

**IN RE TRONOX LTD.,**  
**Slip op. at 33-43, No. 9377 (F.T.C. Dec. 14, 2018) (initial decision)**  
**(excerpt on coordinated effects<sup>1</sup>)**

D. MICHAEL CHAPPELL, Chief Administrative Law Judge

[The FTC sought a preliminary injunction under FTC Act § 13(b) to enjoin the acquisition by Tronox Limited of the National Titanium Dioxide Company's titanium dioxide (TiO<sub>2</sub>) business (known as "Cristal") for \$1.67 billion in cash and a 24% equity stake in the combined firm. TiO<sub>2</sub> is a pigment used to add whiteness, brightness, and opacity to products like paints, plastics, and paper. It is manufactured by subjecting raw titanium ores to either a chloride or a sulfate production process. A central issue in the case was the relevant product market definition. The FTC alleged, among other things, that the acquisition created a highly concentrated market and increased the likelihood of coordinated effects.]

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## 2. Reasonable probability of anticompetitive effects

### a. Overview

As the court explained in *ProMedica Health Systems v. FTC*, anticompetitive effects of a merger can include coordinated effects and/or unilateral effects.

[T]he idea behind coordinated effects is 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." *H&R Block*, 833 F. Supp. 2d at 77. . . . Unilateral effects theory, on the other hand, holds that "[t]he elimination of competition between two firms that results from their merger may alone constitute a substantial lessening of competition." Merger Guidelines § 6 at 20.

749 F.3d 559, 568-69 (6th Cir. 2014). In the instant case, to support the argument that the Acquisition is likely to have anticompetitive effects, Complaint Counsel asserts: (1) the Acquisition will facilitate coordination among competitors, in a highly concentrated market that is vulnerable to coordination (coordinated effects); and (2) the Acquisition will enable the combined entity to engage in strategic output withholding, in a market with incentives for and a history of such conduct (unilateral effects). Respondents dispute that anticompetitive effects are likely, arguing that the evidence fails to show that coordination among competitors or unilateral strategic output withholding by the combined entity is likely. The question of likely coordinated effects is analyzed below.

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<sup>1</sup> Citations to briefs and to factual findings with parentheticals omitted.

## b. Likelihood of coordinated effects

### i. Legal principles

“Tacit collusion, sometimes called oligopolistic price coordination or conscious parallelism, describes the process, not in itself unlawful, by which firms in a concentrated market might in effect share monopoly power, setting their prices at a profit-maximizing, supracompetitive level by recognizing their shared economic interests and their interdependence with respect to price and output decisions.” *Brooke Group v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 227 (1993). *See also* Merger Guidelines § 7 (Coordinated interaction includes an implied understanding or parallel accommodating conduct not pursuant to a prior understanding.).

Coordinated interaction involves conduct by multiple firms that is profitable for each of them only as a result of the accommodating reactions of the others. These reactions can blunt a firm’s incentive to offer customers better deals by undercutting the extent to which such a move would win business away from rivals. They also can enhance a firm’s incentive to raise prices, by assuaging the fear that such a move would lose customers to rivals.

Merger Guidelines § 7.

“It is a central object of merger policy to obstruct the creation or reinforcement by merger” of market structures in which tacit coordination can occur. [*FTC v.*] *Heinz*, 246 F.3d [246,] at 725 [D.C. Cir. 2001]. “Tacit coordination 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.” *Id.* “[P]ermit[ting] mergers to be challenged prior to their occurrence and thus before the harm from coordinated interaction has materialized . . . is particularly valuable in situations where coordinated interaction is difficult to detect and remedy directly under § 1 of the Sherman Act.” Herbert Hovenkamp, *Prophylactic Merger Policy*, HASTINGS L.J. (August 2018) at 12.

It is not necessary to prove that tacit coordination has already occurred in order to demonstrate a reasonable probability of future coordination. *See* [*FTC v.*] *Arch Coal, [Inc., ]* 329 F. Supp. 2d [109,] at 116 [D.D.C. 2004] (“While proof of prior cooperative behavior is relevant, it is not a necessary element of likely future coordination in violation of Section 7.”)

### ii. Analysis

Under the Merger Guidelines, a merger may substantially lessen competition if: (1) the merger would significantly increase concentration and lead to a moderately or highly concentrated market; (2) that market shows signs of vulnerability to coordinated conduct; and (3) the merger is likely to enhance that vulnerability. Merger Guidelines § 7.1. As shown above, the evidence proves that the Acquisition in this case would significantly increase concentration in the relevant market and lead to a highly concentrated market. As discussed below, the evidence further proves that the North American chloride TiO<sub>2</sub> market is vulnerable to coordinated conduct, and that this vulnerability will be enhanced by the Acquisition. *See generally* Merger Guidelines § 7.2 (discussing factors evidencing vulnerability to coordination).

*First*, with only five participants selling chloride TiO<sub>2</sub> in North America, the number of firms in the relevant market is small. “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 . . . .” *Hosp. Corp. of Am. v. FTC*, 807 F.2d 1381, 1387 (7th Cir. 1986). In the instant case, the Acquisition will reduce the number of firms to four, thereby making it easier for the remaining firms to coordinate on price or output. *See [FTC v.] Elders Grain, [Inc.]* 868 F.2d. [901,] at 905 [(D.C. Cir. 1989)] (holding that acquisition reducing firms from six to five would make it easier for leading members of the industry to collude on price and output); *[FTC v.] Univ. Health, [Inc.]* 938 F.2d [1206,] at 1219 [(11th Cir. 1991)] (holding that four businesses remaining after merger could easily collude to raise price and decrease output without committing detectable violations of the Sherman Act). In particular, the Acquisition would not only simplify coordination by eliminating Cristal, a current competitor, but would also create a new firm of a similar size to Chemours, the current market leader. Indeed, the Acquisition will result in only two firms—Tronox and Chemours—in control of [redacted—nearly three-quarters] of North American sales, and over of [redacted] North American capacity. “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.” *[FTC v.] CCC Holdings [Inc.]*, 605 F. Supp. 2d [26,] at 67 [(D.D.C. 2009)].

*Second*, chloride TiO<sub>2</sub> is a commodity product. Markets for homogenous products are more susceptible to coordination. One reason for this is that reactions by rivals to attempts to steal their business are likely to be strong, given that each firm’s product is largely interchangeable with its rivals’ products. In this case, given the small number of market participants in the relevant market, and the commodity nature of chloride TiO<sub>2</sub>, the market is fairly characterized as an oligopoly. *See [4A PHILLIP E.] AREEDA [ & HERBERT HOVENKAMP, ANTITRUST LAW ] ¶ 1429a at 221 [(3d ed. 2009)]; Blomkest Fertilizer, Inc. v. Potash Corp. of Saskatchewan, Inc.*, 203 F.3d 1028, 1031 n.3 (8th Cir. 2000) (quoting Black’s Law Dictionary 1086 (6th ed. 1990)); *see also* Preliminary Injunction Opinion, *[FTC v. Tronox Ltd.]*, 332 F. Supp. 3d 187, 195 (D.D.C. 2018)] (“The titanium dioxide market has been described as an ‘oligopoly,’ as TiO<sub>2</sub> is a ‘commodity-like product with no substitutes, the market is dominated by a handful of firms, and there are substantial barriers to entry.’” (quoting *Valspar Corp. v. E.I. Du Pont De Nemours & Co.*, 873 F.3d 185, 190 (3d Cir. 2017))).

*Third*, mutually recognized interdependence is indicative of a market that is vulnerable to coordination. In such a market, each [competitor] knows that his choice will affect the others, who are likely to respond, and that their responses will affect the profitability of his initial choice. Each knows that expanding his sales or lowering his price will reduce the sales of rivals, who will notice that fact, identify the cause, and probably respond with a matching price reduction. Unless he can somehow conceal his price reduction, or unless his own position is improved by a lower market price, he will hesitate to reduce prices at all. Areeda ¶ 1410b at 65 (emphasis and footnote omitted). Recognized interdependence is a distinct characteristic of an oligopolistic

market. Areeda ¶ 404a; *see also Rebel Oil Co. v. Atlantic Richfield Co.*, 51 F.3d 1421, 1443 (9th Cir. 1995) (“[b]y definition, oligopolists are interdependent . . .” (citation omitted); *In re Flat Glass Antitrust Litig.*, 385 F.3d 350, 359 (3rd Cir. 2004) (explaining that a participant in an oligopoly market “‘must take into account the anticipated reaction of the other [] firms’”) (citation omitted)).

In the instant case, the evidence proves that the North American chloride TiO<sub>2</sub> market is characterized by mutually recognized interdependence. As acknowledged in a November 2016 Tronox presentation, the “TiO<sub>2</sub> market shows oligopoly pricing behavior (one supplier can drive price down, action of all suppliers needed to pull prices up).” Indeed, the record is replete with testimony and documents from Tronox and Cristal demonstrating recognized interdependence among market participants. *E.g.*, F. 207 (Tronox’s Mr. Romano testifying that “it only takes one to make the price go down. The whole market has to go up. But any one competitor can make pricing go down.”); F. 212 (Tronox’s Mr. Romano testifying that success of a price increase “depends on what our competition is doing”); F. 213 (Tronox’s Mr. Casey stating in an email: “[T]he success of this [Tronox December 2015 price increase] initiative will be materially affected by how Huntsman [now Venator], Cristal and Kronos respond. Chemours announced an equivalent price increase yesterday . . .”); F. 208 (Mr. Gigou of Cristal testifying that when considering whether to issue a price increase and for what amount, Cristal takes into account information from customers regarding other TiO<sub>2</sub> suppliers); F. 217 (Mark Stoll, general manager of mergers and acquisitions for Cristal, stating in a 2012 email: “In current market conditions of excessive inventory we cannot raise price and gain market share at the same time unless all suppliers support the price movement.”).

In addition, the evidence shows mutual accommodating conduct by chloride TiO<sub>2</sub> producers in order to support market discipline and avoid triggering adverse competitor responses. For example, in a July 2015 email discussing pricing for a customer, Mr. Duvekot of Tronox wrote: “Especially on a highly visible account like [this particular customer] any price move will be seen by the competitors, even more so if we use it to take a piece of the pie. That will cause a reaction from the competition, at this account or elsewhere in the market, which will just lead to more price erosion in the market. Tronox does not want to play this game (anymore).” In a March 2016 email, Tronox’s Mr. Moulard wrote to two salespeople: “We will have to pass on this opportunity as I do not want to undercut a competitor. The price increase is taking hold and any attempt to get volume at the expense of price could undermine our progress.” F. 246. *See also* F. 231 (“The problem we face is that pricing is falling and if we take action to go after market share, price will deteriorate further and we do not want [to] facilitate or fuel that process. Everyone is defending their business and matching offers from the competition to maintain their share as no one want[s] to loose [sic] business.”); F. 235 (Cristal email stating: “All of the large global TiO<sub>2</sub> suppliers are still acting in a disciplined manner, respecting each other’s market positions and share and holding on to price. No volume stalking of any great consequence is taking place yet, which is very good news.”).

*Fourth*, “[a] market typically is more vulnerable to coordinated conduct if each competitively important firm’s significant competitive initiatives can be promptly and confidently observed by that firm’s rivals. . . . Regular monitoring by suppliers of one another’s prices or customers can indicate that the terms offered to customers are relatively transparent.” Merger Guidelines § 7.2. *See also* [*United States v.*] *Oracle, [Corp.]* 331 F. Supp. 2d [1098,] at 1166 [N.D. Cal. 2004)] (“Without homogeneity or transparency, the market conditions are not conducive to coordinated effects, either tacit or express.”). The evidence in this case shows that TiO<sub>2</sub> suppliers monitor, and are able to observe, significant moves by their competitors, including as to price and output, from public statements by competitors and information obtained from customers.

Tronox and Cristal monitor and analyze public statements by competitors such as quarterly earnings updates, presentations at industry conferences, and ratings agency meetings. For example, Tronox’s Mr. Engle, vice president of marketing, listens to competitors’ earnings calls to learn about their production plans and other announcements, and to obtain competitive intelligence. Indeed, these sources represent Tronox’s largest source of competitor intelligence. Reports and analyses are provided to Tronox’s executives. Cristal also monitors TiO<sub>2</sub> competitors’ public calls and circulates detailed analyses to executives, highlighting information such as production curtailments, capacity utilization, and planned price increases.

The information provided in public earnings calls and similar public presentations can be specific. Tronox discusses in its quarterly results earnings calls such matters as changes in sales volume, changes in the selling prices by region, margin information, and operation related information such as relative plant utilization rate and inventory levels. Tronox publicly announced in a second quarter 2015 earnings call its decision to reduce production at two facilities, including Tronox’s Hamilton plant, and specifically noted that “these processing line curtailments represent approximately 15% of total pigment production.” In a first quarter 2016 conference call, Tronox described its plan to continue to be “disciplined” about production and not to bring back “full production” on the first sign of price recovery. In a second quarter 2016 earnings call, Chemours stated its prediction that for “the rest of the year, you’ll see a cadence up in our price as you look at third quarter . . . .” At a basic materials conference sponsored by Goldman Sachs, the executive vice president of Huntsman (now Venator) stated: “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.”

Publicly disclosing information in a market characterized by interdependence can serve as a signal to the market, enhancing predictability and the potential for tacit coordination. North American chloride TiO<sub>2</sub> producers over the years have increased TiO<sub>2</sub> prices typically in close proximity to each other in time. For example, Chemours announced a price increase of \$150 per metric ton on December 17, 2015. Within about a half hour of learning this information, Mr. Casey of Tronox reacted by directing that “[w]e will put out a [redacted] global price increase announcement of our own before

9:30 tomorrow,” which Tronox did. In an internal email, Tronox explained that, with its price increase, Tronox was “testing whether [the market] is ready for price increases or at least to stop declines.” Cristal learned of the price increase by Tronox on the same day it was announced, and remarked in an internal email: “Tronox follows the trend. . . . Expectedly, other TiO<sub>2</sub> manufacturer’s [sic] may follow the trend.” Cristal characterized these announced pricing moves as “an initiative to taste the market readiness to accept this announced price increase.” Later that day on December 18, 2015, Cristal confirmed that both Chemours and Huntsman had also announced price increases. From Cristal’s perspective, the December 2015 price increase announcements were “[n]ot based on supply/demand dynamics.”

In another example, shortly after Tronox publicly announced in its second quarter 2015 earnings call its decision to reduce production at its Hamilton plant, Chemours closed its Edge Moor plant in Delaware, and shut down a production line at its Johnsonville, Tennessee plant, removing 150,000 metric tons of capacity. Tronox considered this “Good news!!” with then-CEO Mr. Casey responding that “[i]t’s good that [Chemours] can follow the leader!”

The Acquisition will increase the competitive information available to market participants through earnings calls and similar public presentations. Tronox, Chemours, Kronos, and Venator are publically traded companies, and therefore required to report earnings and similar business information to investors and others in the ordinary course of business. Presently, Cristal is a privately held company. With the merger, all participants will be reporting as public companies.

Chloride TiO<sub>2</sub> producers also monitor competitive actions in the market through information obtained from their customers. It is part of Tronox’s price increase implementation process to collect competitive intelligence on its competitors’ pricing in order to assess whether its competitors are “maintain[ing] a disciplined approach” with respect to a price increase. Customer-provided information is included in reports provided to senior management and is used to make pricing decisions. In many instances, this can include specific pricing information. *E.g.*, F. 276 (“Per [redacted] , Purchasing Mgr, Kronos and DuPont have moved their price by [redacted]”); F. 276 (“customer confirmed Kronos is taking them up ”; F. 276 (describing that Cristal is offering [redacted] per pound lower than Tronox at [redacted]); F. 279 (Cristal email reporting that customer “indicated that Huntsman offered [redacted] for volume . . . ”); F. 279 (internal Cristal email stating: “Our refusal to . . . meet [redacted] price resulted in [a customer] moving 5 trucks per month away from us and over to [redacted] . . .”). Competitor price information, once disclosed, gets further communicated within the market “from competitor to customer to other supplier.”<sup>10</sup>

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<sup>10</sup> Respondents contend that customer-provided pricing information is not reliable because customers in a negotiation may not necessarily be truthful about competing offers. RRF 476-85. However, the fact that suppliers report and rely on customer-provided competitor pricing information in making their own pricing decision is indicative of the information’s reliability. In addition, Cristal’s redbook, a data compilation, uses customer-provided sales information to track suppliers’ sales volumes, and market share data calculated from the data proved to be a close match to market

*Fifth*, the fact that the chloride TiO<sub>2</sub> market has low demand elasticity makes coordination more profitable, which increases incentives to coordinate. Price elasticity of demand is how responsive demand is to changes in price. Inelastic demand makes a market more susceptible to coordination because if prices of all firms were to rise, few sales would be lost, which makes the reward for coordinating greater. Here, the price elasticity of demand for chloride TiO<sub>2</sub> in North America is low.<sup>11</sup>

### iii. Respondents' opposing arguments

Respondents argue that Complaint Counsel has failed to prove that coordinated effects are likely, citing *United States v. Oracle Corporation*, 331 F. Supp. 2d 1098 (N.D. Cal. 2004). RB at 57. Oracle does not support Respondents' argument. In that case, the court denied a preliminary injunction under Section 7, finding, among other things, that "the products of Oracle and SAP are not homogeneous, but are differentiated products, and that the pricing of these products is not standardized or transparent." 331 F. Supp. 2d at 1109. Indeed, the plaintiffs in Oracle did not contend that any of those conditions were present in the proposed merger. *Id.* at 1113. In the instant case, by contrast, the evidence proves that chloride TiO<sub>2</sub> is a commodity product and suppliers are able to gain relatively detailed and specific information about competitors' pricing.

Respondents further assert that the evidence fails to show coordination has occurred in the past. However, as explained above, proof of prior tacit coordination is not necessary to demonstrate a reasonable probability of future coordination. *See Arch Coal*, 329 F. Supp. 2d at 116. Respondents additionally contend that coordination would be difficult to conceive, monitor, or enforce because announced prices are not necessarily the actual price paid by customers; rather, prices are individually negotiated with each customer. Respondents' argument ignores the facts that suppliers obtain reliable information about actual prices being offered by the competition directly from customers, among other sources, and that such information spreads to other suppliers in the market. Moreover, knowledge of precise competitor pricing is not necessary to be able to coordinate price movements through parallel price increases, which are publicly disclosed. In any event, it is not necessary to demonstrate that market participants can form and enforce an agreement. Coordinated interaction includes a range of conduct, and can involve parallel conduct "in which each rival's response to competitive moves made by others is individually rational, and not motivated by retaliation or deterrence but nevertheless emboldens price increases and

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shares calculated from actual data derived from suppliers' invoices. The totality of the evidence belies the notion that customers routinely provide false information as part of the negotiation process.

<sup>11</sup> It is also noteworthy that customers in the relevant market are concerned about the increased consolidation of suppliers post-Acquisition. F. 293 (Mr. Vanderpool of True Value testifying: "[We're] going from five major suppliers down to four major suppliers . . . [redacted]. So we see raw material prices continue to go up and tightening in the market from allocation, and that's a very big concern of ours"); F. 294 (Ampacet email stating, "The acquisition of Cristal by Tronox is cause for concern for Ampacet" noting the "20% reduction in [its] supply base").

weakens competitive incentives to reduce prices or offer customers better terms.” Merger Guidelines § 7.

Respondents also argue that TiO<sub>2</sub> sales are subject to “fierce competition.” Respondents assert that most customer contracts do not set price but rather provide for prices to be negotiated; that contracts typically contain an option to switch suppliers if they find a better price (a “meet or release” clause), which can result in a lower price; and that buyers “pit” suppliers against each other to obtain a lower price. However, such evidence does not logically preclude a finding that the market is also vulnerable to coordination, particularly where, as here, the market is characterized by oligopolistic interdependence, exacerbated by relative transparency and product homogeneity.<sup>12</sup> Furthermore, “[a]s the statutory language suggests, Congress enacted Section 7 to curtail anticompetitive harm in its incipiency.” [*In re*] *Polypore*, [Int’l, Inc., 150 F.T.C. 586, 598 (FTC Nov. 5, 2010) (No. D-9327),] 2010 WL 9549988 at \*8 (citing *Chicago Bridge & Iron Co. v. FTC*, 534 F.3d [410,] at 423 [(5th Cir. 2008)]) (emphasis added). See also Merger Guidelines § 7.1 (“Pursuant to the Clayton Act’s incipiency standard, the Agencies may challenge mergers that in their judgment pose a real danger of harm through coordinated effects, even without specific evidence showing precisely how the coordination likely would take place.”).

#### iv. Summary

Based on the foregoing, the evidence proves that the North American chloride TiO<sub>2</sub> market is vulnerable to coordinated conduct, and that this vulnerability will be enhanced by the Acquisition.

#### NOTES

1. The theory of coordinated effects has two elements: (a) the relevant market must be susceptible to coordinated interaction (oligopolistic interdependence); and (b) the merger must increase the likelihood or success of coordinated interaction. In the *Tronox* excerpt, be sure you know the headline factual findings supporting each element. Note that most of the factual findings go to susceptibility; if a market is susceptible to coordinated interaction, the then elimination of the independence of a major competitor through a horizontal merger is usually enough to support a finding of increased likelihood or success.

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<sup>12</sup> According to the Merger Guidelines, “meet or release” clauses tend to increase the vulnerability of a market to coordinated interaction by increasing visibility of competitive initiatives. See Merger Guidelines § 7.2 (“A market typically is more vulnerable to coordinated conduct if a firm’s prospective competitive reward from attracting customers away from its rivals will be significantly diminished by likely responses of those rivals. This is more likely to be the case, the stronger and faster are the responses the firm anticipates from its rivals. The firm is more likely to anticipate strong responses if there are few significant competitors, if products in the relevant market are relatively homogeneous, if customers find it relatively easy to switch between suppliers, or if suppliers use meeting-competition clauses.”).