, and Kwinana, Australia. (CCFF ¶ 5). In addition, Tronox owns and operates titanium feedstock mining and smelting assets to produce titanium slag in South Africa, as well as titanium feedstock mining assets and a titanium feedstock plant producing synthetic rutile in Chandala, Australia. (CCFF ¶¶ 6–7).

Three legal entities collectively comprise “Cristal.” (CCFF ¶ 8). Cristal USA Inc. is a Delaware corporation and an indirectly owned subsidiary of Saudi Arabian companies The

³ *Valspar Corp. v. E. I. Du Pont De Nemours & Co.*, 873 F.3d 185 (3d Cir. 2017).

⁴ *In re Titanium Dioxide Antitrust Litig.*, 959 F. Supp. 2d 799 (D. Md. 2013).

National Industrialization Company (“Tasnee”) and The National Titanium Dioxide Company. (CCFF ¶ 8). Cristal owns and operates five chloride TiO₂ plants, two of which are located in Ashtabula, Ohio, one in Yanbu, Saudi Arabia, one in Stallingborough, United Kingdom, and one in Bunbury, Australia. (CCFF ¶ 9). Cristal owns and operates three sulfate TiO₂ plants, located in Thann, France, Bahia, Brazil, and its Tikon plant located in China. (CCFF ¶ 10). Cristal also owns and operates titanium feedstock mining assets in Australia, formerly known as Bemax, and a titanium feedstock mining asset in Paraiba, Brazil. (CCFF ¶¶ 11–12). In addition, Cristal owns a titanium feedstock smelter in Jazan, Saudi Arabia { [REDACTED] } (CCFF ¶ 13). Besides Tronox and Cristal, the only other producers of TiO₂ in North America are Chemours, Venator and Kronos. (CCFF ¶ 376).

B. Titanium Dioxide (TiO₂)

TiO₂ is an essential pigment used to add whiteness, brightness, opacity, and durability to paints, industrial and automotive coatings, plastics, and other specialty products. (CCFF ¶ 14). The primary customers of TiO₂ include paint and coatings manufacturers and plastic producers, who account for approximately 60% and 25% of the TiO₂ consumed in North America, respectively. (CCFF ¶ 15). Paper and other specialty products, such as ink, food, cosmetics, and pharmaceuticals, use the remainder. (CCFF ¶ 15). For nearly all customers, there are no commercially reasonable substitutes for TiO₂. (CCFF ¶ 16).

TiO₂ is produced from titanium-containing ores through one of two manufacturing processes that extract TiO₂ from ore: (1) the chloride process that uses chlorine; and (2) the sulfate process that uses sulfuric acid. (CCFF ¶ 17). The chloride process generally produces higher quality TiO₂ with a bluer tint, compared to a yellower tint for TiO₂ manufactured from

the sulfate process. (CCFF ¶ 18). Chloride TiO₂ is more durable than sulfate TiO₂. (CCFF ¶ 18). The vast majority of TiO₂ sold to and consumed by North American customers is chloride TiO₂.⁵ (CCFF ¶ 19). Virtually all of the TiO₂ production capacity in North America is for chloride TiO₂—the only sulfate TiO₂ plant in North America is a small Kronos plant in Quebec that is co-located with a larger Kronos chloride plant. (CCFF ¶¶ 376, 379).

In North America, customers purchase TiO₂ either in a liquid slurry or in a bagged dry powder form. (CCFF ¶ 21). TiO₂ slurry is made by dispersing TiO₂ powder in water with other additives. (CCFF ¶ 21). TiO₂ slurry is delivered to customers by rail cars or tank cars. (CCFF ¶ 21). Slurry TiO₂ can be pumped directly into customers' storage tanks, which simplifies handling and manufacturing. (CCFF ¶ 21). Demand for TiO₂ slurry is much higher in North America than in other regions. (CCFF ¶ 22). Large paint and coatings manufacturers in North America generally purchase { [REDACTED] } (CCFF ¶ 22). North American slurry TiO₂ is { [REDACTED] } (CCFF ¶ 22).

II. The Proposed Acquisition Is Presumptively Unlawful in a Market for Sales of Chloride TiO₂ to North American Customers

Tronox's Proposed Acquisition of Cristal is presumptively unlawful. It would give the combined firm a market share of { [REDACTED] } percent of sales of chloride TiO₂ to customers in North America, and would result in just two firms (Tronox and Chemours) accounting for { [REDACTED] } percent of sales of chloride TiO₂ in North America, thereby substantially increasing market concentration in the sale and manufacture of chloride TiO₂ to North American customers. (CCFF ¶ 391).

⁵ TiO₂ can also have two different crystal structures—rutile and anatase. (CCFF ¶ 20). Rutile TiO₂ and anatase TiO₂ have different physical characteristics and applications and are not substitutes for any use relevant to this matter. (CCFF ¶ 20).

A. The Relevant Market Is the Sale of Chloride TiO₂ to North American Customers

A relevant market has two components, reflecting the different dimensions of where competition occurs: (1) the relevant product market and (2) the relevant geographic market. “The ‘relevant product market’ identifies the product and services with which the defendants’ products compete,” while “the ‘relevant geographic market’ identifies the geographic area in which the defendants compete in marketing their products or services.” *CCC Holdings*, 605 F. Supp. 2d at 37.

Courts often rely on the principles expressed in the Federal Trade Commission and U.S. Department of Justice Horizontal Merger Guidelines (“*Merger Guidelines*”) to define the market.⁶ *E.g.*, *Heinz*, 246 F.3d at 716 n.9, 718; *CCC Holdings*, 605 F. Supp. 2d at 37. The *Merger Guidelines* define a relevant market in economic terms, by asking whether a monopolist of a particular group of products in a specified geography could profitably impose a “small but significant non-transitory increase in price” (“SSNIP”)—typically five percent—over those products, or whether customers switching to alternative products or to product outside the geographic market would render such a price increase unprofitable. *Merger Guidelines* §§ 4.1.1, 4.1.2; *see also CCC Holdings*, 605 F. Supp. 2d at 38 n.12.⁷ Applied to the facts here, the “hypothetical monopolist test” asks whether a single firm controlling all sales of chloride TiO₂ to North American customers could profitably raise prices by five to ten percent. As the record evidence shows, the answer is a resounding yes.

Consistent with the record described below, Complaint Counsel’s economic expert, Dr. Nicholas Hill, conducted an empirical analysis and found that a hypothetical monopolist of all

⁶ “The *Merger Guidelines* are not binding, but the Court of Appeals and other courts have looked to them for guidance in previous merger cases.” *Sysco*, 113 F. Supp. 3d at 38 (citing *Heinz*, 246 F.3d at 716 n.9).

⁷ Courts frequently use the hypothetical monopolist test in defining markets. *FTC v. Penn State Hershey Med. Ctr.*, 838 F.3d 327, 338 (3d Cir. 2016); *Staples 2016*, 190 F. Supp. 3d at 121-22; *Sysco*, 113 F. Supp. 3d at 33.

chloride TiO₂ sales to customers in North America would find it profitable to impose a SSNIP.⁸ (CCFF ¶¶ 134–42, 323–29). This analysis, combined with documents and testimony described below and in Complaint Counsel’s Proposed Findings of Fact, confirms that the sale of chloride TiO₂ to North American customers is a properly defined relevant market.

1. The Relevant Product Market is Chloride TiO₂

The relevant product market refers to the “product and services with which the defendants’ products compete.” *United States v. Anthem, Inc.*, 236 F. Supp. 3d 171, 193 (D.D.C. 2017) (citation omitted), *aff’d*, 855 F.3d 345 (D.C. Cir. 2017). To determine the scope of the product market, courts examine “[w]hether goods are ‘reasonable substitutes,’” which “depends on two factors: functional interchangeability and cross-elasticity of demand.” *Sysco*, 113 F. Supp. at 25. Therefore, “a relevant market cannot meaningfully encompass [an] infinite range [of products]. The circle must be drawn narrowly to exclude any other product to which, within reasonable variations in price, only a limited number of buyers will turn.” *Id.* at 26 (quoting *Times-Picayune Publ’g Co. v. United States*, 345 U.S. 594, 612 n.31 (1953)) (modifications in original). The key question for defining a product market is whether customers in North America would substitute sulfate TiO₂ for chloride TiO₂ in sufficient volumes to render a SSNIP unprofitable. *Merger Guidelines* § 4.1.1. The evidence shows that the answer to that question is clearly no.

At trial, customers uniformly testified that sulfate TiO₂ is not an effective substitute for chloride TiO₂ in North America.⁹ Chloride TiO₂ has distinct performance advantages over

⁸ TiO₂ has two distinct crystal forms, rutile and anatase. It is undisputed that anatase TiO₂ is used in different products than rutile TiO₂ and is not at issue in this case. (CCFF ¶¶ 20, 333–36).

⁹ Courts routinely rely upon the testimony of customers and other third-party market participants to gain an understanding of the market. *Staples 1997*, 190 F. Supp. at 100 (citing customer testimony as evidence of pricing); *Sysco*, 113 F. Supp. 3d at 32 (using customer testimony as evidence of the proper product market). Likewise, the *Merger Guidelines* also recognize the importance of customer testimony on a host of issues, including “their own

sulfate TiO₂, including a brighter, cleaner tint and superior coverage and durability. (CCFF ¶ 70) ({}); (CCFF ¶ 67) (True Value: Chloride TiO₂ is “purer” than sulfate TiO₂, which is “dirtier” and has a yellow tint); (CCFF ¶ 75) (PPG: “[S]ulfate carries iron with the product, and that decreases the durability in our final application.”).¹⁰ As major TiO₂ producer Kronos explained:

[Chloride TiO₂ is] a superior product on its optical [] properties, whether . . . its color undertone or its tinting strength, durability, a whole host of different ways of evaluating a grade of TiO₂, and chloride products tend to outperform sulfate products. (CCFF ¶ 92).

North American consumers demand the brighter whites and colors, durability, and better coverage that only *chloride* TiO₂ can provide. (CCFF ¶¶ 41, 303) ({}); (CCFF ¶ 306) ({}); (CCFF ¶ 47) ({}).

Due to chloride TiO₂’s superior performance characteristics and the demands of North American consumers, North American TiO₂ customers—such as paint and coatings companies and plastics manufacturers—overwhelmingly buy chloride TiO₂, and do not consider sulfate TiO₂ to be suitable substitute. Sherwin-Williams, which manufactures both architectural and

purchasing behavior and choices,” “how they would likely respond to a price increase,” and “the relative attractiveness of different products and suppliers.” *Merger Guidelines* § 2.2.2.

¹⁰ See also, e.g., (CCFF ¶¶ 18, 70) ({}); (CCFF ¶ 74) (Kronos: sulfate TiO₂ produces a yellowish undertone compared to chloride TiO₂, which has “a brighter white to it”); (CCFF ¶ 75) (Sherwin-Williams: “[T]he chemistry of sulfate TiO₂ may result in less coverage and less durability than chloride TiO₂”).

industrial coatings, testified that sulfate TiO₂ is unsuitable for its products in North America because it does not result in consistent brightness of color or consistent whites, and that Sherwin-Williams has been “unwilling to compromise the quality of [its] goods” by using sulfate TiO₂.

(CCFF ¶ 51).¹¹ Likewise, { [REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶¶ 57, 129). { [REDACTED]

[REDACTED] } (CCFF ¶¶ 70, 72, 130). Plastics

manufacturer Deceuninck North America (“DNA”) testified that it has always used exclusively chloride TiO₂ because purity and quality are of paramount importance in DNA’s products.

(CCFF ¶ 48).¹²

Customers have investigated whether they could substitute sulfate TiO₂ for chloride TiO₂, and found that they could not. At trial, { [REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶ 53). { [REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶

34).¹³ Likewise, { [REDACTED]

[REDACTED] } (CCFF ¶ 52).

Additionally, unlike in other parts of the world, the vast majority of the architectural paint sold in North America is tinted (*i.e.*, mixed into a specific color) at the point of sale. *See* (CCFF

¹¹ Sherwin-Williams further explained that in other regions of the world, where quality standards are different than in North America, sulfate TiO₂ has been suitable for use in its products. (CCFF ¶ 51).

¹² *See also, e.g.*, (CCFF ¶ 90) ([REDACTED]).

¹³ [REDACTED] (CCFF ¶ 87).

[REDACTED] } (CCFF ¶ 132).

[REDACTED] } (CCFF ¶ 117).¹⁷ Despite this, [REDACTED]
[REDACTED]
[REDACTED] } (CCFF ¶ 117). For example, Sherwin-Williams has consistently paid more for chloride TiO₂ because chloride TiO₂ is necessary to “consistently meet [its] customers’ requirements for quality and performance.” (CCFF ¶ 128). Even when sulfate TiO₂ was 40% cheaper than chloride TiO₂, [REDACTED]
[REDACTED]
[REDACTED] } (CCFF ¶ 127). Sherwin-Williams explained that [REDACTED]
[REDACTED] } (CCFF ¶ 128).

Other customers confirm that they have not and will not switch to sulfate TiO₂, even in the face of a significant price differential with chloride TiO₂. For example, [REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] }
(CCFF ¶¶ 34, 124); *see also, e.g.*, (CCFF ¶ 50) (“[T]he only way that Deceuninck would even consider sulfate TiO₂ would be if chloride TiO₂ was unavailable.”); (CCFF ¶ 130) ([REDACTED]
[REDACTED]
[REDACTED] }).

Consistent with that reality, North American customers do not attempt to use sulfate TiO₂ prices as leverage to negotiate for better chloride TiO₂ pricing. As [REDACTED]

¹⁷ *See also* (CCFF ¶ 112) (Sherwin-Williams: chloride TiO₂ was typically more expensive than sulfate TiO₂ from 2012 to 2017, with sulfate TiO₂ as much as 40% cheaper.).

[REDACTED] } (CCFF ¶ 116);

see also (CCFF ¶ 116) ([REDACTED]

[REDACTED]).

Tronox itself acknowledges the advantages of chloride TiO₂, the dominance of chloride TiO₂ in the North American market, and that sulfate TiO₂ is not a close substitute for chloride TiO₂ in North America. A 2015 Tronox presentation states:

[REDACTED]

(CCFF ¶ 59). Tronox talking points for a 2014 presentation described the limited threat posed by sulfate TiO₂: [REDACTED]

[REDACTED] } (CCFF ¶ 32); *see also* (CCFF ¶ 119)

(stating during an investor call that major North American TiO₂ customers’ “ability to substitute sulfate for chloride . . . is limited by their need to maintain the quality levels of their own products.”). Indeed, during a call with investors, Tronox’s then-CEO rejected the idea that high chloride TiO₂ prices had caused customers to switch to sulfate TiO₂ in North America:

In various markets, the [] customers have responded to what happened on pricing a year ago in [] different ways. For example in the North American market, it was 95% or 98%, or some [] very, very high number chloride [.] [I]t remains, essentially the same [] number market share for chloride. That was true when prices were over [] \$4,000 a ton, it is true now.”

(CCFF ¶ 119 (Tronox Q4 2013 Earnings Call)).¹⁸ During a 2013 question and answer session with investors, Tronox reiterated that sulfate TiO₂ was not a meaningful substitute for chloride TiO₂ in North America:

[REDACTED]

(CCFF ¶ 120) (emphasis added).

Likewise, the other major producers also recognize the important differences between chloride and sulfate TiO₂, and that customers in North America would not substitute between them in most applications. *E.g.*, (CCFF ¶ 41) (Kronos: explaining that North American customers have an “overwhelming preference” for chloride TiO₂ because it is needed to achieve the necessary product quality); (CCFF ¶ 113) ([REDACTED]); [REDACTED]; [REDACTED]; [REDACTED]); (CCFF ¶ 74) ([REDACTED]); [REDACTED]).

As all of the foregoing evidence makes clear, sulfate TiO₂ is not a suitable substitute for chloride TiO₂ for North American customers.

¹⁸ At trial, Tronox’s Vice President of Investor Relations testified that statements to investors are made on behalf of Tronox as a whole and that the company uses its best efforts to ensure that its statements to investors are accurate, complete, and not misleading. (CCFF ¶ 462).

2. The Relevant Geographic Market is North America

The Supreme Court has defined the relevant geographic market as the region “in which the seller operates, and to which the purchaser can practicably turn for supplies.” *Tampa Elec. Co. v. Nashville Coal Co.*, 365 U.S. 320, 327 (1961); *FTC v. Cardinal Health, Inc.*, 12 F. Supp. 2d 34, 49 (D.D.C. 1998) (citation omitted). The Court further elaborated in *United States v. Philadelphia National Bank* that the “proper question” is “not where the parties do business or even where they compete, but where, within the area of competitive overlap, the effect of the merger on competition will be direct and immediate.” 374 U.S. at 357.

With those principles in mind, the Commission has held that where “suppliers can set prices based on customer location, and customers cannot avoid targeted price increases through arbitrage,” the relevant geographic market may be defined around the locations of customers, not suppliers. *In re Polypore Int’l Inc.*, 150 FTC 586 at *16 (2010), *aff’d sub nom., Polypore Int’l, Inc. v. FTC*, 686 F.3d 1208 (11th Cir. 2012) (applying *Merger Guidelines* § 4.2.2).

That is the case here. As in *Polypore*, TiO₂ producers know their customers’ locations, and take advantage of that by pricing regionally (*i.e.*, price discriminate). Moreover, a SSNIP by a hypothetical monopolist controlling all sales of chloride TiO₂ to North American customers¹⁹ would not be defeated by those customers turning outside of North America, through arbitrage, to purchase chloride TiO₂. (See CCFE ¶¶ 138, 139, 640).

i. TiO₂ Suppliers Price Discriminate Based on Customer Location

For geographic price discrimination to be feasible, suppliers must be able to distinguish among customers based on customer location. *Merger Guidelines* § 3. Here, it is undisputed

¹⁹ The North American market is defined as the United States and Canada. Market participants typically group Mexico in their Latin American markets, in part because TiO₂ prices and purchasing decisions there are more similar to those in other Latin American countries than in the United States and Canada. *See, e.g.*, (CCFE ¶¶ 139-143). Significantly, TiO₂ produced in Mexico at Chemours’s Altamira facility, for example, that is sold to North American customers is included in the relevant market for market definition purposes.

that North American chloride TiO₂ suppliers know the locations of their customers and, indeed, deliver TiO₂ to them, typically pricing on a delivered basis. For example, paint maker Masco testified at trial that { [REDACTED] [REDACTED] }. (CCFF ¶ 167). Producers and other customers { [REDACTED] [REDACTED] }. *See, e.g.*, (CCFF ¶¶ 165-171).

Chloride TiO₂ producers then exploit their awareness of customer location to charge different prices to customers in different regions based on the market dynamics in each region—a fact that industry participants broadly acknowledge.²⁰ Ian Mouland, Tronox’s vice president of sales for the Americas, testified at trial—under questioning from his own counsel—that prices among regions { [REDACTED] ”} to pricing across regions. (CCFF ¶ 151). He further acknowledged that pricing to multinational customers doing business in multiple regions { [REDACTED] [REDACTED] } (CCFF ¶ 200). John Romano, Tronox’s Chief Commercial Officer, explained that { [REDACTED] [REDACTED] [REDACTED] } (CCFF ¶¶ 151-54). Cristal similarly testified that TiO₂ pricing is “driven by supply and demand dynamics in ... particular [geographic] regions.”²¹ (CCFF ¶ 157) (Stoll Tr. 2044)). Both Tronox and Cristal also set { [REDACTED] } *See, e.g.*, (CCFF ¶¶ 113; 150-159).

²⁰ The ability to charge different prices in different geographic regions shows that suppliers are able to price discriminate based on customer location. *Polypore*, 150 FTC at *16 & n.28.

²¹ In the price-fixing litigation, Cristal’s former global accounts manager testified that { [REDACTED] [REDACTED] } (CCFF ¶ 225).

Examples of internal documents from Respondents, including many presented at trial, corroborate this testimony about differential regional pricing.

1. [REDACTED] (CCFF ¶ 203).
2. [REDACTED] (CCFF ¶ 202)
3. [REDACTED] (CCFF ¶ 220)
4. [REDACTED] (CCFF ¶ 201)
5. [REDACTED] (CCFF ¶ 177).
6. [REDACTED]” (CCFF ¶ 216).
7. [REDACTED] (CCFF ¶ 151).
8. [REDACTED] (CCFF ¶ 204).
9. [REDACTED] (CCFF ¶ 207).

Consistent with Respondents’ internal documents, Tronox’s then-CEO Tom Casey told investors: “[A]re there different prices in the regional markets in which we do business? The answer to that question is yes. The European and Asian market prices and the Latin American market prices are relatively closely bunched, with the North American price staying somewhat higher.” (CCFF ¶ 252). In another investor call, he commented that “[w]e do not see that exports

from China or from Europe are playing a material role in the competitive balance, particularly in the North American market.” (CCFF ¶ 204). And in response to a query from an analyst about how North American prices compared to those elsewhere, he commented that “[o]ur view as I said . . . is that prices in Europe and in Asia were lower than prices in the United States and the other North American markets.” (CCFF ¶ 257).

Customers and other producers share Respondents’ view regarding the regional nature of TiO₂ markets. At trial, Sherwin-Williams testified that { [REDACTED] } (CCFF ¶ 192). PPG similarly noted that { [REDACTED] } (CCFF ¶ 179). Both companies further explained that prices { [REDACTED] } (CCFF ¶¶ 175, 192). Producers { [REDACTED] } (CCFF ¶¶ 245, 227). As Kronos testified at trial, the company’s { [REDACTED] } (CCFF ¶ 227).

Although regional prices vary relative to one another, over a five-year period, TiO₂ prices in North America remained significantly higher than those elsewhere in the world. (CCFF ¶¶ 239–58). Respondents have consistently recognized that fact:

1. { [REDACTED] } (CCFF ¶ 248).
2. In March 2013: “Markets in North America are still under pressure to decline since they are so much higher than other regions of the world, however, we are trying to hold on to the current price levels.” (CCFF ¶ 249).

3. In November 2013: { [REDACTED] } (CCFF ¶ 250).
4. In June 2016: { [REDACTED] } (CCFF ¶ 253).
5. In September 2016: { [REDACTED] } (CCFF ¶ 255).
6. In September 2016: { [REDACTED] } (CCFF ¶ 256).
7. Cristal seeking to increase { [REDACTED] } (CCFF ¶ 207).

Confirming these statements, both experts agree that North American customers consistently paid { [REDACTED] } from 2012 through at least 2016. (CCFF ¶ 236). Dr. Hill specifically analyzed pricing data for the chloride TiO₂ prices charged by Tronox and Cristal for TiO₂ manufactured in their North American facilities from 2012 through 2016. He found that { [REDACTED] } (CCFF ¶ 236).

ii. North American Customers Cannot Arbitrage Chloride TiO₂

This persistent regional { [REDACTED] } (CCFF ¶ 266). Consistent with this, a Cristal executive testified in 2012 that { [REDACTED] }

{ [REDACTED] } (CCFF ¶ 293). Several reasons account for the absence of arbitrage by North American customers.

First, customers and suppliers uniformly explained that the cost of { [REDACTED] }
 [REDACTED]
 [REDACTED] } (CCFF ¶¶
 265-66, 280-84). Sherwin-Williams testified at trial that the company has evaluated { [REDACTED] }
 [REDACTED]
 [REDACTED]
 [REDACTED] } (CCFF ¶ 277). Similarly, Deceuninck testified at trial that when European prices were significantly lower than those in North America, the company explored moving TiO₂ from one of the company’s European plants to its plants in Ohio. (CCFF ¶ 298). The company decided against doing so, though, because “the cost . . . is very expensive to get the titanium dioxide from Europe to the U.S., the economics didn’t make sense for us to do that. . . .” (CCFF ¶ 298). And PPG testified that while it had purchased small quantities of TiO₂ { [REDACTED] }
 [REDACTED]
 [REDACTED] } (CCFF ¶ 296).

Additionally, unlike in other regions, many of the major North American coatings customers rely on TiO₂ in slurry (liquid) form, as opposed to dry TiO₂, because it lowers costs: slurry can be shipped by rail cars and pumped directly into the customer’s storage tank to be mixed into paint. (CCFF ¶¶ 21, 315, 319).²² Switching from slurry to dry TiO₂ would present significant logistical challenges and costs for those customers. (CCFF ¶ 321) ({ [REDACTED] }

²² [REDACTED]

(CCFF ¶¶ 22, 320–21).

[REDACTED]
[REDACTED]); (CCFF ¶ 321) ([REDACTED]
[REDACTED]
[REDACTED]). [REDACTED]
[REDACTED] (CCFF ¶ 320). In addition to cost, [REDACTED]
[REDACTED] (CCFF ¶ 321). Accordingly,
North American slurry customers would be unable to [REDACTED] (CCFF ¶ 341).

Second, North American customers require quick turnaround with respect to orders, favoring shipments from nearby plants and further precluding the use of arbitrage. (CCFF ¶¶ 193–98). Tronox’s Arjen Duvekot acknowledged that customers [REDACTED]
[REDACTED] (CCFF ¶ 209).
Cristal’s Russ Snider explained that North American customers value [REDACTED]
[REDACTED] (CCFF ¶ 210), and another Cristal executive testified in 2012 that [REDACTED]
[REDACTED]
[REDACTED] (CCFF ¶ 279). And customers Sherwin-Williams, PPG, True Value, and Deceuninck all testified at trial that [REDACTED]
[REDACTED]
[REDACTED] (CCFF ¶¶ 273–77).

Third, North American customers place an especially high value on having a [REDACTED]
[REDACTED] (CCFF ¶ 286). Kronos explained that reliability and security of supply are [REDACTED]
[REDACTED] (CCFF ¶ 316). [REDACTED]
[REDACTED]. (CCFF ¶ 210). Reflecting this desire for a [REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶ 210). The need for reliable supply also hampers the ability to arbitrage.

Fourth, chloride TiO₂ suppliers { [REDACTED] }. As PPG explained at trial, [REDACTED] [REDACTED] } (CCFF ¶¶ 284-85). And suppliers would also { [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] } (CCFF ¶¶ 284–85).

Fifth, North American customers value having a { [REDACTED] [REDACTED] }, which is not possible when purchasing from { [REDACTED] }. (CCFF ¶ 286). Tronox, for example, provides both technical support and technical collaboration to its customers, which includes working with customers to address any technical issues. (CCFF ¶ 800).

Finally, as explained above, North American customers generally require high quality chloride TiO₂, but the amount available outside North America is limited, further restricting the ability of North American customers to engage in arbitrage. (CCFF ¶¶ 301–04).

The same analytical framework employed by Complaint Counsel to assess the scope of the geographic market was applied in the Initial Decision in *Polypore*. FTC Dkt. No. 9327, Initial Decision (FTC, Mar. 1, 2010). There, the Initial Decision (and subsequent decisions) defined a North American market based on customer location, as opposed to the global market urged by the Respondents. *Id.* at 239–43. That decision rested on evidence showing that Respondents were able to price discriminate based on customer location, and that North

American customers were unable to turn to foreign suppliers, for many of the same reasons North American customers cannot do so here, to defeat a discriminatory price increase through arbitrage. *Id.* The Commission affirmed, holding that where “customers cannot avoid targeted price increases through arbitrage, suppliers may be able to exercise market power over customers located in a particular geographic region, even if a price increase to customers located in other geographic regions would be unprofitable.” *Polypore*, 150 FTC 586 at *16. The evidence supports a similar finding here.

iii. Respondents’ Criticisms of a North American Market Are Unavailing

When confronted with the real-world evidence and *Guidelines* analysis offered by Complaint Counsel, Respondents seek to conflate the issues. Respondents first point to trade flows (i.e., that TiO₂ is shipped internationally) as evidence of a global chloride TiO₂ market. Resps.’ Pretrial Br. at 16–19. But the existence of international trade does not define an antitrust market. Antitrust markets are based on whether customers can substitute to avoid a SSNIP. On that question, consistent with *Merger Guidelines* § 4.2.2, Complaint Counsel’s market already includes *all* sales of chloride TiO₂ delivered to North American customers from suppliers located *anywhere* in the world. (CCFF ¶ 141). Imports account for only []% of such sales, belying Respondents’ contention that imports to North America are competitively significant.²³ (CCFF ¶ 141). And as discussed above, the significant and persistent gaps in price between [REDACTED] [REDACTED]. (CCFF ¶¶ 264, 266, 635).

²³ Respondents also claim that imported TiO₂ accounts for over 24% of North American sales, Resps.’ Pretrial Br. at 17, but this figure includes anatase TiO₂, which Respondents concede is not at issue in this case. Resps.’ Pretrial Br. at 4, n.1. As Dr. Hill calculated, rutile TiO₂ imports comprise about []% of North American consumption. (CCFF ¶ 141).

Moreover, as discussed further below, Dr. Hill assessed the responsiveness of both imports and exports (i.e., export repatriation) to chloride TiO₂ price changes by analyzing past responses to price changes in North America. Consistent with the evidence of sustained pricing differences, he found { [REDACTED] [REDACTED] [REDACTED] } (CCFF ¶¶ 641–45, 667).

Second, Respondents claim that North American prices are “correlated” and “co-integrated” with global prices, i.e., that prices move together. Resps.’ Pretrial Br. at 19-20. But again, the antitrust question—embodied in the hypothetical monopolist test—is whether customers change their purchases in response to price changes. Price movements say nothing about that. Indeed, based on price movements, the same co-integration analysis performed by Respondents’ economic expert would show that propane and crude oil are in the same market, but that is clearly erroneous. (CCFF ¶ 359). And in any event, Tronox’s Vice President of Sales for the Americas testified that prices among regions { [REDACTED] [REDACTED] } to pricing.²⁴ (CCFF ¶ 151).

Finally, Respondents’ contend that the FTC erred in applying the hypothetical monopolist test, by “giv[ing] the hypothetical monopolist control over supply both inside *and outside* the proposed relevant market.” Resps.’ Pre-trial Br. at 22 (emphasis in original). That is wrong. The *Merger Guidelines* specify that in a market based on the location of customers, as here, the hypothetical monopolist is defined as “the only present or future seller of the relevant product to customers in the region,” and that all sales made to North American customers, “regardless of

²⁴ Respondents also suggest that customers are able to leverage pricing in one geography to obtain better pricing elsewhere, Resps.’ Pretrial Br. at 21, but ample evidence shows that even the largest North American customers pay { [REDACTED] [REDACTED] }. (CCFF ¶¶ 172-198).

the location of the supplier making those sales” are attributed to the hypothetical monopolist. *Merger Guidelines* § 4.2.2. That is what Complaint Counsel did. Thus, for example—and contrary to Respondents’ suggestion—the Chemours plant in Mexico is not excluded from the market. Rather, any sales from the Chemours plant in Mexico to North American customers are properly captured in Complaint Counsel’s relevant market.²⁵ Respondents’ incorrect argument is merely an effort to confuse the issue.

In sum, the North American market for the sale of chloride TiO₂ presented by Complaint Counsel is wholly consistent with both the market reality of where the “effect of the merger on competition will be direct and immediate,”²⁶ and the *Merger Guidelines*. The global market Respondents urge is neither.

B. The Proposed Acquisition Is Presumptively Unlawful Because It Would Substantially Increase Concentration In The Relevant Market

Congress enacted the Clayton Act so that courts could prevent undue economic concentration *before* a dominant firm could use its market power to harm customers. *Brown Shoe*, 370 U.S. at 317–18; *see Phila. Nat’l Bank*, 374 U.S. at 363. In accordance with that statutory directive, courts have made clear that acquisitions that significantly increase economic concentration are presumptively unlawful:

[T]he government must show that the merger would produce ‘a firm controlling an undue percentage share of the relevant market, and [would] result[] in a significant increase in the concentration of firms in that market.’ Such a showing establishes a ‘presumption’ that the merger will substantially lessen competition. *Heinz*, 246 F.3d at 715 (citations omitted).

²⁵ Respondents assert that Complaint Counsel’s approach could result in Sandusky, Ohio being a relevant geographic market. Resps.’ Pretrial Brief at 22. However, they overlook that unlike the North American chloride customers at issue here, a customer in Sandusky likely could engage in arbitrage by purchasing the product in a nearby city like Cleveland and inexpensively and quickly delivering it to its plant in Sandusky. (CCFF ¶ 363).

²⁶ *Phila. Nat’l Bank*, 374 U.S. at 357.

To assess an acquisition's presumptive illegality, courts first consider Respondents' shares of the relevant market, and then employ a statistical measure of market concentration called the Herfindahl-Hirschman Index ("HHI"). *Heinz*, 256 F.3d at 716; *Sysco*, 113 F. Supp. 3d at 52. The HHI calculates market concentration by adding the squares of each market participant's individual market share. *See Staples 2016*, 190 F. Supp. 3d at 128; *Sysco*, 113 F. Supp. 3d at 52. "Sufficiently large HHI figures establish the FTC's prima facie case that a merger is anti-competitive." *Heinz*, 246 F.3d at 716; *see Staples 2016*, 190 F. Supp. 3d at 128; *Sysco*, 113 F. Supp. 3d at 52.

An acquisition is presumptively anticompetitive if it increases the HHI by more than 200 points and results in a "highly concentrated market" with a post-acquisition HHI exceeding 2,500. *See Staples 2016*, 190 F. Supp. 3d at 128; *Sysco*, 113 F. Supp. 3d at 52-53; *see also Merger Guidelines* § 5.3. This transaction would *triple* the increase that renders an acquisition presumptively unlawful. Post-merger, the combined firm would have a market share of {█}% of North American sales of chloride TiO₂, and the acquisition would increase the HHI by over 700 points, to a level of over 3000.²⁷ (CCFF ¶¶ 391, 393).

These market share statistics demonstrate this Acquisition is presumptively anticompetitive. *See Staples 2016*, 190 F. Supp. 3d at 128; *Sysco*, 113 F. Supp. 3d at 52-53; *United States v. Aetna Inc.*, 240 F. Supp. 3d 1, 28 (D.D.C. 2017). "The presumption can only be rebutted by persuasive evidence showing that the merger is unlikely to enhance market power." *Merger Guidelines* §5.3. Courts consistently enjoin transactions with high changes in concentration, like this Acquisition. *E.g., Heinz*, 246 F.3d at 716 (HHI increase of 510 "creates, by a wide margin, a presumption that the merger will lessen competition.").

²⁷ The transaction also is presumptively unlawful in the market for sales of rutile TiO₂ to North American customers. (CCFF ¶ 397).

C. The Documented History of Coordination in the TiO₂ Industry Strengthens the Presumption

There can be little doubt that the decisions in the two civil price fixing cases, *Valspar* and *In re Titanium Dioxide*, increase competitive concerns in this case.²⁸ See *Horizontal Merger Guidelines* §7.2. Indeed, as the Seventh Circuit has observed: “The theory of competition and monopoly that has been used to give concrete meaning to Section 7 teaches that an acquisition which reduces the number of significant sellers in a market already highly concentrated and prone to collusion by reason of its history and circumstances is unlawful *in the absence of special circumstances.*” *Elders Grain*, 868 F. 2d. at 906 (emphasis added).

The factual records described by the two courts—and the record developed by Complaint Counsel in this case—make apparent that the North American market for chloride TiO₂ is “prone to collusion,”²⁹ In *Valspar*, the U.S. Court of Appeals for the Third Circuit, while upholding summary judgment because Valspar had not shown overt price fixing by TiO₂ producers, highlighted the oligopolistic market conditions in TiO₂: “There is little doubt that this highly concentrated market for a commodity-like product with no viable substitutes and substantial barriers to entry was conducive to price fixing.” *Valspar*, 873 F.3d at 197.³⁰ In *In re*

²⁸ *Valspar Corp. v. E. I. Du Pont De Nemours & Co.*, 873 F.3d 185 (3d Cir. 2017); *In re Titanium Dioxide Antitrust Litig.*, 959 F. Supp. 2d 799 (D. Md. 2013). Cristal was named as a Defendant in *In re Titanium Dioxide* and in the original *Valspar* complaint. Tronox, which had been in bankruptcy due to environmental liabilities for a portion of the class period, was not a Defendant, but was named as a co-conspirator.

²⁹ Respondents complain that Complaint Counsel’s references to these decisions are somehow unfair or inappropriate because the Courts were addressing motions for summary judgment. (Williams, Tr. 136–37). Complaint Counsel has only referenced events that cannot be disputed: that competitive conditions in TiO₂ were of a character that spurred civil allegations of price fixing in two different jurisdictions, that the District Court in Maryland concluded that evidence in support of those allegations would be sufficient to infer a price-fixing conspiracy, and that the District Court in Delaware and Third Circuit Court of Appeals decided that summary judgment was appropriate specifically because the evidence tended to show strong “anticompetitive interdependence” rather than overt collusion. *Valspar*, 873 F. 3d at 197 (“There is no dispute that the market was primed for anticompetitive interdependence and that it operated in that manner. Valspar’s expert evidence confirming these facts mastered the obvious.”).

³⁰ The District Court in Delaware had referenced evidence of interdependent or collusive interactions among TiO₂ producers. *Valspar Corp. v. E. I. Du Pont De Nemours & Co.*, 152 F. Supp. 3d 234, 250 (D. Del. 2016) (referring to DuPont’s “business decisions”: “It appears that, in making those decisions, DuPont and the other defendants undertook actions that could plausibly be interpreted as ‘collusive.’”); *id.* at 253 (“The evidence cited by Valspar

Titanium Dioxide, the District Court reached a different result and concluded that the plaintiffs had provided enough evidence to support their allegations of a TiO₂ price fixing conspiracy. *In re Titanium Dioxide*, 959 F. Supp. 2d at 830 (“[T]his Court finds that the Plaintiffs put forward sufficient evidence tending to exclude the possibility of independent action.”); see *Merger Guidelines* §7.2 (“The agencies presume that market conditions are conducive to coordinated interaction if firms representing a substantial share in the relevant market *appear to have previously engaged in express collusion.*”) (emphasis added).

The two decisions therefore build on the inferences to be drawn from the market share statistics that the Section 7 coordination concerns are particularly strong in this case. *Heinz*, 246 F.3d at 715 (“Merger law rests upon the theory that, where rivals are few, firms will be able to coordinate their behavior, either by overt collusion or implicit understanding, in order to restrict output and achieve profits above competitive levels.”) (internal quotation marks and citations omitted). In fact, it is precisely the “anticompetitive interdependence” described in *Valspar* that is “feared by antitrust policy even more than express collusion, for tacit coordination, even when observed, cannot easily be controlled directly by the antitrust laws. *‘It is a central object of merger policy to obstruct the creation or reinforcement by merger of such oligopolistic market structures in which tacit coordination can occur.’*” *Heinz*, 246 F.3d at 725 (emphasis added) (quoting 4 Phillip E. Areeda, Herbert Hovenkamp & John L. Solow, *Antitrust Law* ¶ 901b2, at 9 (rev. ed. 1998)).

Respondents have advocated that, because part of the conduct in these cases involved the participation of TiO₂ producers in an information sharing program that no longer exists, the competitive conditions are so different that they make the two price fixing cases unimportant.

demonstrates that the titanium dioxide industry is an oligopoly. That oligopoly may well have caused substantial anticompetitive harm to Valspar.”).

public ways.”). See (CCFF ¶ 472 (Tronox CEO at 3Q 2015 earnings call: “And the question is, when will [the prices] turn? We’re addressing that by managing our production so that inventories get reduced to normal or below normal levels. And when that happens, prices will rise. We -- from what we see with Chemours and Huntsman and presumably others as well, they’re doing the same thing. We see them acting in the same way.”); CCFF ¶ 466 (discussing Chemours earnings conference call relating to expected “cadence” of TiO₂ price increases through the year, and testimony of John Romano describing the information from this earnings call to be a [REDACTED] [REDACTED]); CCFF ¶ 467 (Huntsman presentation at Goldman Sachs Basic Materials Conference) (“Well, there’s the April 1 effective price increase. It was roughly \$235 a ton, nominated. And we have communicated and signaled that we would expect the realization on that price would be on the upper end of what we’ve been realizing over the last 3 or 4 quarters. That is closer to 2/3, 70% realization.”)). In fact, TiO₂ producers view the increasing market transparency, including through the Proposed Acquisition, as a positive development for competitive conditions in TiO₂. (CCFF ¶¶ 537–44).

III. Evidence of Likely Harm Bolsters the Presumption

Instead of the “special circumstances” required by *Elders Grain*, there is extensive evidence that the Acquisition would likely result in harm to competition by making coordination between the remaining competitors—Chemours, Kronos and Venator—more likely, and by increasing Tronox’s ability and incentive to unilaterally curtail output in order to raise prices or prevent them from falling.³¹ This “additional proof that the merger would harm competition” further strengthens the presumption, thus increasing the burden Respondents must shoulder on

³¹ See *Staples 1997*, 970 F. Supp. at 1082-83 n.14 (“[W]hen the Court discusses ‘raising’ prices it is also with respect to raising prices with respect to where prices would have been absent the merger, not actually an increase from present price levels.”).

rebuttal. *Sysco*, 113 F. Supp. 3d at 71–72; *see id.* at 72 (“The more compelling the [FTC’s] *prima facie* case, the more evidence the defendant must present to rebut [the presumption] successfully.” (quoting *Baker Hughes*, 908 F.2d at 991)).

In this case, there is direct evidence that the Merger is likely to lead to anticompetitive effects. The Court need not guess whether Tronox intends to raise prices after the Merger; Tronox has explicitly stated that it intends to do so. At trial, PPG, one of Tronox and Cristal’s largest customers, testified that Tronox executives John Romano and Ian Mouland told PPG that Tronox would raise prices post-Merger. (CCFF ¶ 708). Mr. Romano explained to PPG that “Cristal’s price is too low in the market,” that Cristal “give[s] [TiO₂] away,” and that Cristal lacks “market discipline.” (CCFF ¶¶ 699, 709–10). That testimony was un rebutted at trial, even though both Tronox executives testified as live witnesses. (CCFF ¶ 712). Consistent with Tronox’s statements to PPG, Mr. Mouland previously wrote in an internal Tronox email that he was { [REDACTED] [REDACTED] [REDACTED] } (CCFF ¶ 707).

Other TiO₂ market participants have similarly acknowledged the Acquisition’s likely effects on competition. For example, in a September 2017 presentation, Kronos advised investors that “[h]igher concentration increases likelihood of continued capacity constraints.” (CCFF ¶ 722). In a June 2017 investor presentation, Venator projected that the acquisition would { [REDACTED] [REDACTED] [REDACTED] }. (CCFF ¶ 723). Similarly, in a presentation to analysts a month later, Venator observed that { [REDACTED] [REDACTED] [REDACTED] }

[REDACTED] } (CCFF ¶ 724).

The speaker’s notes to this slide { [REDACTED]

[REDACTED] } (CCFF ¶ 724). { [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶ 724).³² Consistent with these competitors’ observations about the impact of the merger, just after the acquisition was announced, Tronox’s then-CEO Tom Casey and Peter Huntsman (the Chairman of Venator) congratulated each other on the deal, with Mr. Casey observing that the merger “will be very good for our shareholders - and if today’s market reaction is an indication, for yours, and Chemours’ and Kronos’ too.” (CCFF ¶ 706).³³

Customers, meanwhile, have testified at trial and in depositions regarding their well-founded concerns that the Merger will weaken competition and lead to higher prices, output reduction, or both.³⁴ (CCFF ¶¶ 701–02, 713–20). For example, True Value testified that { [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] }. (CCFF ¶ 714). Similarly, { [REDACTED]

[REDACTED]

³² Cristal also recognizes that { [REDACTED] } . (CCFF ¶705).

³³ The ordinary course documents from the parties and other TiO2 producers are particularly probative of the likely anticompetitive effects of the Proposed Acquisition. *See Cardinal Health*, 12 F. Supp. 2d at 63-64 (citing documents that discuss more “orderly” and “rational” pricing after merger, and reductions in “excess capacity”).

³⁴ Customer testimony can be highly probative of the likely effects of the Proposed Acquisition. *See Merger Guidelines*, §2.2.2 (customer testimony); *Staples 1997*, 190 F. Supp. 3d at 100 (crediting fact witness testimony that they would lose “tremendous leverage” as a result of merger as evidence that “strengthens [FTC’s] claim that harm will result in the form of loss of competition”); *Anthem*, 236 F. Supp. 3d 171 at 221 (crediting testimony of customers that “[t]he more vendors we have, the more competitive . . . the responses are going to be”).

[REDACTED] } (CCFF ¶ 715). This evidence, as well as the extensive evidence described below, both strengthens the presumption that the Acquisition will lead to anticompetitive effects and serves as direct evidence of likely effects.

A. The Proposed Acquisition Would Increase the Likelihood of Coordination in an Already Vulnerable Market

“Merger law rests upon the theory that, where rivals are few, firms will be able to coordinate their behavior, either by overt collusion or implicit understanding, in order to restrict output and achieve profits above competitive levels.” *Heinz*, 246 F.3d at 715 (internal quotation marks omitted); *accord CCC Holdings*, 605 F. Supp. 2d at 60; *United States v. H&R Block*, 833 F. Supp. 2d 36, 77 (D.D.C. 2011). “[A]bsent extraordinary circumstances, a merger that results in an increase in concentration above certain levels raise[s] a likelihood of ‘interdependent anticompetitive conduct.’” *CCC Holdings*, 605 F. Supp. 2d at 60 (citation and internal quotation marks omitted) (quoting *United States v. General Dynamics Corp.*, 415 U.S. 486, 497 (1974)). Because Complaint Counsel has established a *prima facie* case, Respondents bear the burden of “produc[ing] evidence of ‘structural market barriers to collusion’ specific to this industry that would defeat the ‘ordinary presumption of collusion’ that attaches to a merger in a highly concentrated market.” *H&R Block*, 833 F. Supp 2d. at 77 (quoting *Heinz*, 246 F.3d at 725); *accord CCC Holdings*, 605. F. Supp. 2d at 60.

“[C]oordinated interaction involves a range of conduct, including unspoken understandings about *how* firms will compete or refrain from competing.” *H&R Block*, 833 F. Supp. 2d at 77 (citing *Merger Guidelines* § 7). Thus, coordination includes not only unlawful collusion, but also lawful tacit coordination or parallel accommodating conduct. *Merger*

Guidelines § 7 (“Coordinated interaction includes conduct not otherwise condemned by the antitrust laws”).³⁵ Under the Clayton Act’s incipency standard, Complaint Counsel need not show how “coordination likely would take place.” *Merger Guidelines* § 7.

The *Merger Guidelines* outline six areas of inquiry, each of which can support the likelihood that a market is vulnerable to coordination: (1) there is a mutual awareness among firms of their shared interest (interdependence), (2) the number of firms in the market is small, (3) the products in the market are homogenous, (4) firms can and do monitor one another’s behavior (transparency), (5) the price elasticity of demand is low, and/or (6) there is a past history of actual or attempted coordination among firms. (CCFF ¶ 401); *Merger Guidelines* § 7.2.

Before trial, another court had already observed “the market for titanium dioxide is an oligopoly. Titanium dioxide is a commodity-like product with no substitutes, the market is dominated by a handful of firms, and there are substantial barriers to entry.” *Valspar*, 873 F.3d at 190. The evidence in this case bore that out. Indeed, the Acquisition would leave Tronox and Chemours in control of {█}% of North American sales, and over {█}% of North American capacity. (CCFF ¶ 391). Such a merger is likely to cause anticompetitive effects. As one court explained, “With only two dominant firms left in the market, the incentives to preserve market shares would be even greater, and the costs of price cutting riskier, as an attempt by either firm to undercut the other may result in a debilitating race to the bottom.” *CCC Holdings*, 605 F. Supp. 2d at 67.

³⁵ Respondents’ arguments that Complaint Counsel must show an “agreement” that is “enforced” ignores the range of otherwise lawful (but anticompetitive) conduct that is condemned by the Clayton Act’s incipency standard, including conduct that is “individually rational . . . but nevertheless emboldens price increases and weakens competitive incentives to reduce prices or offer customers better terms.” *Merger Guidelines* § 7. Complaint Counsel need not show that the transaction will result in an illegal cartel.

This market is vulnerable to coordination, whether by express collusion, tacit collusion, or parallel accommodating conduct. (CCFF ¶¶ 398–99, 402). There are a small number of meaningful competitors—five, which account for 99% of all chloride TiO₂ sales—in the North American market for chloride TiO₂, and the Acquisition would eliminate one of those competitors. (CCFF ¶ 404). “The fewer competitors there are in a market, the easier it is for them to coordinate their pricing without committing detectable violations of section 1 of the Sherman Act, which forbids price fixing.” *Hospital Corp. of Am. v. FTC*, 807 F.2d 1381, 1387 (7th Cir. 1986). The product, chloride TiO₂, is relatively homogenous; indeed, testimony and documents from Tronox { [REDACTED] } (CCFF ¶ 493; *see also* CCFF ¶¶ 494–97). Dr. Hill determined that demand for chloride TiO₂ in North America is highly inelastic. (CCFF ¶ 499). And there is a well-documented past history of actual or attempted coordination. (CCCOL ¶ 29). Interdependence and transparency in this market permeate the documents and testimony of Respondents, and were described at trial as well as in Complaint Counsel’s findings of fact. *See* (CCFF § V.A.i.b., c., d.).

Transparency heightens the opportunities for coordination/interdependent conduct. *See CCC Holdings*, 605 F. Supp. 2d at 62, 65. Here, the major producers’ pricing and supply decisions are easily observed by their competitors. (CCFF ¶ 461). The major producers have regularly announced their intentions to raise price, whether by press release or letters to customers. (CCFF ¶ 461). These price increase announcements are typically in close proximity, and for similar amounts. (CCFF ¶¶ 426, 462). By announcing intentions to raise price, { [REDACTED] } the industry can reach a consensus on price. (CCFF ¶ 420 (PX2055 at 022)).

For example, in December 2015, Chemours announced a price increase of \$150/MT. { [REDACTED] }, Tronox decided to match the price increase. (CCFF ¶ 417). Tronox’s decision to follow the price increase spread to Cristal and Venator within a day. (CCFF ¶ 421). Tronox’s former Chairman explained that the purpose of the price increase announcement was to { [REDACTED] } (CCFF ¶ 418). He continued that { [REDACTED] } (CCFF ¶ 419). { [REDACTED] } (CCFF ¶ 419). And Cristal similarly understood the price increase announcement as “an initiative to taste the market readiness to accept this announced increase.” (CCFF ¶ 421). Pricing transparency allowed the producers to coordinate price increase attempts, and as Tronox recognizes, { [REDACTED] } (E.g., CCFF ¶ 415).

The *Valspar* court further acknowledged this competitive dynamic:

DuPont does not claim that the competitors’ numerous parallel price increases were discrete events – nor could it do so with a straight face. But it doesn’t need to. The theory of interdependence recognizes that price movement in an oligopoly will be just that: *interdependent*. And that phenomenon frequently will lead to successive price increases, because oligopolists may “conclude that the industry as a whole would be better off by raising prices.” *Valspar*, 873 F.3d at 195.

As shown at trial, the producers have the opportunity to learn much about their competitors through public statements in earnings calls, investor presentations, trade data, industry conferences, meetings with ratings agencies, and other public forums that reveal key competitive information about pricing, inventories, and production levels, all of which lays the groundwork for successful coordination. (CCFF ¶¶ 462–65). In fact, PPG’s Paul Malichky

testified that the level of detail in this industry's earnings calls is "very unique," { [REDACTED] } (CCFF ¶ 462). In only one earnings call, Tronox was able to convey to its competitors that it was reducing inventory levels, cutting production, and working to reduce feedstock production, all in the service of raising prices:

Industry supply and demand will return to balance. The obvious question is, when? And I can't tell you that because I can't speak for the industry as a whole. However, I can tell you that we are reducing our inventory, freeing up working capital, generating cash, and accelerating the return to supply-demand balance.

From their public announcements, we believe others at both the feedstock and the pigment levels are doing the same thing. So, we're optimistic about the return to a more normal market conditions in TiO₂. (CCFF ¶ 472 (Tronox Q3 2015 Earnings Call)).

[W]e're addressing when the prices turn. So we've addressed the cash spending while the prices are down. And then the question is, when will they turn? We're addressing that by managing our production, so that inventories get reduced to normal or below normal levels. And when that happens, prices will rise.

We -- from what we see with Chemours and Huntsman and presumably the others as well, they're doing the same thing. We see them acting in the same way." (CCFF ¶ 472 (Tronox Q3 2015 Earnings Call)).

This type of information can facilitate coordination, by increasing the predictability of Tronox's competitive initiatives and responses for competitors. (CCFF ¶ 463). In fact, shortly after Tronox's Q3 2015 earnings call detailing its decision to idle capacity at its North American chloride TiO₂ plant,³⁶ Chemours announced its own decision to curtail chloride TiO₂ production. In response to that news, Tronox's CEO exclaimed: "It's good that they can follow the leader!" (CCFF ¶ 430). And although Tronox's counsel told the Court in opening statements

³⁶ Tronox provided extraordinarily detailed information to the public, and therefore competitors, about its output in its Q2 2015 earnings call: "Production has been suspended at one of our six processing lines in Hamilton and one of our four processing lines at Kwinana, both of which are pigment plants. Together, these processing line curtailments represent approximately 15% of total pigment production." (CCFF ¶ 496 (Tronox Q2 2015 Earnings Call)).

that the evidence would show this statement was a “joke,” Respondents introduced no such evidence. Williams, Tr. 100.

The sales forces of both Tronox and Cristal are adept at gathering information from customers and other sources about the actions of their competitors. (E.g., CCF ¶¶ 476–92).

{ [REDACTED] } (CCF ¶ 486).
{ [REDACTED] } (CCF ¶ 487). { [REDACTED] } (CCF ¶ 488). { [REDACTED] } (CCF ¶¶ 476–82) { [REDACTED] } (CCF ¶¶ 490–92).

The market also demonstrates the oligopolistic interdependence that the *Valspar* and *In re Titanium Dioxide* courts have cited. Tronox sales executive Arjen Duvekot drafted a presentation that explained the { [REDACTED] }³⁷ (CCF ¶ 452). { [REDACTED] } (CCF ¶ 726) { [REDACTED] } (CCF ¶ 407

³⁷ John Romano’s testimony corroborated this description of the market. (CCF ¶¶ 414–15).

(Tronox TiO2 Strategy and 5-Year Plan Update 2017)). { [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] } (CCFF ¶ 459 (Tronox TiO2 Strategic Plan
2017)).

Consistent with its overall emphasis on not undercutting competitors, Tronox opted to avoid such competition at every turn, even where it has product available to sell to its customers.

1. [REDACTED] } (CCFF ¶ 457).
2. [REDACTED] } (CCFF ¶ 455).
3. [REDACTED] (CCFF ¶ 528).
4. [REDACTED] (CCFF ¶ 528).
5. [REDACTED] } (CCFF ¶ 533).

Tronox’s former CEO plainly (and publicly) summarized their approach: “As you saw, we have not gained market share by trying to reduce price. We don't think that's the appropriate strategy going forward” (CCFF ¶ 433). And Tronox has publicly recognized coordinated actions taken with its competitors to reduce output and maintain prices:

“I can tell you that I thought last year Huntsman, I believe Cristal, Chemours, and we all lowered our plant utilization rates, and we all talked about declining inventories

which we had set as a goal. That is that we wanted to reduce inventories. Clearly, the way that one reduces inventories is one reduces production and continues to maintain sales, which is what we all tried to do.” (CCFF ¶ 474).

Cristal has often shared Tronox’s approach toward oligopolistic pricing, explaining in 2011, as demand in North American began to weaken, that “[t]he ‘*Evil Sin*’ would be to attempt to lower prices to take market share as markets weaken. *We Must Hold Price!*” (CCFF ¶ 438).

{ [REDACTED]
[REDACTED]
[REDACTED] } (CCFF ¶ 439).

But Cristal also has departed from an accommodative strategy, causing disruption and forcing Tronox to respond to aggressive moves:

[REDACTED]

[REDACTED]

(CCFF ¶ 711 (email from Tronox distributor)).

Tronox’s Ian Mouland wrote in response, and then testified at trial, that { [REDACTED]
[REDACTED] } (CCFF ¶ 519). John Romano and Ian Mouland also explained to PPG that Cristal lacks “market discipline.” (CCFF ¶ 699). Indeed, { [REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶ 504). Plainly, this was at odds with Tronox’s strategy, which was to { [REDACTED]

[REDACTED] } (CCFF ¶ 452).

Removing Cristal as a competitor will eliminate opportunities for it to compete aggressively and to disrupt Tronox's strategy of pricing discipline and avoiding driving down price. That alone provides a "credible basis on which to conclude that the merger may enhance [the market's] vulnerability to coordination." *See Merger Guidelines* § 7.1. Fundamentally, Tronox has adopted a strategy that is consistent with facilitating coordination among its rivals. (*E.g.*, CCFE ¶¶ 527–28). And customers feel the effects of that strategy, highlighting the difficulty of getting supply in this industry. (CCFF ¶ 556). The Acquisition would place even more capacity under its purview and eliminate a rival that, at times, has refused to cooperate. And it would eliminate a competitor for whom customers "might turn for succor if the other sellers tried to jack prices above the competitive level." *Elders Grain*, 868 F.2d at 907.

Additionally, the Acquisition will likely increase transparency in the market. Cristal is the only major producer that is not a publicly-traded company. As explained above, public engagement with investors and traders—by design—increases transparency into the strategies and actions of the other major producers. (CCFF ¶ 539, 544). The Acquisition would result in Tronox making public disclosures about Cristal's competitive activities that Cristal does not make today. *See* (CCFF ¶ 539, 544).

Respondents' assertion that the industry faces "fierce competition" is both factually wrong and misses the point. The existence of competition is not a defense to an otherwise anticompetitive merger. Indeed, Complaint Counsel is seeking to block the proposed merger precisely to ensure that any competition that does exist is not diminished. *See CCC Holdings*, 605 F. Supp. 2d at 34-35 (enjoining merger to preserve the existing "vigorous" competition in the market); *H&R Block*, 833 F. Supp. 2d at 77 (that there will be ongoing competition post-merger "is not necessarily inconsistent with some coordination"); *Cardinal Health*, 12 F. Supp.

2d at 65 (enjoining merger to preserve vigorous competition: “Over the past ten years, fierce competition among the four Defendants has led to falling prices.”).

In any case, the TiO₂ industry is not “fiercely competitive;” it is an oligopoly characterized by “anticompetitive interdependence.” *Valspar*, 873 F.3d at 197. As set forth in Complaint Counsel’s Proposed Findings of Facts, voluminous evidence shows that the industry is far from “fiercely competitive.” (*E.g.*, CCF § V.A.i.b.). Respondents’ self-serving testimony from their own executives on this point should be given little weight. *In re The B.F. Goodrich Co.*, 1988 WL 1025464, at *94 (F.T.C. Mar. 15, 1988) (“Given the interest of industry participants in establishing that their industry is highly competitive, this sort of generalized testimony is not particularly probative.”). Moreover, customers have described a market in which parallel price increases are common, in which supply is tight, and in which they have had to accept a series of price increases. (CCFF ¶¶ 638–39).

B. The Merger Would Increase Tronox’s Incentive and Ability to Reduce Output Unilaterally

In addition to increasing the likelihood of coordination, the Merger will increase Tronox’s incentive and ability to reduce its TiO₂ output. The price implications of these output reductions are clear: Respondents and other North American TiO₂ producers consistently credit industry output reductions—by outright facility closures, temporary shutdowns, or slowdowns—with contributing to higher chloride TiO₂ prices. This impact is not surprising given the basic principles of the chloride TiO₂ market, where price is driven by supply and demand. (CCFF ¶¶ 558-62). As PPG described at trial, { [REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶ 557).

As the *Merger Guidelines* recognize, “[i]n markets involving relatively undifferentiated products,” a merged firm may “find it profitable unilaterally to suppress output and elevate the market price. A firm may leave capacity idle, refrain from building or obtaining capacity that would have been obtained absent the merger, or eliminate preexisting production capabilities.” *Merger Guidelines* § 6.3. This is because the “merger may provide the merged firm a larger base of sales on which to benefit from the resulting price rise, or it may eliminate a competitor that otherwise could have expanded its output in response to the price rise.” *Id.* The intuition underlying the former principle is that the larger a firm’s market share, the greater benefit it receives from the higher prices resulting from the output reduction, increasing the firm’s incentives to do so.³⁸ (CCFF ¶¶ 562-64).

1. North American TiO₂ Producers Already Have a History of Reducing Output to Support Pricing and Those Incentives Will Grow With the Merger

Tronox’s history of curtailing North American production and taking capacity offline to support higher North American chloride TiO₂ pricing is well documented. In 2009, Tronox closed its chloride TiO₂ facility in Savannah, Georgia, { [REDACTED] } (CCFF ¶ 590). Following the shutdown, { [REDACTED] } { [REDACTED] } (CCFF ¶ 591). Indeed, the closure of Tronox’s Savannah facility

³⁸ The *Merger Guidelines* further recognize that unilateral output suppression is more likely when: “(1) the merged firm’s market share is relatively high; (2) the share of the merged firm’s output already committed for sale at prices unaffected by the output suppression is relatively low; (3) the margin on the suppressed output is relatively low; (4) the supply responses of rivals are relatively small; and (5) the market elasticity of demand is relatively low.” *Merger Guidelines* § 6.3. All of those factors would be met here. (CCFF ¶¶ 562-67.) For example, in { [REDACTED] } (CCFF ¶ 564). Short-term pricing would allow North American TiO₂ sellers to adjust prices upward in response to reduced output. (CCFF ¶ 564). Additionally, North American customer demand for chloride TiO₂ is highly inelastic, meaning that customers would not substitute away from chloride TiO₂ if prices were to rise. (CCFF ¶ 567). As discussed below, the supply response from the remaining North American chloride TiO₂ suppliers is also likely to be small. (CCFF ¶¶ 566, 636-57).

was part of a larger reduction in industry capacity around that time that industry insiders credit with leading to significant price increases over the next several years. (CCFF ¶¶ 431, 592, 621).

Since Tronox closed the Savannah plant, Respondents have at various times reduced production at their remaining TiO2 plants with the objective of increasing TiO2 prices. Complaint Counsel has identified no fewer than nine periods over the past six and a half years when Respondents produced well below their North American capacity for at least three consecutive months. (CCFF ¶¶ 595, 601, 605, 625). The following examples of prior output curtailments reveal both the intentions behind and results of several of those recent reductions.

For instance, Tronox lowered its North American chloride output in {REDACTED}.

(CCFF ¶ 595.) {REDACTED}

{REDACTED}

{REDACTED}

{REDACTED} (CCFF ¶ 593);

see also (CCFF ¶ 573) ({REDACTED}

{REDACTED}

{REDACTED}

{REDACTED}

{REDACTED} (CCFF ¶ 596). {REDACTED}

{REDACTED}

{REDACTED} (CCFF ¶ 596). {REDACTED}

{REDACTED} (CCFF ¶ 598). {REDACTED}

{REDACTED} (CCFF ¶

598). { [REDACTED]

[REDACTED]

{ [REDACTED] } (CCFF ¶ 597).

{ [REDACTED]

[REDACTED]

{ [REDACTED] } (CCFF ¶ 601). { [REDACTED]

[REDACTED]

[REDACTED]

{ [REDACTED] } (CCFF ¶ 602). { [REDACTED]

[REDACTED] } (CCFF ¶ 602).

In 2015, Tronox once again curtailed TiO₂ production for an extended period, { [REDACTED] } in order to { [REDACTED] } (CCFF ¶¶ 605, 607-08). At that time, Tronox’s then-CEO told investors “that an upward move in pigment selling prices will be predicated on a reduction of supply in the pigment market relative to demand, and/or an upward move in feedstock selling prices and we expect to see both.” (CCFF ¶ 606). He later explained that Tronox had taken steps to “manag[e][] our production so that inventories get reduced to normal or below normal levels[;] [a]nd when that happens, prices will rise.”³⁹ (CCFF ¶ 610). Both { [REDACTED]

[REDACTED]

[REDACTED]

{ [REDACTED] } (CCFF ¶ 607).

³⁹ In 2015, shortly after Tronox’s CEO publicly stated that Tronox had idled part of its Hamilton plant, { [REDACTED] } (CCFF ¶ 430). Tronox cheered these developments as “Good news!” with Tronox’s CEO remarking, “[i]t’s good [Chemours] can follow the leader!” (CCFF ¶¶ 430, 585).

In early 2016, when a distributor conveyed concerns regarding supply shortages for some Tronox chloride TiO₂ grades, a Tronox sales executive explained that { [REDACTED] [REDACTED] [REDACTED] } (CCFF ¶ 611). The Tronox executive further explained that { [REDACTED] [REDACTED] [REDACTED] [REDACTED] } (CCFF ¶ 611).

Following the 2015 output reduction, Tronox reiterated its commitment to managing production volumes:

- “We believe that a very disciplined approach to production, to managing supply relative to demand, is what has facilitated the recovery in our markets and we intend to continue to be disciplined about that. So we don’t intend to bring back the full production instantaneously simply because we could see the very first signs of price recovery.” (CCFF ¶ 473).
- [REDACTED] (CCFF ¶ 576).
- [REDACTED] } (CCFF ¶ 613).

In 2017, after announcing the Cristal acquisition, Tronox once again reaffirmed its commitment to a strategy of matching production to demand and to market discipline, { [REDACTED] [REDACTED] [REDACTED] } (CCFF ¶ 614).

{ [REDACTED] [REDACTED] [REDACTED] } (CCFF ¶ 615) ({ [REDACTED] [REDACTED] [REDACTED] }

[REDACTED]
[REDACTED] }).

That practice is likely to increase with the merger. During an investor call following the deal announcement, Tronox’s former CEO responded to a question about how the acquisition would affect Tronox’s approach to supply discipline and pricing:

I think we have tried to be economically rational over these last several years. If there was surplus supply in the market, we slowed down our production, and we did that with respect to pigment. We also did it with respect to mineral sands. You remember over the last couple of years that we shut down about 75,000 tons of pigment production when we felt that all we were doing was adding supply to inventory levels. And we shut down two of our four slag furnaces.

(CCFF ¶¶ 616-17). Additionally, an internal Tronox document { [REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶ 618).

Cristal has likewise recognized that reducing output leads to higher prices. After closing its Hawkins Point plant in 2009, Cristal considered reopening the plant when prices rose dramatically in 2011 and 2012. (CCFF ¶ 622). However, Cristal decided against doing so because “the only certain factor is that the markets will remain tighter with greater pricing power the longer we leave [Hawkins Point] down.” (CCFF ¶ 622.) A 2016 Cristal presentation observed that { [REDACTED]

[REDACTED] } (CCFF ¶ 628). In fact, Cristal acknowledges that { [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶ 629).

The other North American TiO₂ producers also recognize the connection between reduced output and higher pricing. In a recent investor presentation, Kronos observed that

industry “structural improvements” drove a \$250 million increase in EBITDA and that “baseline TiO₂ capacity has been permanently reduced with limited near-term ability to increase capacity.” (CCFF ¶ 583). Chemours, meanwhile, has told its investors that it will “vary [its] production in line with customer demand” and operate “at lower levels of output when customer needs . . . warrant that we adjust our production.” (CCFF ¶ 584).

2. Sound Economic Models Also Predict that the Merged Firm Will Reduce Output

Respondents’ recent actions show that they have reduced output in the past, that they understand that reducing output increases TiO₂ prices, and that they can reduce output again—particularly after the merger—when they will have an even greater ability and incentive to do so. To corroborate this evidence, Dr. Hill employed two economic models commonly applied to commodity markets to test whether withholding output would be profitable for the merged firm, and if it would result in customer harm. (CCFF ¶¶ 658-59). As Dr. Hill testified, the models answered both questions with a resounding yes. (CCFF ¶ 659).

Dr. Hill’s first model, the Capacity Closure Model (“CCM”), incorporated Respondents’ actual cost data for reducing output as well as measures of likely responses to that reduction, and found that it would be profitable for the merged firm to curtail output through a number of different scenarios involving idling at the merged firm’s North American plants. (CCFF ¶ 668). To ensure accuracy, Dr. Hill relied on Respondents’ own documents and data, including various internal calculations of the costs of reducing output, to capture the costs of actually doing so. (CCFF ¶ 665). The scale of the predicted capacity cuts, including the most profitable scenario, is on par with the combined output reduction taken by the Respondents during prior periods of lowered production. (CCFF ¶ 669).

Dr. Hill also considered whether various potential responses to the output withdrawal would render the output reduction unprofitable. (CCFF ¶ 666). He examined whether customers would switch from chloride TiO₂ to another product (elasticity of demand), or if a response from rivals (i.e., increased output, imports, or redirect exports) would render the merged firms' output reduction unprofitable. (CCFF ¶ 666). To determine these responses, Dr. Hill analyzed real-world evidence and data of how North American customers and producers have responded to chloride TiO₂ price changes in the past. (CCFF ¶ 667). Dr. Hill then incorporated those responses into his model, and found them insufficient to render an output reduction by the merged firm unprofitable. (CCFF ¶ 667-68). Dr. Hill also checked whether the CCM predicted that the stand-alone firms would have an incentive to reduce output using the same data, and found that they did not, confirming that the merger increases the incentives to withhold output. (CCFF ¶ 670).

The second model Dr. Hill used, the Cournot Model, also predicts that the merger would result in higher chloride TiO₂ pricing in North America. (CCFF ¶ 684). The Cournot model is the "standard framework" for analyzing potential harm in commodity markets. (CCFF ¶ 681). While similar to CCM because it examines whether the merger increases incentives to reduce output, Cournot differs, for example, because it allows "unbridled" rival responses to an output reduction, unlike CCM, which instead relies on evidence of historical responses. (CCFF ¶ 682). The fact that two different models each find that the Merger would cause significant anticompetitive effects confirms the robustness of the result and shows that the prediction is not dependent on the specific model being used. (CCFF ¶ 683).

it.” (CCFF ¶ 594).

Respondents also attack Dr. Hill’s CCM.⁴⁰ First, they criticize the CCM for underestimating potential rival responses to the merged firm’s output reduction, Resps.’ Pretrial Br. at 45-46, but they ignore that Dr. Hill analyzed real-world evidence and data to determine likely rival responses to chloride TiO2 price increases in North America, incorporated them into his model, and found them insufficient to render an output reduction by the merged firm unprofitable.⁴¹ (CCFF ¶¶ 667-68). As discussed above, Dr. Hill did not “assume,” for example, that redirected exports to North America would not defeat a price increase. Rather, he analyzed historical data showing that North American producers had not redirected exports back to North America in the past, even when North American chloride TiO2 prices were significantly higher than they are today (or would be with a 10% price hike). (CCFF ¶¶ 643-44, 652-57).

Dr. Hill’s results are consistent with deposition testimony from { [REDACTED] }
[REDACTED] }⁴² (CCFF ¶ 653). { [REDACTED] }
[REDACTED]
[REDACTED] }
(CCFF ¶¶ 654-55). { [REDACTED] }
[REDACTED] } (CCFF ¶ 654). { [REDACTED] }
[REDACTED]

⁴⁰ Respondents mischaracterize Dr. Hill’s corrections to the CCM. While they claim that the corrected simulation “fundamentally differs from Dr. Hill’s original simulation,” Resps.’ Pretrial Brief at 46, as Dr. Hill testified, [REDACTED] } (CCFF ¶ 671).

⁴¹ Notably, Dr. Hill’s other oligopoly model, Cournot, allows for “unbridled” rival responses but yet still predicts significant harm from this merger. CCFF ¶ 682.

⁴² Kronos and Venator, the two remaining North American TiO2 producers, have { [REDACTED] } (CCFF ¶ 657). [REDACTED] (CCFF ¶ 657). [REDACTED] } (CCFF ¶ 649).

[REDACTED] } (CCFF ¶ 656).

Similarly, Dr. Hill did not incorporate an increase in North American domestic production of chloride TiO₂ into his model, beyond the growth in demand, because the record evidence shows it is unlikely to occur in response to any of the predicted output reduction scenarios. { [REDACTED]

[REDACTED] } (CCFF ¶¶ 637-39). Additionally, any plant expansion would be expensive and time-consuming (well beyond the one-year time-frame contemplated by the model). (CCFF ¶¶ 667, 737, 739-40). Debottlenecking efforts, meanwhile, have typically not increased capacity beyond the rate of demand growth already factored into the model and, in any event, have been largely exhausted. *See* (CCFF ¶¶ 667, 738). { [REDACTED]

[REDACTED] } (CCFF ¶¶ 636, 735-36). There is no evidence of any large-scale output expansions by North American producers even in response to the price increases in 2012, when North American chloride TiO₂ prices exceeded \$4,000 per ton, well above the price increase predicted by the CCM. (CCFF ¶ 729.) Given these facts, it is not surprising that Respondents cannot point to any evidence showing that North American TiO₂ producers have increased output in response to output restrictions undertaken by another North American TiO₂ producer.

When the evidence *did* show a potential response to the output reduction, Dr. Hill *did* incorporate it into his model. For example, Dr. Hill included an import response to the output reduction, albeit a small one, because the real-world evidence and import data indicated only limited import responses in the past. (CCFF ¶ 642). { [REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶ 645). { [REDACTED]

[REDACTED]

[REDACTED]⁴³ } (CCFF ¶¶ 646-47).

{ [REDACTED]

[REDACTED] } (CCFF ¶¶ 649-50). { [REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶¶ 651, 755-57).

Significantly, North America’s extended run of higher prices only ended in 2017 when supply disruptions hit both Europe (Pori fire) and Asia (rising demand and feedstock costs along with environmental shutdowns), not as a result of expanded output, higher imports, or repatriated product responding to higher North American prices. (CCFF ¶¶ 631-33, 771-74, 779-781). Further, that European TiO₂ prices rose so dramatically following the (incidental) loss of output in Europe also shows the impact that an output withholding can have on TiO₂ prices in the affected region (as well as the absence of a mitigating response). (CCFF ¶¶ 632-35).

While Dr. Hill’s quantitative assessments of how rivals would respond to changes in the merged firm’s output match the views expressed by market participants as well as the data, Respondents present estimates of their own that purportedly predict more aggressive responses by North American importers and exporters. Those measures, however, are belied by the qualitative and quantitative evidence discussed above showing sustained regional pricing differences not mitigated by rival responses. They are also technically unsound. (CCFF ¶¶ 671-

⁴³ Respondents point to a handful of internal documents, primarily from early 2015, expressing prospective concern that foreign producers might increase imports in response to higher North American prices. Resps.’ Pretrial Br. at 20, 23. However, those fears were not realized. As Tronox’s CEO explained to investors in late 2015, “[w]e do not see that exports from China or from Europe are playing a material role in the competitive balance, particularly in the North American market.” (CCFF ¶ 396).

78). First, Respondents' expert, Dr. Ramsey Shehadeh, attempted to calculate his own import elasticity of rutile TiO₂,⁴⁴ but his measure suffers from a multicollinearity problem, rendering its results unreliable. (CCFF ¶ 672). Dr. Shehadeh also limited the time-frame he considered (2011-2015) without justification, excluding both earlier and later periods. (CCFF ¶ 672). When each of these problematic choices is addressed, Dr. Shehadeh's estimates are similar to Dr. Hill's. (CCFF ¶ 672). Dr. Shehadeh also cites elasticity estimates from two academic papers that he claims show strong import and export responses to North American price changes. (CCFF ¶¶ 673, 675). But Dr. Shehadeh misconstrues the nature of each estimate, and neither addresses how the overall quantity of North American rutile TiO₂ imports or exports would respond to price changes in North America. (CCFF ¶¶ 673, 675). In light of these errors, Respondents' elasticity estimates should be disregarded.

Next, Respondents claim that only a "small" rival response is necessary to defeat price increases predicted by the CCM.⁴⁵ Resps.' Pretrial Br. at 45. Respondents, however, once again ignore that Dr. Hill analyzed real-world historical data of rival responses, incorporated that reality into his model, and found that the output reduction would be profitable. (CCFF ¶¶ 667-69.) [REDACTED] } (CCFF ¶ 679). And that figure likely understates the real scope of the required response. [REDACTED]

⁴⁴ Dr. Shehadeh never provides an import or export elasticity measure for chloride TiO₂.

⁴⁵ In its pretrial brief, Respondents claim that [REDACTED]

[REDACTED] (CCFF ¶ 679).

[REDACTED] } (CCFF ¶ 679). This is hardly the “small” change Respondents imply.

Finally, Respondents assert that the CCM failed to predict Chemours’s behavior—i.e., that Chemours currently sells more TiO₂ than predicted when Dr. Shehadeh re-ran the CCM to assess Chemours’ likely behavior. Resps.’ Pretrial Br. at 46 & n.180. However, Respondents omit that { [REDACTED]

[REDACTED] } (CCFF ¶ 678). { [REDACTED] } (CCFF ¶ 678).

Respondents’ criticisms of Dr. Hill’s Cournot model are equally unavailing. Respondents argue that the Cournot model is inappropriate because it suggests the merger may be unprofitable, but that is because, among other reasons, they mistakenly focus on variable profits, not total profits. (CCFF ¶ 694). Respondents also note that the Cournot model predicts at least some harm even for a merger in an unconcentrated market. (CCFF ¶ 686). Not only is Cournot considered a standard oligopoly model despite that potential outcome, but the relevant question is not the prediction of harm itself, but its magnitude. (CCFF ¶ 686). Here, Dr. Hill’s Cournot model predicts a substantial price increase from the merger—over eight percent. (CCFF ¶ 686). While Cournot may technically predict a price increase from a merger in an unconcentrated industry, the measure would be dramatically smaller. Respondents further argue that the Cournot model implies that large chloride TiO₂ suppliers have unrealistically low costs. (CCFF ¶ 689). However, the { [REDACTED] } (CCFF ¶¶ 689-90).

Dr. Shehadeh also purports to “fix” Dr. Hill’s Cournot model by applying a framework from an unpublished working paper (Greenfield et al.). (CCFF ¶ 691). Dr. Shehadeh claims those “fixes” cause the price effect predicted by Cournot to disappear. (CCFF ¶ 691). Dr. Shehadeh’s reliance on the Greenfield et al. approach is unwarranted here. Greenfield et al. were responding to a quirk in the California refinery market where the standard Cournot model predicted marginal costs below that of one of the inputs to the finished product, an implausible result. (CCFF ¶ 691). No such issues arise here—the margins predicted by the Cournot model are similar to those actually observed in the TiO₂ market—obviating the need to apply the Greenfield et al. approach. (CCFF ¶ 691). Moreover, despite Dr. Shehadeh’s claims to the contrary, it was not the Greenfield et al. “fixes” he used that reduced the predicted price effect. (CCFF ¶¶ 691-92). Rather, it was Dr. Shehadeh’s imposition of an inappropriately low margin, contrary to the factual evidence, that alters the Cournot model’s result. (CCFF ¶ 693).

As shown above, the evidence in this case demonstrates that Respondents already recognize the benefits of unilaterally reducing output and that their incentives to do so will increase with the Merger. Respondents’ efforts to show otherwise are unavailing. Thus, the Merger will likely result in unilateral harm.

IV. Respondents Did Not Rebut The Strong Presumption Of Illegality

With the presumption of illegality firmly established, the burden shifts to Respondents to rebut the presumption by “produc[ing] evidence that ‘shows that the market-share statistics [give] an inaccurate account of the [acquisition’s] probable effects on competition’ in the relevant market.” *Heinz*, 246 F.3d at 715 (quoting *United States v. Citizens & S. Nat’l Bank*, 422 U.S. 86, 120 (1975)); *Staples 2016*, 190 F. Supp. 3d at 115; *Sysco*, 113 F. Supp. 3d at 23.⁴⁶

⁴⁶ Although the burden of production shifts to Respondents, the burden of persuasion remains at all times with the FTC. *Staples 2016*, 190 F. Supp. 3d at 116.

Here, Respondents carry a heavy burden given the strength of the *prima facie* case. *See Staples 2016*, 190 F. Supp. 3d at 115 (“The more compelling the *prima facie* case, the more evidence the defendants must present to rebut it successfully.” (quoting *Baker Hughes*, 902 F.2d at 991)). As shown *supra*, significant evidence of competitive harm corroborates the presumption. Respondents were unable to rebut the presumption, as neither the possibility of entry or expansion, nor any claimed efficiencies, can redeem the Acquisition.

A. Entry and Expansion Would Not Be Timely, Likely, and Sufficient

“Defendants carry the burden of showing that the entry or expansion of competitors will be ‘timely, likely and sufficient in its magnitude, character, and scope to deter or counteract the competitive effects of concern.’” *Staples 2016*, 190 F. Supp. 3d at 133 (citation omitted); *see also Sysco*, 113 F. Supp. 3d at 80; *CCC Holdings*, 605 F. Supp. 2d at 47. Respondents could not meet this burden here.

De novo entry is unlikely, and would not be timely even if it did occur. { [REDACTED]

[REDACTED] } explained why in a regulatory submission in connection with this Merger:

{ [REDACTED]

(CCFF ¶ 731). Even assuming an entrant could overcome these significant barriers, Tronox has estimated that building a new chloride TiO₂ plant would { [REDACTED]

[REDACTED] }

(CCFF ¶ 739); *see also* (CCFF ¶ 739 (PX1636 at 001 (email from Romano to Arndt) (“Four years for a greenfield plant would be aggressive. . . Total time line would be 54 months or 4.5 years if everything went according to plan (aggressive.)”). Cristal estimated at least { [REDACTED]

[REDACTED] } to construct a new chloride plant in a submission to the FTC. (CCFF ¶ 740). Thus, entry would not be timely.

Respondents argued at trial that producers based in China have the capability to offset the competitive harms of the Acquisition. But the record evidence shows that it is highly unlikely that Chinese producers will expand their sales in North America to deter or counteract the competitive harm resulting from the loss of Cristal as an independent competitor.

Today, TiO₂ from Chinese producers is not a meaningful competitive constraint in North America, where it is used primarily in low-end applications. *See, e.g.*, (CCFF ¶ 745 (PX9001 at 009 (Tronox Q3 2016 Earnings Call) (“So the question for us is, do we confront China-produced supply in the market as a competitive alternative to our supply. And as I’ve said, we don’t. . . . [T]he kind of customers that will buy our high-quality pigments are not simultaneously looking at for the same supply need Chinese product.”)); (CCFF ¶ 745 (PX9006 at 6 (Tronox Q2 2015 Earnings Call) (“We do not see that exports from China or from Europe are playing a material role in the competitive balance in the North American market.”)); (CCFF ¶ 745 { [REDACTED]

[REDACTED]); (CCFF ¶ 745 { [REDACTED]

[REDACTED] } The vast majority of production in China is sulfate TiO₂. (CCFF ¶ 808). As described above, North American chloride TiO₂ customers would not meaningfully switch to sulfate TiO₂ if faced with a SSNIP. *See supra* at Section II.A.1.

Although several firms in China have begun manufacturing chloride TiO₂, Chinese chloride does not have any meaningful impact in the North American market. Imports of

chloride TiO₂ from all producers in China account for *only* { [REDACTED] } of the North American market for chloride TiO₂. (CCFF ¶ 755). Respondents nevertheless speculate that expansion by Chinese manufacturers of chloride TiO₂, such as Lomon Billions, may provide a future competitive constraint. There are significant barriers to Chinese chloride TiO₂ becoming a meaningful competitive presence in North America, however. These barriers include the “proprietary technology,” “operating expertise,” and “highly skilled workforce” necessary to run a chloride TiO₂ facility (CCFF ¶ 743), and that “superior chloride technology [is] closely guarded by Western producers.” (CCFF ¶ 759).⁴⁷ Whether Chinese producers will be able to overcome these barriers is highly uncertain, and even if they eventually do, they are unlikely to do so in a sufficient and timely manner to counteract the competitive harm resulting from the Acquisition.

As Respondents themselves recognize in their public statements and internal documents, Chinese producers of chloride TiO₂ are, at best, still years away from being able to produce substantial quantities of chloride TiO₂ that are commercially suitable and cost competitive in North America. For example, in response to a { [REDACTED] } from the German competition authority, Cristal described { [REDACTED]

{ [REDACTED]

{ [REDACTED]

⁴⁷ See also (CCFF ¶ 743) (“In addition, running TiO₂ plants is a capital-intensive undertaking that requires mastery of complex, proprietary technology, and which remains a major hurdle particularly for the chloride process production plants.”).

[REDACTED]

[REDACTED] } (CCFF ¶ 749). { [REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶ 799). { [REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶ 749). { [REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶ 749).

Deceuninck testified that it has never turned to Chinese TiO₂ when faced with price increases in North America, and that buying TiO₂ from China would be its “last resort.” (CCFF ¶¶ 299, 749).

Even if Chinese producers are someday able to improve the quality of their chloride TiO₂ and operate their chloride TiO₂ plants reliably—both of which are uncertainties—there will still be barriers to Chinese chloride TiO₂ becoming a meaningful competitive constraint in North America in a timely and sufficient manner. If Chinese producers do eventually produce chloride TiO₂ that meets customers’ performance standards for broad usage in North America, [REDACTED]

[REDACTED] } (CCFF ¶ 102). { [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] }

(CCFF ¶¶ 754, 799). Moreover, import duties and the high cost of overseas shipping are also barriers to Chinese producers expanding their sales in North America. (CCFF ¶ 778) ([REDACTED]

[REDACTED]

[REDACTED]
 [REDACTED]); (CCFF ¶ 778) ([REDACTED]
 [REDACTED]).⁵¹

Finally, given recent reductions in Chinese TiO₂ production capacity and increasing demand for TiO₂ within China, it is uncertain whether there will be any Chinese TiO₂ available for export to North America in the years to come. Over the past several years, many of the older TiO₂ plants in China have closed due to high cost positions, government initiatives to address pollution, and limited availability of feedstocks, and more are projected to close. *See* (CCFF ¶ 779 (PX9001 at 006 (Tronox Q3 2016 Earnings Call)) (observing that net Chinese production was down in 2015 and would be down again in 2016 and 2017)).⁵² At the same time, demand for chloride and sulfate TiO₂ within China has continued to increase at a higher rate than in other regions. (CCFF ¶ 777); *see also* (CCFF ¶ 775) (domestic demand for Chinese chloride TiO₂ is growing faster than supply). This has resulted in tight supply, increased prices,⁵³ and reduced availability of Chinese TiO₂ for exporting. *See* (CCFF ¶ 779) ([REDACTED]

[REDACTED]). Indeed, Tronox itself projects that Chinese production will be unable to keep up with increasing Chinese demand, causing more Chinese TiO₂ to stay in its domestic market:

⁵¹ The major producers also recognize the advantages of prioritizing their own local customers. *See, e.g.*, (CCFF ¶ 209) ([REDACTED]); (CCFF ¶ 209) ([REDACTED]); (CCFF ¶ 282) ([REDACTED]).

⁵² *See also* (CCFF ¶ 779) (Cristal reporting 10-15 plants idled, some expected to remain closed, and others expected to close due to environmental issues); (CCFF ¶ 799) ([REDACTED]).

⁵³ In a May 2017 investor call, Tronox executives estimated that prices for Chinese TiO₂ had increased by 45% for export sales since the start of 2016 alone. (CCFF ¶ 784).

190 F. Supp. 3d at 134, 136 (finding that the evidence “does not support the conclusion that Amazon Business will be in a position to restore competition lost by the proposed merger within three years,” and that it would be sheer speculation to conclude otherwise); *United States v. BazaarVoice, Inc.*, No. 13-00133, 2014 U.S. Dist. LEXIS 3284, at *248 (N.D. Cal. Jan. 8, 2014) (“While a few companies have entered the market recently, their entry is of such a minimal scale that it is not close today, and is unlikely to be close in the next two years, to replacing PowerReviews.”).

B. Respondents Have Failed to Demonstrate Their Efficiencies Claims

Respondents have the burden to present evidence sufficient to permit an independent party to “verify by reasonable means the likelihood and magnitude of each asserted efficiency, how and when each would be achieved (and any costs of doing so), how each would enhance the merged firm’s ability and incentive to compete, and why each would be merger-specific.” *Merger Guidelines* § 10. Respondents have failed to do so, and their claimed efficiencies must be rejected.

1. The Legal Standard to Demonstrate Cognizable Efficiencies is High

A “rigorous standard . . . applies to efficiencies, which must be merger specific, verifiable, and must not arise from any anticompetitive reduction in output or service.” *FTC v. Penn State Hershey Med. Ctr.*, 838 F.3d 327, 347 (3d. Cir. 2016). Under this standard, “the court must undertake a rigorous analysis of the kinds of efficiencies being urged by the parties in order to ensure that those ‘efficiencies’ represent more than mere speculation and promises about

¶ 753) ([REDACTED]);
(CCFF ¶ 753) ([REDACTED]); (CCFF ¶ 753) ([REDACTED]).

post-merger behavior.” *Heinz*, 246 F.3d at 721; *CCC Holdings*, 605 F. Supp. 2d at 72–73; *H&R Block*, 833 F. Supp. 2d at 89 (D.D.C. 2011) (quoting *Merger Guidelines* § 10).

In fact, when there are “high market concentration levels,” like those presented by the Proposed Acquisition, the law requires “proof of extraordinary efficiencies.” *Heinz*, 246 F.3d at 720; *CCC Holdings, Inc.*, 605 F. Supp. 2d at 72. Indeed, no court has ever permitted an otherwise unlawful transaction to proceed as a result of claimed efficiencies. *See Heinz*, 246 F.3d at 720–21; *Sysco*, 113 F. Supp. 3d at 82 (“The court is not aware of any case, and Defendants have cited none, where the merging parties have successfully rebutted the government’s *prima facie* case on the strength of the efficiencies.”); *CCC Holdings*, 605 F. Supp. 2d at 72.

The burden of providing evidence of cognizable efficiencies lies squarely upon Respondents’ shoulders. *See United States v. Anthem Inc.*, 855 F.3d 345, 364 (2017) (noting that the defendant “has the burden of showing what portion of the claimed efficiencies will result from the merger itself); *Sysco*, 113 F. Supp. at 82; *Staples 2016*, 190 F. Supp. 3d at 137–38 n.15 (“Defendants bear the burden of showing that . . . their claimed efficiencies are: (1) merger specific; and (2) reasonably verifiable by an independent party.” (citing *H&R Block*, 833 F. Supp. 2d at 89)); *FTC v. Univ. Health Inc.*, 938 F.2d 1026, 1223 (11th Cir. 1991) (holding that “a defendant who seeks to overcome a presumption that a proposed acquisition would substantially lessen competition must demonstrate that the intended acquisition would result in significant economies and that these economies ultimately would benefit competition, and hence, consumers”).

“In order to be cognizable, the efficiencies must, first, offset the anticompetitive concerns in highly concentrated markets. Second, the efficiencies must be ‘merger specific,’ –

meaning, ‘they must be efficiencies that cannot be achieved by either company alone.’

Third, the efficiencies ‘must be verifiable, not speculative,;’ they ‘must be shown in what economists label ‘real’ terms. Finally, the efficiencies must not arise from anticompetitive reduction in output or service.” *Penn State Hershey*, 838 F.3d at 348-49 (quoting *St. Alphonsus Med. Ctr.–Nampa Inc. v. St. Luke’s Health Sys., Ltd.*, 778 F.3d 775, 790 (9th Cir. 2015), *Heinz*, 246 F.3d at 722, and *Univ. Health*, 938 F.2d at 1223) (citing *Merger Guidelines* § 10).

Respondents must prove “merger-specificity and verifiability” of all claimed efficiencies. *Anthem*, 855 F.3d at 364; *see also Heinz*, 246 F.3d at 722.

i. Verifiability

To be verifiable, the claimed efficiencies require “clear evidence showing that the merger will result in efficiencies that will offset the anticompetitive effects and ultimately benefit consumers.” *Penn State Hershey*, 838 F.3d 327 at 350. Respondents presented several of their own employees in an attempt to present evidence of verifiability. However, under the law, Respondents cannot merely rely upon “managers experiential judgment.” *H&R Block*, 833 F. Supp. 2d at 91.⁵⁷ “While reliance on the estimation and judgment of experienced executives about costs may be perfectly sensible as a business matter, the lack of a verifiable method of factual analysis resulting in the cost estimates renders them not cognizable by the Court.” *H&R Block*, 833 F. Supp. 2d at 91. If the business judgment of experienced managers were sufficient, “the efficiencies defense might well swallow the whole of Section 7 of the Clayton Act because management would be able to present large efficiencies based on its own judgment and the Court would be hard pressed to find otherwise.” *H&R Block*, 833 F. Supp. 2d at 91. As Dr. Zmijewski, Complaint Counsel’s expert, explained at trial, in order to verify business judgment,

⁵⁷ Business judgment is “a business person’s opinion based on their business experience,” including education and knowledge basis. CCF ¶ 937 (Dr. Zmijewski).

the business judgment must have foundation on documents and analysis, so an independent party can trace through to the foundational documents. (CCFF ¶ 937). Verification of business judgment requires a factual foundation to support the numbers provided by business executives. (CCFF ¶ 937).

ii. Merger Specificity

“[T]he alleged efficiencies must be ‘merger-specific’ to be cognizable as a defense. That is, they must be efficiencies that cannot be achieved by either company alone because, if they can, the merger’s asserted benefits can be achieved without the concomitant loss of a competitor.” *Heinz*, 246 F.3d at 721-22 (internal citations omitted). Merger specificity requires *more than* reliance upon ordinary due diligence conducted by the merging firms. *Sysco*, 113 F. Supp. 3d at 83 (faulting Defendants’ expert for failing to conduct “any independent analysis of the [third party due diligence] estimate to determine which savings, if any, can be achieved without the merger”). Third party firms performing due diligence in deal making are not hired “to identify merger-specific savings for antitrust purposes.” *Sysco*, 113 F. Supp. 3d at 83.

2. Respondents’ Experts Fail to Conduct a *Guidelines* Analysis

{ [REDACTED] }⁵⁸ See (CCFF ¶¶ 833–40). Complaint Counsel presented Dr. Zmijewski to explain that, under a *Guidelines* analysis, { [REDACTED] } (CCFF ¶¶ 828–32).

Respondents seek to rely upon a due diligence analysis from KPMG, a consulting firm hired during the deal-making, as an independent source of validation of its efficiencies.

⁵⁸ Respondents did not call their third expert, Mr. Basil Imburgia, to testify. As a result, the Court should disregard Mr. Imburgia’s report. In any event, Mr. Imburgia did not conduct a *Guidelines* analysis in his report and presented no opinions in his report that the claimed efficiencies were verifiable or merger specific. (CCFF ¶¶ 837–39).

Williams, Tr. 133–34. But KPMG merely received estimates for all of the operational efficiencies from Tronox’s managers and did nothing to verify the numbers. (CCFF ¶ 841). KPMG’s report contained a disclaimer that they “have not otherwise verified the information” and laid out a number of “assumptions” taken from Tronox’s management, such as assuming that Tronox will be able to run Cristal’s Saudi Arabian assets. (CCFF ¶¶ 827, 858–59 (related to Yanbu), 908 (related to Jazan)); *see also* (CCFF ¶¶ 936, 946, 954–55, 958–59, 963–64, 968–69, 982, 985–87). This is not the independent analysis required under the *Merger Guidelines*. *See H&R Block*, 833 F. Supp. 2d at 89. Nor is it an analysis of merger–specificity and cognizability under the *Merger Guidelines*. (CCFF ¶ 841); *see also Sysco*, 113 F. Supp. 3d at 83 (finding that third party’s ordinary due diligence analysis was not sufficient under antitrust efficiencies standard).

3. Respondents’ Claimed Efficiencies Are Not Cognizable

In addition to specific claims, Respondents provide generalized arguments that they will increase TiO₂ output through various methods. Resps.’ Pre-trial Br. at 34–36. For instance, several of Respondents’ claimed efficiencies are based upon the notion that increased vertical integration will lead to greater TiO₂ output. But Tronox—which is already vertically integrated—has repeatedly *rejected* plans to expand production. (CCFF ¶¶ 994–1002); *see also* (CCFF ¶¶ 1003-08).⁵⁹

Respondents asserted a number of various efficiencies that primarily fall into three basic categories: (1) alleged expansion of TiO₂ production at Cristal’s TiO₂ manufacturing facility in Yanbu, Saudi Arabia; (2) alleged expansion of feedstock at Cristal’s high-grade feedstock

⁵⁹ The advantages claimed by Respondents as associated with vertical integration are not merger-specific. Tronox acknowledges that it has options absent the merger to take advantage of vertical integration and expand output. (CCFF ¶ 1009–10).

facility in Jazan, Saudi Arabia;⁶⁰ and (3) alleged cost savings. None of Respondents' claimed efficiencies are verifiable and merger-specific. In addition, Respondents have failed to show that the claimed efficiencies will benefit North American customers.⁶¹

i. Yanbu

Respondents claim that the merger will increase chloride TiO₂ production at Cristal's plant in Yanbu, Saudi Arabia, by resolving operational issues at the plant. *See* (CCFF ¶¶ 842–44). This claim is not verifiable because it relies upon business judgment and is speculative, and it is not merger-specific because it fails to consider steps already available to Cristal.

Tronox's projections { [REDACTED] }, and therefore should be rejected as unverifiable. *See* (CCFF ¶¶ 845–50); *see also H&R Block*, 833 F. Supp. 2d at 91 (rejecting efficiencies based on managers' judgments rather than detailed analysis of data). Tronox's estimates are based upon { [REDACTED] }. (CCFF ¶¶ 848–50). Dr. Zmijewski explained that { [REDACTED] }. (CCFF ¶¶ 849–50).

Moreover, Tronox's claim that it { [REDACTED] }.⁶² *See* (CCFF ¶ 856). { [REDACTED] } (CCFF ¶ 856). Tronox bases its Yanbu claim on the assumption { [REDACTED] }. (CCFF ¶

⁶⁰ [REDACTED]

[REDACTED] }. (CCFF ¶ 890); *see also* (CCFF ¶ 889).
⁶¹ Under the *Guidelines*, Respondents are responsible for providing efficiencies estimates that are “net of costs produced by the merger or incurred in achieving those efficiencies.” *Merger Guidelines* § 10. As Dr. Zmijewski notes, Respondents have failed to provide verifiable estimate for the implementation costs of their claimed efficiencies. (CCFF ¶ 838).

⁶² [REDACTED]

(CCFF ¶ 859).

851). However, there are important differences between the Hamilton plant and the Yanbu facility. { [REDACTED] } (CCFF ¶ 851). { [REDACTED] } (CCFF ¶¶ 852–56). { [REDACTED] } (CCFF ¶¶ 852–53). In fact, Mr. Dean, the Tronox manager tasked with handling the Yanbu improvement effort, { [REDACTED] } (CCFF ¶ 852).

Respondents’ Yanbu claim is also not merger-specific. Cristal { [REDACTED] } { [REDACTED] } *E.g.*, (CCFF ¶¶ 861–62, 865–66, 868, 871–72). Mr. Hewson, a Cristal manager who was in charge of the Yanbu facility, testified that { [REDACTED] } { [REDACTED] } (CCFF ¶ 865); *see also* (CCFF ¶¶ 866–67, 870). { [REDACTED] } (CCFF ¶¶ 872–75 ({ [REDACTED] }), 877 ({ [REDACTED] }), 878 ({ [REDACTED] }), 884 ({ [REDACTED] })). { [REDACTED] } { [REDACTED] } (CCFF ¶¶ 879–80). Indeed, without the Proposed Acquisition, Cristal { [REDACTED] } { [REDACTED] } (CCFF ¶¶ 880–82); *see also* (CCFF ¶ 865, 869). Mr. Dean himself could not explain { [REDACTED] }

[REDACTED] }. (CCFF ¶ 883).⁶³ [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] } (CCFF ¶ 887).

ii. Jazan

Respondents also claim that Tronox will increase feedstock production in Jazan, Saudi Arabia. *See* (CCFF ¶ 888). This claim is not verifiable, as evidenced that the fact that Tronox would not agree to purchase the facility outright, and is not merger-specific, given that Cristal has other third parties with whom it can partner.

To start, Respondents’ Jazan claim is rife with uncertainty, and thus is speculative and unverifiable. Respondents have only agreed to an Option Agreement, which provides { [REDACTED] } within a five year timeframe. (CCFF ¶ 893) ({ [REDACTED] } [REDACTED] [REDACTED] [REDACTED]); *see St. Alphonsus*, 778 F.3d at 790 (“Claimed efficiencies must be verifiable, not merely speculative.”) (citation omitted). Tronox’s CEO testified that even if the Proposed Acquisition were consummated, there is “no certainty” that Tronox ultimately will purchase Jazan. (CCFF ¶ 900).

Tronox’s confident projections about Jazan are belied by the steps it has taken to insulate itself from risk if it were unable to fix the facility. This uncertainty surrounding whether the Jazan facility can be fixed { [REDACTED] }
[REDACTED]

⁶³ [REDACTED] (CCFF ¶¶ 876, 886); *see also* (CCFF ¶ 885).

[REDACTED]

[REDACTED] } (CCFF ¶ 898). { [REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶ 899). { [REDACTED]

[REDACTED] } (CCFF ¶¶

894, 896–97, 899). Therefore, despite its confident pronouncements, it is clear from Tronox’s own behavior that fixing the Jazan facility is a highly uncertain proposition. (CCFF ¶ 901) (“{ [REDACTED] }”).

As Dr. Zmijewski pointed out, { [REDACTED]

[REDACTED] } (CCFF ¶ 902).

Tronox’s own documents also reflect uncertainty about whether it will be able to fix the Jazan facility. { [REDACTED]

[REDACTED]

[REDACTED] } (CCFF ¶ 903). Mr. Van Niekerk, the Tronox manager with responsibility for the Jazan claim, explained { [REDACTED]

[REDACTED]

[REDACTED] }. (CCFF ¶ 904).⁶⁴ [REDACTED]

[REDACTED]. } (CCFF ¶ 904).⁶⁵

The Jazan claim is also not merger specific. A potential future acquisition of the Jazan facility by Tronox is likely not the only way the Jazan facility could become operational. *See*

⁶⁴ Similar to the assumptions made with the Yanbu claim, Tronox assumes { [REDACTED] } (CCFF ¶ 905). However, [REDACTED] } (CCFF ¶ 905); *see also* (CCFF ¶ 906).

⁶⁵ In fact, the location of the facility itself – near the Yemen border – can create challenges. (CCFF ¶ 907). ({ [REDACTED] }).

(CCFF ¶ 909). Cristal { [REDACTED] }
[REDACTED]
[REDACTED] } (CCFF ¶ 910 (Stoll, Cristal)); *see also* (CCFF ¶ 911).
Indeed, right up until the Proposed Acquisition was announced, Cristal { [REDACTED] }
[REDACTED] }, *see, e.g.*, (CCFF ¶¶ 912, 920–22,
924–28, 930–31) and was pursuing { [REDACTED] }
[REDACTED] }. (CCFF ¶¶ 913–19, 923).

[REDACTED]
[REDACTED]
[REDACTED] }. (CCFF ¶ 917). { [REDACTED] }
[REDACTED]
[REDACTED] } (CCFF ¶ 913–16). { [REDACTED] }
[REDACTED]
[REDACTED] } (CCFF ¶ 915). { [REDACTED] }
[REDACTED] } (CCFF ¶
917); *see also* (CCFF ¶ 916). { [REDACTED] }
[REDACTED]
[REDACTED] } (CCFF ¶ 932).

In addition to the issues above, it is important to note that Respondents are making the extraordinary argument that the Court should credit efficiencies related to an asset that is not even part of this proposed transaction, and that may never be acquired. *See* (CCFF ¶¶ 891–93, 900). Respondents have failed to identify any case that has credited efficiencies generated not by the transaction in question, but by some *separate* acquisition of assets. To the contrary, courts

that have considered an efficiencies defense presume that the claims relate to efficiencies generated by the acquisition in question. *See, e.g., Penn State Hershey*, 838 F.3d at 347 (efficiencies defense entails a showing by defendants that “the anticompetitive effects of the merger will be offset by extraordinary efficiencies *resulting from the merger*”) (citation omitted and emphasis added); *St. Alphonsus*, 778 F.3d at 790 (efficiencies defense entails a showing by defendants that “the *proposed merger* will create a more efficient combined entity and thus increase competition”) (emphasis added); *Univ. Health*, 938 F.2d at 1222-23 (efficiencies defense requires a showing that “the *intended merger* would create significant efficiencies in the relevant market”) (emphasis added). The Merger Guidelines presume the same—considering “efficiencies *generated through a merger*” in evaluating the effects of the merger in question. *Merger Guidelines* § 10 (emphasis added). This provides an independent reason the Jazan claim should be rejected.

iii. Cost Savings

Third, Respondents allege a number of cost saving efficiencies relating to optimizing various operations and processes.⁶⁶ Dr. Zmijewski has reviewed the claimed cost saving efficiencies and concluded that { [REDACTED] [REDACTED] [REDACTED] } (CCFF ¶¶ 831–32, 938–40, 942–44, 947–48, 956, 960, 967, 971, 974, 977, 980, 983, 989). Dr. Zmijewski’s opinions analyzing these claimed cost savings efficiencies under the *Merger Guidelines* framework went un rebutted at trial.

⁶⁶ Respondents present a handful of efficiencies that they describe as output efficiencies: { [REDACTED] [REDACTED] } (CCFF ¶¶ 933, 941, 945). The analysis for these efficiencies is the same as the cost savings claims.

Respondents offered only self-serving testimony from Tronox’s executives, but mere estimation and judgment by Respondents’ executives are insufficient to establish cognizable efficiencies. *H&R Block*, 833 F. Supp. 2d at 91; *Sysco*, 113 F. Supp. 3d at 83. In fact,

{ [REDACTED] }
 [REDACTED]. (CCFF ¶¶ 934, 970, 990); *see also* (CCFF ¶ 935). { [REDACTED] }
 [REDACTED] } (CCFF ¶ 968).

{ [REDACTED] }
 [REDACTED] } (CCFF ¶¶ 936 ({ [REDACTED] }), 955 ({ [REDACTED] }), 959
 ({ [REDACTED] })). { [REDACTED] }
 [REDACTED] }. (CCFF ¶¶ 946 ({ [REDACTED] }), 963
 ({ [REDACTED] }), 969 ({ [REDACTED] }); 982 ({ [REDACTED] }); 985-987
 ({ [REDACTED] })).⁶⁷

4. Respondents’ Claimed Efficiencies Will Not Impact North American Consumers

Finally, Respondents’ efficiencies defense fails because the vast majority of their claims would not materially benefit the North American chloride TiO₂ market. *See Univ. Health*, 938 F.2d at 1222–23; *Sysco*, 113 F. Supp. 3d at 82; *CCC Holdings*, 605 F. Supp. 2d at 74 (“Even assuming *arguendo* that the Defendants will achieve significant cost savings in a timely manner, there is no evidence to suggest that a sufficient percentage of those savings will accrue to the benefit of the consumers to offset the potential for increased prices”). Reducing the cost of doing business may benefit the merged firm but this does not necessarily translate to benefiting customers or competition in North America. *CCC Holdings*, 605 F. Supp. 2d at 74. Indeed, efficiencies outside of the relevant market are not cognizable. *See Phila. Nat. Bank*, 374 U.S. at

⁶⁷ Respondents have also failed to provide sufficient evidence in other regards. *See, e.g.*, (CCFF ¶¶ 952–53, 962, 965–66, 973, 976, 979, 988, 991–93).

370 (indicating that “anticompetitive effects in one market” could not be justified by “procompetitive consequences in another”).

The bulk of Respondents’ claims are outside of the relevant market. Tronox CEO Jeffrey Quinn appears to concede this, testifying that “an overwhelming portion of the synergies are ex – you know, non-U.S. assets.” (CCFF ¶ 1011). In particular, the Jazan claim concerns the production of feedstock—not TiO₂—outside of North America, and Respondents have failed to show how these purported benefits will have any effect inside the relevant market at issue here. (CCFF ¶ 1014). Although related to TiO₂ production, the Yanbu claim likewise is largely out of market, { [REDACTED] } (CCFF ¶ 1013).⁶⁸

Moreover, Respondents have failed to demonstrate how any of their claimed efficiencies (in or out of market) would benefit customers, and the evidence is to the contrary. Indeed, Tronox acknowledged that it has not even attempted to quantify how its claimed efficiencies would benefit customers. { [REDACTED] } (CCFF ¶ 1012).⁶⁹

V. Requested Relief

Once Complaint Counsel has established a violation of Section 7, “all doubts as to the remedy are to be resolved in its favor.” *United States v. E.I. du Pont de Nemours & Co.*, 366 U.S. 316, 334 (1961). Consistent with this principle, Complaint Counsel requests an injunction blocking the Proposed Acquisition. *See* Comp., Notice of Contemplated Relief ¶ 2. The Commission has broad discretion to select a remedy so long as it bears a “reasonable relation to

⁶⁸ Several other claimed efficiencies are also out of market. (CCFF ¶¶ 1015-17).

⁶⁹ Additionally, Tronox’s history of curtailing TiO₂ and feedstock output shows that it is unlikely to increase production at Jazan and Yanbu if doing so would cause prices to decrease.

the unlawful practice found to exist.” *Jacob Siegel Co. v. FTC*, 327 U.S. 608, 611–13 (1946). Such a remedy must “effectively preserve competition in the relevant market” and “maintain the premerger level of competition.” *Sysco*, 113 F. Supp. 3d at 72 (quotation omitted). In this case, the proper remedy is an Order prohibiting any transaction between Tronox and Cristal that combines their businesses, except as may be approved by the Commission. Complaint Counsel’s proposed order is attached as Appendix A.

CONCLUSION

For the foregoing reasons, the evidence presented at trial and admitted to the record establishes that Tronox’s Acquisition of Cristal violates Section 7 of the Clayton Act and Section 5 of the Federal Trade Commission Act, as alleged in the complaint, and justifies entry of an Order by the Court granting the relief sought therein.

Dated: August 14, 2018

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Attachment A

UNITED STATES OF AMERICA
BEFORE THE FEDERAL TRADE COMMISSION
OFFICE OF ADMINISTRATIVE LAW JUDGES

In the Matter of

Tronox Limited,
a corporation,

National Industrialization Company
(TASNEE),
a corporation,

National Titanium Dioxide Company
Limited (Cristal),
a corporation,

and

Cristal USA Inc.,
a corporation.

Docket No. 9377

[PROPOSED] ORDER

I.

IT IS ORDERED that, as used in the Order, the following definitions shall apply:

- A. “Tronox” means Tronox Limited, its directors, officers, employees, agents, representatives, successors, and assigns; the joint ventures, subsidiaries, partnerships, divisions, groups, and affiliates controlled by Tronox Limited, and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.
- B. “Cristal” means the National Titanium Dioxide Company Limited (Cristal), its directors, officers, employees, agents, representatives, successors, and assigns; the joint ventures, subsidiaries (including Cristal USA), partnerships, divisions, groups, and affiliates controlled by the National Titanium Dioxide Company Limited (Cristal), and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.
- C. “Cristal USA” mean Cristal USA Incorporated, its directors, officers, employees, agents, representatives, successors, and assigns; the joint ventures, subsidiaries, partnerships, divisions, groups, and affiliates controlled by Cristal USA Incorporated, and the

respective directors, officers, employees, agents, representatives, successors, and assigns of each.

- D. "TASNEE" means the National Industrialization Company (TASNEE), its directors, officers, employees, agents, representatives, successors, and assigns; the joint ventures, subsidiaries (including Cristal), partnerships, divisions, groups, and affiliates controlled by the National Industrialization Company (TASNEE), and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.
- E. "Proposed Acquisition Agreement" means the "Transaction Agreement Dated as of February 21, 2017 between The National Titanium Dioxide Company Limited, Tronox Limited and, solely for the purposes of Articles I, II, VIII, IX and XIII, Cristal Inorganic Chemicals Netherlands Coöperatief W.A."

II.

IT IS FURTHER ORDERED that:

- A. Respondent Tronox and Respondents Cristal, TASNEE, and Cristal USA shall terminate the Proposed Acquisition Agreement, and cease and desist from taking any actions, directly or indirectly, to consummate the Proposed Acquisition Agreement.
- B. Respondent Tronox shall cease and desist from acquiring Cristal, in whole or in part, including, but not limited to, any stock, assets, share capital, equity, or other interest in or related to Cristal, directly or indirectly, from Respondents Cristal, TASNEE, or Cristal USA.
- C. Respondents Tronox, Cristal, TASNEE, and Cristal USA shall return all confidential information received, directly or indirectly, from one another and destroy all notes relating to such information.
- D. Respondents shall submit a verified written statement within 15 days of the Order becoming final certifying compliance with the requirements of Paragraphs II.A. and II.C. relating to terminating the acquisition agreement and returning/destroying each other's confidential information, with sufficient detail and supporting documentation to allow the Commission to determine independently that Respondents are in compliance.

ORDERED:

D. Michael Chappell
Chief Administrative Law Judge

Date:

CERTIFICATE OF SERVICE

I hereby certify that on August 14, 2018, I filed the foregoing document electronically using the FTC's E-Filing System, which will send notification of such filing to:

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The Honorable D. Michael Chappell
Administrative Law Judge
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I also certify that I delivered via electronic mail a copy of the foregoing document to:

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Dated: May 8, 2018

By: /s/ Blake Risenmay
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CERTIFICATE FOR ELECTRONIC FILING

I certify that the electronic copy sent to the Secretary of the Commission is a true and correct copy of the paper original and that I possess a paper original of the signed document that is available for review by the parties and the adjudicator.

August 14, 2018

By: /s/ Blake Risenmay
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