

513. Japanese cal hypo producers also face higher costs than their United States counterparts in several respects. For example, they face high energy costs which makes chlorine and caustic soda, two key raw materials, more expensive. (CX 259-N#; CX 332-G#; CX 377-N#; CX 545-C) Manufacturing cost estimates calculated several years ago, using an exchange rate of 230 yen to the dollar, show that the Japanese cal hypo producers had no significant manufacturing cost advantage over the major United States producers. (CX 271-J#; CX 332-H#) The differential has since shifted to the disadvantage of the Japanese producers as the yen has strengthened to around 150 to the United States dollar.

514. The lead time required for the delivery of cal hypo from Japan to the United States can be a significant problem and risk for United States repackers who are engaged, in the most part, in a seasonable business. (CX 173-Z62-Z63) Japanese shipping regulations require cal hypo to be shipped from Japan in steel drums, which also add to the cost of the product leaving Japan and to the cost ultimately faced by a United States repacker purchasing Japanese cal hypo, as the repacker incurs additional costs, over the price of the material, in order to dispose of the drums. (Schaub, Tr. 2193-94)

515. The Japanese cal hypo producers are not viewed as a significant competitive threat by either Olin or PPG. (CX 343-A#; CX 545-C, E)

f. Other Foreign Producer/Exporters

(1) Sigma

516. Sigma Prodotti Chimici, SpA ("Sigma") is an Italian company that manufactures chlorinated isocyanurates at its plant in Bergamo, Italy. (Kennedy, Tr. 514; Marcum, Tr. 3967-68) Sigma is said to have begun producing dichlor and trichlor in commercial quantities in 1986. (Marcum, Tr. 4043-46)

517. Evidence from Sigma regarding its iso production capacity was not available at the trial. Olin's internal estimate, placed # # (CX 651-B#) Marshall Bloom of Bio-Lab, who has visited Sigma's [113] plant, places # # (Bloom, Tr. 700-01) # # (CX 478-Z7; CX 492#)

518. Sigma acquired the necessary permits to begin sales of dichlor and trichlor in the United States for use as a swim pool sanitizer in early 1986. (RX 194; CX 638-A; Marcum, Tr. 4043-46; CX 677-Z57, Z-58#) Sigma began sales of dichlor and trichlor to the United States a few months thereafter. (RX 190-C; Kennedy, Tr. 515; Pettoruto, Tr.

1380-81#) Sigma exports isocyanurates to the United States through its wholly-owned subsidiary, 3-V Chemical Corporation ("3-V"). (CX 677-Z60#; RX 190; Rx 246#) 3-V sells the dichlor and trichlor it purchases from Sigma under the trade name Oxidan. (RX 190-A) There is testimony indicating that Sigma's product quality was poor in 1986. (Schaub, Tr. 2093; Jonas, Tr. 2253-54)

519. 3-V Chemical Corporation began offering Sigma isos for sale in the # # (CX 492#; RX 194#) It is not known, however, what quantity of Sigma isos has been imported into this country, beyond a few samples. (Marcum, Tr. 4045) A major repacker purchased two truckloads but returned part of that due to quality problems. (Marshall, Tr. 1140#) A second major repacker, Bio-Lab, purchased only trial samples. (Bloom, Tr. 697) A third repacker found Sigma's quality to be unacceptable. (Jonas, Tr. 2253-54) Another repacker located on the West Coast has not encountered any Sigma iso products and has not been solicited by 3-V salesmen. (Christensen, Tr. 1851)

520. 3-V reported no United States sales in 1985 and only 11,000 pounds of iso sales in the United States in 1986, as of April 3, 1986, the date of the company's subpoena response. (CX 643-C, Z)

521. Sigma was not viewed as a factor in 1985, around the time of the Olin/FMC acquisition. (CX 223-A#) Much of its efforts are anticipated to be in non-pool uses of isos. (CX 224-A#)

(2) CdF Chimie—Isocyanurates

522. CdF Chimie SA ("CdF") is a French company which produces CA and isocyanurates at a plant in Toulouse, France. The firm is also known as Societe Toulousaine de Synthese SA ("STS"), which is reportedly owned 75% by CdF and 25% by Azotes et Produits Chimiques SA ("APC"). (CX 179-Z39; CX 258-H; CX 465-I; CX 666-A) CdF is at least partially subsidized by the French Government. (CX 127-T#) [114]

523. CdF has been known since the 1960's as a European producer of isos (CX 666-A) and, at one time, sold product in the United States that was not viewed as price-competitive. (Jonas, Tr. 2255-56; Turnipseed, Tr. 7471) CdF has the capacity to produce about 7 million pounds of isos per year. (CX 15-A, B-C; CX 478-Z2; CX 651-B#; Ishida, Tr. 987) There is evidence indicating that CdF increased its isos capacity to about 13 million during the 1984-1985 period. (RX 93-A#; RX 340#; CX 325-A#)

524. CdF is not a member of the Isocyanurate Industry Ad Hoc

Committee and does not export any isocyanurates into the United States for swimming pool use. (Jonas, Tr. 2255; Marcum, Tr. 3968, 3970) CdF had minimal exports of dichlor into the United States in 1985, through its United States subsidiary, CdF Chimie North America. (CX 3; RX 340-A, B#) CdF is not viewed as a factor in the United States market. *E.g.*, CX 223-A#. Moreover, CdF has very little excess capacity (CX 15-A; CX 478-Z2), purchased CA from # # occasionally (CX 676-Z144-Z49#), and sought to purchase isos from FMC in late 1984. (CX 478-Z4-Z5) Although CdF produces CA, it does not produce chlorine or caustic soda. (CX 319-A#) CdF is also known to have experienced production difficulties. (CX 375-T#; CX 478-Z2)

(3) Saskatoon Chemical—Cal Hypo

525. Saskatoon Chemical, Ltd (“Saskatoon”), a Canadian firm, is a division of Prince Albert Paper, Ltd. and is owned by the provincial government of Saskatchewan, Canada (CX 426-B; CX 467-A) and exported some cal hypo to the United States in 1986. (Hughes, Tr. 5252) Saskatoon built a cal hypo plant in Saskatchewan, Canada, using licensed technology from Canadian Industries Limited and similar to that used in an unsuccessful pilot plant in Yugoslavia. (CX 426-B, E; CX 467-A; Hughes, Tr. 5252) Saskatoon’s entry into the production of cal hypo appears to have been as a result of a need to dispose of excess chlorine by-product from other chemicals operations. (CX 426-B)

526. Saskatoon reportedly commenced construction of a cal hypo plant in 1981 or early 1982, scheduled for completion in late 1983. (CX 467-A) Major start-up problems ensued, including a process-related fire, and whatever product was manufactured in 1984 was of inferior quality. (CX 127-Q#; CX 175-Z65-66; CX 177-Z3-4; CX 377-T#; CX 466-B#; CX 471-O#; CX 476-Z32#; Schaub, Tr. 2015) # # (CX 472-Z1#) and # # (CX 466-B#) A repacker witness testified that Saskatoon’s production and inferior product quality adversely affected one United States repacker, which went into Chapter 11 bankruptcy after having relied heavily on Saskatoon cal hypo to meet its [115] 1985 cal hypo needs. (Schaub, Tr. 2015)

527. Saskatoon’s product quality appears to have improved since it recommenced production in 1986. (Castagnoli, Tr. 2433; Vonderlow, Tr. 4803, 4836, 4882) However, # # (CX 476-Z33-34#) Some repackers reportedly did not purchase Saskatoon cal hypo despite lower prices. (Sossamon, Tr. 4626; Smith, Tr. 6672)

528. Saskatoon is believed to have higher unit production costs than either Olin or PPG. (CX 259-O#; Hughes, Tr. 5239-40#; Henske, Tr. 7243-44#) Saskatoon reportedly produces the less desirable 70% cal hypo and utilizes a lower quality lime. (CX 467-A) PPG's cal hypo business manager, Mr. Hughes, testified when Saskatoon began selling in the United States in 1985, its price ranged from 5 to 10% lower than PPG's and that PPG is projecting a similar range of price differential into the future. (Hughes, Tr. 5185-86, 5298-99) A major repacker whose firm markets the "Olympic" brand pool chemicals testified that Saskatoon is likely to follow Olin's pricing lead. (Castagnoli, Tr. 2458)

529. Actual data on Saskatoon's United States sales are not available. However, the DOC cal hypo import data show imports of 272,000 pounds from Canada for 1985, and none from Canada for prior years. (CX 684-D, F, H, J, L, S)

530. Saskatoon's cal hypo production capacity has been variously estimated to be about 12 million pounds annually. (CX 582-C#; Pettoruto, Tr. 1333; Schaub, Tr. 2082; Hammersmith, Tr. 6044) Saskatoon is said to have commitments to supply cal hypo to customers in Canada and Australia as well as some in the United States (Schaub, Tr. 2082) and reportedly has a limited capacity available for sale in the United States. (Schaub, Tr. 2082; Jonas, Tr. 2255; Hughes, Tr. 5185)

531. The record also contains evidence regarding other foreign producers of isos or cal hypo. Of those, a Spanish company known as Delsa is the only firm which reported any export of either product into the United States.

532. Derivados Electroquimicos Levante S.A. ("Delsa") produces isos at its plant in Barcelona, Spain. (CX 179-Z39; CX 465-I#) The company has been producing trichlor since 1973 and dichlor since 1979. (RX 358-B#) Delsa is not a member of the Isocyanurate Industry Ad Hoc Committee and does not have an EPA registration to sell isos in the United States for swimming pool use. (Bloom, Tr. 702; Marcum, Tr. 4163) Delsa operates under a [116] CdF license and has purchased CA from CdF and, more recently, Nissan. (CX 246; CX 319-A#; CX 465-I, J; RX 358-C#; Turnipseed, Tr. 7776-77) Delsa does not appear to be vertically integrated into chlorine or caustic soda. (CX 319-A#; Turnipseed, Tr. 7867#) Delsa reported about 200,000 pounds of isos shipment to the United States in 1985. Delsa has only one United States customer and reportedly has no plans to start marketing isos in the United States. (RX 358#)

533. Enquidesa, another Spanish firm, has been identified as a producer of isos. The company does not sell isos in the United States. (Marcum, Tr. 3968)

534. There are occasional references in the record to cal hypo manufactured in mainland China. (CX 123-B; CX 409#; CX 553-C; Christensen, Tr. 1780-81) The evidence indicates that the Chinese product has a chlorine content of 60% or less (CX 409#; CX 524; CX 527-A; CX 553-C) and is generally considered unsuitable for pool use. (CX 527-A; CX 528) The Chinese cal hypo is reportedly of poor quality (CX 377-S-T#; CX 524; CX 545-E; CX 587-E) with a high lime content (CX 527-A) and is not considered a factor in the United States (CX 123-B) or elsewhere. (CX 545-E)

535. There are other references in the record to cal hypo manufactured in Europe (CX 529) and India. (CX 526) These products are reportedly of inferior quality and low in chlorine content. (CX 526; CX 529)

B. The Challenged Acquisition Exacerbated the Concentration in the Relevant Markets to an Unacceptably High Level and Is a Likely Violation of Section 7 of the Amended Clayton Act Unless Saved By Other Relevant Factors

1. Measurement of Market Share

a. The Data Base—General

356. The quantitative data related to the production, sales and production capacity used to determine the market shares of the various firms in this case were obtained, in the most part, directly from the firms involved through pretrial discovery by means of compulsory and voluntary process by the parties, mostly through joint requests and joint subpoenas.² [117]

537. This is not to say that the quantitative data employed in the market share measurement and concentration analysis which follow is free from minor deficiencies or that their precision could not have been improved with expenditures of more time and funds. For example, the capacity and production figures for isos and cal hypo could have been broken out between residential and commercial uses. However, the capacity and production data reported by responding firms described hereinabove, together with other quantitative information contained in

² The accuracy and reliability of information related to foreign producers have been materially advanced with the cooperation of foreign corporations secured through the good offices of government authorities of Japan and the EEC member nations.

the planning and marketing documents of the major industry participants as well as information offered by many witnesses representative of the various segments of the pool chemicals business, is sufficient for the purpose of an overall assessment of the order and magnitude of market shares of the various participants in the relevant markets and to determine whether the challenged acquisition may tend to lessen competition substantially in the relevant markets. It is well-recognized that in Section 7 cases "precision in detail is less important than the accuracy of the broad picture presented." *Brown Shoe Co. v. U.S.*, 370 U.S. 194, 341-42, n. 69 (1962); *Luria Bros. v. FTC*, 389 F.2d 847, 858 (3d Cir. 1968), *cert. denied*, 393 U.S. 829 (1968); *Papercraft Corp.*, 78 FTC 1352, 1404-06 (1971), *aff'd as modified*, 472 F.2d 927 (7th Cir. 1973).

b. *Olin's Isocyanurate Capacity at the Lake Charles Plant*

538. The *DOJ Guidelines* provide, in the context of product market definition, that "[i]f a firm has existing productive and distributive facilities that could easily and economically be used to produce and sell the relevant product within one year in response to 'a small but significant and nontransitory' increase in price, the Department will include that firm in the [product] market." *DOJ Guidelines* § 2.21. The *DOJ Guidelines* also makes clear that, for the purposes of calculating market shares "total sales or capacity may overstate the competitive significance of a firm" and that the DOJ will "include only those sales likely to be made or capacity likely to be used in the market in response to 'a small but significant and nontransitory' increase in price." *DOJ Guidelines* § 2.4.

539. The evidence shows that the production of isos at Olin's Lake Charles plant was suspended effective August 1, 1984 "until further notice." (CX 402) The Olin announcement [118] indicated that it had concluded a raw materials tolling arrangement with another manufacturer and that it would continue to sell the product under the PACE brand. Olin further explained in the announcement that "this action was taken for economic reasons since current conditions favor contract tolling the product for an interim period instead of manufacturing it" and that "during the interim period" the Lakes Charles "isocyanurate manufacturing facilities will be kept in stand-by condition." (CX 402)

540. The evidence also shows that after Olin ceased trichlor production at Lake Charles, Olin continued to be a major contract-

producer-seller of isos (PACE brand) through the Monsanto Toll (CX 469#) until it reopened the Lake Charles plant in October, 1985, after the challenged acquisition was consummated in August, 1985. Monsanto Toll obligated Olin to supply # # and take # # pounds of isos per month from Monsanto during the contract term. (CX 469-A-C#; Kosche, Tr. 8953#) Therefore, for the purposes of a realistic assessment of the present and future effect of the acquisition, Olin's 1984 isos market share in terms of capacity and production should be measured on the basis of Olin's 1984 trichlor capacity and production at Lake Charles, and Olin should be treated as an on-going producer-seller of isos before and after the acquisition. This common sense approach would also be in accord with Olin's own corporate intentions and plans as well as the industry's perception of Olin as a producer-seller of isos during that period.

541. In any event, Olin's decision to "waterbatch" and not to "mothball" the Lake Charles trichlor facility was a deliberate corporate decision, made at the highest level, that Olin chose the "waterbatching" over "mothballing," at considerable additional costs, in order to maintain the facilities in a higher state of readiness, and that Olin wanted to be able to, and fully intended to, resume production at the plant within 60 to 90 days, presumably whenever it thought the "economic conditions" favored manufacturing over tolling. (CX 655-L; CX 656-Z48#; Johnstone, Tr. 6295-96#)

542. Also, what clearly emerges from a review of Olin's contemporary corporate documents, as largely corroborated by corporate management witnesses, is that (1) Olin's firm commitment to produce and sell isos along with cal hypo never wavered at Olin's senior corporate management level; (2) Olin's management actively pursued that corporate objective and was determined to overcome whatever technological or production economics problems that lay in the path to profitability of Olin's isos business; and (3) to that end Olin sought new and superior CA technology through both stepped-up in-house process [119] development efforts and acquisition or licensing of "proven" CA technology from others. Olin also continued to stockpile CA during the period of Monsanto Toll, to be used for resumption of its own trichlor production at Lake Charles after the toll agreement ended.

543. It is fair to conclude, on the basis of the record as a whole, that Olin's corporate management was determined to become a factor in the production and sale of isos for pool use, preferably by internal

technological development but through any means to achieve that goal, and Olin's corporate management was ready, willing and able to provide necessary financial support to press the internal R&D toward that goal, that, as a result, Olin's management and technical staff at the operational level were about to implement an engineering plan for a CA pilot plant using a new, internally developed CA technology, and finally that these efforts were suspended when the FMC acquisition opportunity became promising.

544. Olin planned to suspend the operation of the Lake Charles trichlor on a temporary basis (CX 656-Z47-48#; CX 659-B#) and Olin's management, including Henske, Chairman of the Board and the CEO, Swartley, Olin's Executive Vice President of the Consumer Products Group, and Turnipseed, Director of Marketing and Sales for Olin's pool chemicals business, planned the purchase and stockpiling of CA from Nissan to provide the capability for restarting the trichlor plant at the end of the toll agreement. (CX 403-A-B#; CX 656-Z4, Z30#; Henske, Tr. 7272-73)

545. In response to a management inquiry, Olin's technical organization reported to Swartley that CA had a substantial shelf life and could safely be stockpiled for some extended period in excess of 2-3 years. (CX 656-Z4, Z31#; Henske, Tr. 7270-71) Olin's vice president for technology, Dr. O'Leary, # # (CX 398#) # # (Turnipseed, Tr. 7797#) and stockpiled # # (#Kosche, Tr. 8502#) # # (CX 659-B#)

546. Mr. Henske, Olin's CEO, directed and approved the water-batching of Lake Charles. (CX 655-J-K, M) Mr. Henske did not intend to exit the iso business by the July, 1984 suspension of trichlor production but intended to secure CA supplies needed to resume the Lake Charles production at the end of the Tolling [120] Agreement. (CX 655-L-M; Henske, Tr. 7251) Mr. Henske intended that Olin would develop its own CA manufacturing capability in the meantime. (CX 655-L)

547. Mr. Henske, # # (CX 656-Z48#) Mr. Henske believed that mothballing the Lake Charles plant would have resulted in the plant becoming inoperable within 12-18 months. (CX 657-Q#; Henske, Tr. 7250-51) Mr. Henske felt that # # (CX 657-P#), # # (CX 657-P-Q#; Henske, Tr. 7270; *see also* CX 655-W; Johnstone, Tr. 6295-96; Kosche, Tr. 8496, 8498#) The total annual fixed costs of the trichlor plant while waterbatched were about \$7.6 million. (CX 659-A,C#) # # (Henske, Tr. 7252-53; 7261-67#) Peter Kosche, General

Manager of Pool Chemicals, testified that # # (Kosche, Tr. 8921-22#)

548. # #. (Turnipseed, Tr. 7919-21#) # # (CX 791-A#)

549. The evidence also clearly shows that, at Mr. Henske's direction, Olin's new CA technology development efforts were stepped up about when the Lake Charles waterbatching decision was made. In a memo to Mr. Swartley, dated September 20, 1983, Mr. Kosche # # (CX 768#) Subsequently, [121] # # (CX 768#; CX 769-A-B#; CX 778-A#) # # (CX 770-A-B#; Kosche, Tr. 8697-98#)

550. # # (CX 776-A#; RX 30-C-D,I#)

551. # # (CX 778-B#; Kosche, Tr. 8747-48#) # # (Kosche, Tr. 8755-56#) # # (CX 777-D#; CX 778-C#; Kosche, Tr. 8756#)

552. # #. (CX 777-A-D#) # # (CX 777-C#) [122] # # (CX 777-C#; Kosche, Tr. 8758, 8760-63#)

553. # # (CX 261-J#)

554. # # (Kosche, Tr. 8764-66#) # # (RX 29-A, I#) # # (RX 29-A#)

555. On December 7, 1984, Mr. Kosche received from # # (CX 765-A#) # # (Kosche, Tr. 8773#) # # (CX 765-D-E#; Kosche, Tr. 8775#) # # (CX 765-D#; Kosche, Tr. 8775-76#)

556. Olin's 1985 Pool Chemicals budget # # (Kosche, Tr. 8775#) Olin's corporate budget for 1985 also contained # #. (Swartley, Tr. 7410-11#)

557. On January 9, 1985, Dr. Gill's Monthly Highlight Report to Dr. Marano # # (CX 771-B#) # # [123] (Swartley, Tr. 7419#)

558. # # (Swartley, Tr. 7419-20#) # # (Kosche, Tr. 9055-56#)

559. Viewed in light of the evidence reviewed hereinabove, Olin's trichlor plant capacity at Lake Charles must be taken into account in measuring the overall industry capacity as well as Olin's true competitive position, in terms of capacity, at the time of the acquisition. Moreover, at the time of the acquisition, Olin remained a seller of PACE brand isos. Therefore, the challenged acquisition is horizontal in nature and should be analyzed as such. For all of these reasons, Olin's isos capacity at Lake Charles should be included in measuring the market shares of industry firms as well as gauging the extent of seller concentration in the relevant markets for the purposes of this case.

c. Capacity of Foreign Producers/Exporters

560. Needless to say, an assessment of the effects of the challenged

acquisition on competition in the relevant product markets in the United States must take into consideration the substantial imports which have accounted for almost 20% of isos and cal hypo used as pool chemicals in the United States. On the other hand, in determining the size of the United States isos and cal hypo market and the relative shares of that market of individual firms, it would be entirely inappropriate to include the total production capacities of these foreign producers.

561. The *DOJ Guidelines* state in pertinent part that if sales or shipments are used to measure shares of domestic firms, the market shares of foreign firms (who export to the domestic market) will also be measured using dollar sales in, or shipments to, the relevant market, and that if capacity or production is used for domestic firms, the shares of foreign firms will be measured in terms of the capacity “likely to be used to supply” or production “that is likely to be shipped to the relevant market in response to a ‘small but significant and nontransitory’ price increase” in the domestic market. The *DOJ Guidelines*, § 2.4 “Calculating Market Shares.” The *DOJ Guidelines* state finally that “a single market share may be assigned to a country or group of countries if firms in that country or group of countries act in coordination or if necessitated by data limitations.” *Id.* [124]

562. The evidence shows that, because of commitments to other markets, anti-dumping duty orders against Japanese producers of isos and cal hypo, yen/dollar exchange rates, advanced planning requirements, and historic geographic shipment patterns, as hereinafter discussed in some detail, the full capacity of these foreign firms is not readily available for diversion to the United States in response to “small but significant and nontransitory price increase” in the United States market.

563. In these circumstances, historic levels of imports are an appropriate proxy for quantifying the amount of capacity that foreign cal hypo and iso producers could readily use to restrain the anticompetitive behavior by the domestic producers. (Kamerschen, Tr. 2728-32) Therefore, in market share charts that reflect the two United States markets, historic import data are used as a surrogate for foreign firm “capacity,” “production” and “production value.” See F. 569, 573, 576, *infra*.

564. Our market share tables reflect a conservative approach to quantifying the historic United States export levels of foreign producers. With two exceptions, the United States market shares for

foreign firms reflect the highest level of exports over the 1980-1985 period. (CX 652-Q#; Kamerschen, Tr. 2729-30, 2732) An average was taken for Nippon Soda, which reported unusually high United States exports in 1983. (CX 652-Q#; Kamerschen, Tr. 2732) The smallest export figure was taken for Chlor-Chem, which is half owned by FMC. (CX 652-Q#; Kamerschen, Tr. 2732-34#)

2. Market Shares and Concentration

565. The *DOJ Guidelines* state that, in evaluating horizontal mergers, the DOJ will consider “both the post-merger market concentration and the increase in concentration resulting from the merger.” But, the DOJ also makes clear that it will consider “all other relevant factors that pertain to its competitive impact.” *DOJ Guidelines* § 3.11.

566. The *DOJ Guidelines*, also point out that “even in concentrated markets, it is desirable to allow firms some scope for merger activity in order to achieve economies of scale and to permit exit from the market.” The *Guidelines* go on to state that market share and concentration data serve only as the “starting point” for assessing the effects of a merger and “all other relevant factors that pertain to its competitive impact” need to be considered. *DOJ Guidelines* § 3.11.

[125]

567. Under the *DOJ Guidelines*, in cases where the post-merger HHI is above 1800, the market is considered to be “highly concentrated” and additional concentration (an increase in the HHI of over fifty points) resulting from a merger in that market is “a matter of significant competitive concern.” *DOJ Guidelines* § 3.11(c). The market shares of Olin and concentration in each of the two markets alleged in the complaint passed the threshold of competitive concern after the acquisition. (Market figures may not appear additive due to “rounding off.”)

568. Furthermore, it is our view that because this acquisition involves two major firms in the relevant markets and the premerger market concentration was already high, and because this acquisition resulted in such unacceptably high level of concentration that the acquisition is a likely violation of Section 7, unless it is saved by some other relevant non-market share factors (which will be considered in later sections of this Initial Decision).

a. *The Isos/Cal Hypo Dry Pool Sanitizer Market*

569. The following tables reflect capacity and production market

shares and pre- and post-acquisition HHI's for the United States dry sanitizer market, at the time of the challenged acquisition: [126]

United States Dry Sanitizer Market
1985 Capacity
Thousands of Pounds

<u>Company</u>	<u>Rank</u>	<u>Capacity</u>	<u>% of Total</u>
<u>Olin</u>	1#	_____	_____ #
PPG	2#		#
Monsanto	3#		#
<u>FMC</u>	4#	_____	_____ #
Shikoku	5#		#
Nissan	6#		#
Nippon Soda	7#		#
Toyo Soda	8#		#
Wesley	9#		#
Nankai	10#		#
Delsa	11#		#
Saskatoon	12#		#
CdF Chimie	13#		#
Chlor-Chem	14#	_____	_____ #
Total	#		#
Olin/FMC Post-Acquisition Share			# #
Post-Acquisition HHI			# #
Pre-Acquisition HHI			# #
Increase in HHI			1065

(CX 652-C#) [127]

United States Dry Sanitizer Market
1984 Production

<u>Company</u>	<u>Rank</u>	<u>000 lbs.</u>	<u>Share</u>
Domestic:			
<u>Olin</u>	1#	_____	_____ #
Monsanto	2#	_____	_____ #
<u>FMC</u>	3#	_____	_____ #
PPG	4#	_____	_____ #
Foreign:			
Shikoku	5#		#
Nissan	6#		#
Nippon Soda	7#		#
Toyo Soda	8#		#
Nankai	9#		#
Delsa	10#		#
Saskatoon	11#		#
CdF Chimie	12#		#
Chlor-Chem	13#	_____	_____ #
Total		#	#
Olin/FMC Post-Acquisition Share			# #
Post-Acquisition HHI			# #
Pre-Acquisition HHI			# #
Increase in HHI			1186

(CX 652-L#)

570. In the United States dry sanitizer market of isocyanurates and calcium hypochlorite, based upon capacity, Olin's share increased from # #% to # #%, with the FMC acquisition. (CX 652-C#) A market share of # #% "might give a firm power over price, regardless of the number or size distribution of its competitors." R. Posner, *Antitrust Law: An Economic Perspective*, 103 (1976). And, based upon capacity, the HHI increased by 1065, from # # to # #. (CX 652-C#)

571. In the United States dry sanitizer market, based on capacity, the acquisition increased the two-firm concentration ratio from # #% to # #%, and the four-firm concentration ratio from # #% to # #%. (CX 652-C#) Based upon the last full year of production prior to the acquisition, Olin's share increased from # #% to # #% with

the acquisition. (CX 652-L#) Based upon production, the HHI in the United States dry sanitizer market increased by 1186 from # # to # #. (CX 652-L#) Two-firm concentration increased from # #% to # #% [128] and four-firm concentration, from # # % to # #%. (CX 652-L#)

572. For both capacity and production market share tables, historical imports have been used as a proxy for the United States capacity of foreign companies. (CX 652-Q,R#)

573. The following table reflects the market shares, based upon the value of production in the United States dry sanitizer market, at the time of the acquisition:

<u>Company</u>	<u>Rank</u>	<u>Sales Based on Average Bulk Price</u>	<u>Share</u>
Domestic:			
<u>Olin</u>	1#	_____	_____ #
Monsanto	2#		#
<u>FMC</u>	3#	_____	_____ #
PPG	4#		#
Foreign:			
Shikoku	5#		#
Nissan	6#		#
Nippon Soda	7#		#
Toyo Soda	8#		#
Nankai	9#		#
Delsa	10#		#
Saskatoon	11#		#
CdF Chimie	12#		#
Chlor-Chem	13#	_____	_____ #
Total		#	#
Olin/FMC Post-Acquisition Share			# #
Post-Acquisition HHI			# #
Pre-Acquisition HHI			# #
Increase in HHI			1301

(CX 652-P#)

The production value figures for each company are computed as the dollar value of production based on average bulk prices per pound.

Isocyanurate production volumes were assigned a value of \$1.45 per pound and calcium hypochlorite production volumes were assigned a value of \$0.85 per pound. (CX 652-P#)

574. Even if the capacity or 1984 production of Olin's waterbatched Lake Charles plant is not counted, Olin's market [129] share and the concentration levels remain essentially high enough to render the acquisition unacceptable. Based upon capacity (without Lake Charles capacity), the acquisition increased Olin's share from # #% to # #%. The HHI increased by 1036, from # # to # #. (CX 652-D#) Based upon 1984 production (without Lake Charles trichlor capacity), the acquisition increased Olin's share from # #% to # #%. The HHI increased by 1179, from # # to # #. (CX 652-M#)

575. Thus, whether viewed in terms of capacity, production, or sales, the acquisition raises grave competitive concerns. This competitive concern is especially acute at these market share levels not only because of the potential for collusive behavior but also because of the potential for leading firm behavior. (Kamerschen, Tr. 2742-54)

b. *The Isos Pool Sanitizer Market*

576. The following tables reflect the capacity and production market shares and the pre- and post-acquisition HHI's for the isos-only market, at the time of the acquisition:

United States Isos-Only Market
1985 Capacity

United States Capacity

<u>Company</u>	<u>Rank</u>	<u>000 lbs.</u>	<u>Share</u>
Domestic:			
Monsanto	1#		#
<u>FMC</u>	2#	_____	_____#
<u>Olin</u>	3#	_____	_____#
Foreign:			
Shikoku	4#		#
Nissan	5#		#
Delsa	6#		#
CdF Chimie	7#		#
Chlor-Chem	8#	_____	_____#
Total		#	#

Initial Decision

113 F.T.C.

Olin/FMC	Post-Acquisition Share	#	#
	Post-Acquisition HHI	#	#
	Pre-Acquisition HHI	#	#
	Increase in HHI	1114	[130]

(CX 652-A#)

United States Isos-Only Market
1984 Production
Thousands of Pounds

<u>Company</u>	<u>Rank</u>	<u>000 lbs.</u>	<u>Share</u>
Domestic:			
Monsanto	1#		#
<u>FMC</u>	2#	_____	_____#
<u>Olin</u>	3#	_____	_____#
Foreign:			
Shikoku	4#		#
Nissan	5#		#
Delsa	6#		#
CdF Chimie	7#		#
Chlor-Chem	8#	#	
Total		#	#

Olin/FMC	Post-Acquisition Share	#	#
	Post-Acquisition HHI	#	#
	Pre-Acquisition HHI	#	#
	Increase in HHI	702	

(CX 652-K#)

577. In the United States isos-only market, based upon capacity, Olin's share increased from # #% to # #% after the acquisition. (CX 652-A#) And the HHI increased by 1114, from # # to # #. (CX 652-A#)

578. The two-firm concentration ratio increased from # #% to # #%, and four-firm concentration ratio increased from # #% to # #%. (CX 652-A#)

579. Similarly, based upon production, Olin's share in the isos-only market increased from # #% to # #% and the HHI increased by 702, from # # to # #. (CX 652-K#)

580. The two-firm concentration ratio increased from # #% to

#%, and the four-firm concentration ratio from # #% to # #%. (CX 652-K#) [131]

581. For both capacity and production market share tables, historical imports have been used as a proxy for the United States capacities of foreign companies. (CX 652-Q,R#)

3. Market Shares and Concentration and Import Competition

a. *Substantiality of Imports*

582. In evaluating the significance of the marked increases in the post-acquisition market shares and seller concentration in the two relevant markets, it is important to assess accurately the true competitive impact of the historically substantial imports in these markets.

583. The following tables, reformatted from corresponding market share tables discussed hereinabove, highlight the substantiality of import competition in the relevant markets in 1984 and 1985, ranging between 8.9% and 19% under various measures of market shares:

Table 1.

1985 United States Market Capacity Isocyanurates Thousands of Pounds

<u>Company</u>	<u>Rank</u>	<u>Post-Acquisition Capacity</u>	<u>% of Total</u>
Olin	1#		#
Monsanto	2#		#
FMC	—	—	—
Imports		23,005	14.4%
Shikoku #	#		
Nissan #	#		
Others #	#		
Total		160,026	100%

(Based on CX 652-A#) [132]

Initial Decision

113 F.T.C.

Table 2.

1984 United States Production
Isocyanurates
Thousands of Pounds
Pre-Acquisition

<u>Company</u>	<u>Rank</u>	<u>Capacity</u>	<u>% of Total</u>
Olin	3#		#
Monsanto	1#		#
FMC	2#		#
Imports		23,005	19.0%
Shikoku #	()#		
Nissan #	()#		
Others #	()#		
Total		121,245	100%

(Based on CX 652-K#) [133]

Table 3.

1985 United States Market Capacity
Isocyanurates and Calcium Hypochlorite
Thousands of Pounds
Post-Acquisition

<u>Company</u>	<u>Rank</u>	<u>Capacity</u>	<u>% of Total</u>
Olin	1#		#
PPG	2#		#
Monsanto	3#		#
FMC	—	—	—
Imports		34,930	8.9%
Shikoku #	#		
Nissan #	#		
Nippon Soda #	#		
Toyo Soda #	#		
Others #	#		
Total		390,163	100%

(Based on CX 652-C#) [134]

Table 4.

1985 United States Market Capacity
Isocyanurates and Calcium Hypochlorite
Thousands of Pounds

Post-Acquisition

<u>Company</u>	<u>Rank</u>	<u>Capacity</u>	<u>% of Total</u>
Olin	1#		#
PPG	2#		#
Monsanto	3#		#
FMC	—	—	—
Imports		34,930	9.6%
Shikoku #	#		
Nissan #	#		
Nippon Soda #	#		
Toyo Soda #	#		
Others #	#		
Total		359,163	100%

(Based on CX 652-D#) [135]

Table 5.

1984 United States Market Production
Isocyanurates and Calcium Hypochlorite
Thousands of Pounds

Pre-Acquisition

<u>Company</u>	<u>Rank</u>	<u>Capacity</u>	<u>% of Total</u>
Olin	1#		#
Monsanto	2#		#
FMC	3#		#
PPG	4#		#

Initial Decision

113 F.T.C.

Imports	33,730	12.1%
Shikoku #	#	
Nissan #	#	
Nippon Soda #	#	
Toyo Soda #	#	
Others #	#	
Total	280,173	100%

(Based on CX 652-M#) [136]

Table 6.

1984 Isos + Calcium Hypochlorite
(United States Production and Foreign Imports)
Average Bulk Prices

<u>Company</u>	<u>Dollars</u>	<u>% of Total</u>
Olin	#	#
FMC	#	#
Monsanto	#	#
PPG	#	#
Imports	42,473,500	13.1%
Shikoku #	#	
Nissan #	#	
Nippon Soda #	#	
Toyo Soda #	#	
Others #	#	
Total	\$323,074,400	100%

(Based on CX 652-P#)

584. Also, a number of witnesses estimated the level of imports of isos and cal hypo to have been from 18 to over 20% of domestic sales in recent years. There is no serious dispute regarding the quantitative substantiality of imports in the relevant markets in this case. There is also testimony indicating that 1986 iso imports were comparable. (Marcum, Tr. 3977-78; Hughes, Tr. 5279; Kosche, Tr. 8548#) In any event, the evidence indicates that the impact of these imports on domestic pricing of isos and cal hypo has been substantial and that repackers often sought lower prices from domestic producers by citing a lower price from a foreign producer. (Schaub, Tr. 2091-92; Smith, Tr. 6675; RX 252#) There is also testimony suggesting that some large repackers are buying imported isos and cal hypo as a secondary

source of supply. (Bloom, Tr. 737-38#; Kennedy, Tr. 512, 516-17; Castagnoli, Tr. 2427; Christensen, Tr. 1707-08#; Jonas, Tr. 2316#; Schaub, Tr. 2109-10; Vonderlow, Tr. 4803-05) However, the quantitative substantiality of imports should be evaluated along with other relevant factors disclosed in the evidence. Such factors, discussed hereinbelow, serve, individually and collectively, to diminish the potential influence of foreign producer-importers to respond to small but significant and nontransitory price increases and otherwise to constrain noncompetitive behavior by the remaining domestic producers in the future. [137]

b. *Recent Iso Dumping Proceedings and Their Impact*

585. Olin appears to contend that because of their capacity, production and substantial exports to the United States market in recent years, the Japanese producers will effectively restrain any anticompetitive behavior, including restriction of output and price increases to a supracompetitive level.

586. Inasmuch as the Japanese isos and cal hypo producers/exporters have accounted for the bulk of United States imports of isos/cal hypo in recent years, it is reasonable to look to them as the principal source of import constraints upon any anticompetitive behavior, including responses to any small but significant and nontransitory price increase. Therefore, a review of the impact of recent ITC-DOC anti-dumping proceedings and imposition of anti-dumping duty margins upon certain Japanese isos and cal hypo producers, including Nissan Chemical and Shikoku Chemical, is appropriate in order to evaluate the Japanese import competition more realistically in light of these experiences.

587. In June, 1983, Monsanto filed a petition with the ITC and the DOC alleging that CA and its chlorinated derivatives (isocyanurates) were being sold in the United States at less than fair value, and that an industry in the United States was materially injured or threatened with material injury by reasons of imports of such merchandise. (CX 174-I#; CX 179-Z13) Olin filed a brief supporting Monsanto's petition. (CX 376#) Olin did not support the Monsanto petition with respect to cyanuric acid (CA). (Turnipseed, Tr. 7702)

588. On November 18, 1983, the DOC made a preliminary determination, pursuant to Section 731 of the Tariff Act of 1930, that there was a reasonable basis to believe or suspect that CA and its chlorinated derivatives were being imported into the United States

from Japan at less than fair value (CX 179-Z13) and directed the Customs Service to require Japanese importers to post a cash deposit or bond equal to the average weighted margin between the United States purchase price and the Japanese market price for subsequent shipments of CA (except CA from Nissan) or one of its chlorinated derivatives. (CX 179-Z14)

589. On February 29, 1984, the DOC made a final determination that imports of CA and its chlorinated derivatives from Japan were being sold in the United States at less than fair value, and directed the Customs Service to continue the bond requirements. (CX 179-Z13-Z14) [138]

590. And, on April 17, 1984, the ITC made a final determination, pursuant to Section 735(b) of the Tariff Act of 1930, that an industry in the United States was materially injured by reason of imports from Japan of CA and its chlorinated derivatives. (CX 179) And the Customs Service was directed to assess anti-dumping duty margins on all entries of Japanese isocyanurates in the following amounts:

Nissan	
Dichlor	32.40%
Trichlor	8.84%
Shikoku	
Dichlor	32.00%
Trichlor	21.40%
Other Japanese Producers	
Dichlor	32.20%
Trichlor	16.58%

(CX 179-Z14)

No such anti-dumping duty was imposed on cyanuric acid imported into the United States by Nissan. (CX 179-Z14)

591. A request for an accelerated review of the order with respect to Japanese isos under Section 736 of the Tariff Act was opposed by Monsanto (CX 201) and no accelerated review was instituted. (Kugelman, Tr. 1241)

592. Neither the DOC's determinations nor the ITC's determinations regarding CA or its chlorinated derivatives resulted in the imposition of any quota or other quantity limitation on the amount of CA or its chlorinated derivatives that could be imported into the United States from Japan or any other country. (Kugelman, Tr. 1276)

593. In September, 1986, the DOC terminated the bond require-

ments imposed on November 18, 1983, on Nissan's United States imports of chlorinated isocyanurates and reduced significantly the bond requirements imposed on Shikoku's United States imports of CA and its chlorinated derivatives. (Preliminary Results of Anti-dumping Duty Administrative Review, *Cyanuric Acid and Its Chlorinated Derivatives from Japan*, ITA (DOC), 51 Fed. Reg. 32, 675 (1986) (Inv. No. 731-TA-136))

594. On December 19, 1986, the DOC published the results of a final determination regarding (1) the actual margins collectable with respect to Nissan and Shikoku imports of the designated products for the period November 1, 1983 to [139] March 31, 1984; and (2) estimated weighted margins for future imports of such designated products for these companies. The following weighted average margins were found to exist:

<u>Manufacturers/producers/exporters</u>	<u>Weighted Average Margin (percentage)</u>
Nissan:	
Dichlor	0
Trichlor	0
Shikoku:	
Cyanuric acid	1.74
Dichlor	9.66
Trichlor	0.66
All other manufacturers/producers/exporters:	
Cyanuric acid	1.74
Dichlor	9.66
Trichlor	0.66

(Final Results of Anti-dumping Duty Administrative Review, *Cyanuric Acid and Its Chlorinated Derivatives from Japan*, ITA (DOC), 51 Fed. Reg. 45,495, 45,497 (1986) (Inv. No. 731-TA-136); Kugelman, Tr. 1265-66)

595. A finding of zero margins in an administrative proceeding indicates that, for the period reviewed, the DOC has found that the importer had not sold at less than fair value in the United States. (Kugelman, Tr. 1248) Thus, with respect to the above finding, Nissan would not have to post any cash deposits after December 19, 1986, and Shikoku would be required to pay 0.66% in duties for its trichlor imports for the six-month initial review period. (Kugelman, Tr. 1267-68, 1289-90)

596. On May 1, 1987, the DOC published the results of a final determination regarding (1) the actual margins collectable with respect to Nissan and Shikoku imports of the designated products for the period April 1, 1984 to March 31, 1985 and (2) estimated weighted margins for future imports of such designated products for these companies. The following weighted average margins were found to exist: [140]

<u>Manufacturers</u>	<u>Weighted Average Margin (per cent)</u>
Nissan:	
Dichlor	0
Trichlor	0
Shikoku:	
Cyanuric acid	0.18
Dichlor	0
Trichlor	0

(RX 395)

This determination has been appealed to the Court of International Trade by Monsanto.

597. As a result of this final determination, neither Nissan nor Shikoku will have to make cash deposits during the next review period. (Kugelman, Tr. 1271-72) To date, Nissan has not paid any dumping duties during the pendency of the proceeding and Shikoku only had to pay a much more limited duty on its imports than initially found (*e.g.*, 0.66% on its trichlor imports) for a single six-month period. (Kugelman, Tr. 1274-75) ICI America's Mr. Pettoruto testified that if a zero margin was finally determined, Shikoku will not have to deposit anything and prior cash deposits will be refunded. (Pettoruto, Tr. 1432-34#)

598. And, if during the next review period (April 1, 1985 to March 31, 1986), both Shikoku and Nissan are determined to have an average weighted margin of zero again (or less than 0.5%), both could petition for revocation of the antidumping order. (Kugelman, Tr. 1272) In addition, during the entire time period when the revocation proceeding is pending, neither Nissan nor Shikoku would be required to post cash deposits. (Kugelman, Tr. 1285) The DOC "would intend to complete that review [*i.e.*, for the April 1, 1985 to March 31, 1986 period] by the end of May, 1988." (Kugelman, Tr. 1270-71)

599. The evidence is clear that Japanese manufacturers of isos have

taken a more cautious attitude toward the United States market following the ITC anti-dumping decisions. This attitude is reflected in documents and testimony from representatives of the Japanese producers and their United States importers, as well as in documents and testimony from domestic producers and United States customers.

[141]

600. Mr. Norihisa (Ken) Ishida, the general manager of Shikoku Chemical's United States subsidiary, was called as a witness by complaint counsel and testified concerning the impact of the anti-dumping decision on his firm. (Ishida, Tr. 923-25, 991-99, 1003-04, 1006, 1085-89, 1100-03) Mr. Ishida described the anti-dumping restrictions as a "hardship" (Ishida, Tr. 924), which he explained meant Shikoku's pricing in the United States "is not any more independently free . . . if the price in the U.S. goes down drastically, we may not be able to meet the competition because our price has to keep up with the Japanese home market price." (Ishida, Tr. 995)

601. Mr. Ishida also testified that Shikoku has a policy of reducing its United States sales as a part of its total sales. (Ishida, Tr. 923-24) He testified that Shikoku was # # (Ishida, Tr. 1085#)

602. Mr. Ishida further indicated that Shikoku regulates both the price and the volume of its United States exports more carefully than before. (Ishida, Tr. 991) He referred to the dumping order as "a limitation on the volume" (Ishida, Tr. 1006) and testified that # # (Ishida, Tr. 1102#) It is also Mr. Ishida's opinion that the anti-dumping order against Shikoku will remain in effect for approximately ten years before it is revoked. (Ishida, Tr. 998)

603. Mr. Ishida testified that Shikoku would follow an Olin increase in the price of dry sanitizers, because Olin is a "stronger force" than Shikoku and because it would be "the easier action to follow" Olin's pricing. (Ishida, Tr. 1004)

604. Shikoku documents confirm Mr. Ishida's testimony. A January 6, 1986 report from Mr. Ishida to Shikoku's Tokyo office reflects Shikoku's inability to discount prices to its United States customers. (CX 566-C) # # (Ishida, Tr. 1087-89#) # # (CX 573-D#) # # (CX 574-C#) and its own inability to # # (CX 577-F#) [142]

605. Documents and testimony from ICI, the exclusive importer of Shikoku isos in the United States, confirm the testimony of Mr. Ishida. Nicholas Pettoruto, ICI's product manager for water treatment chemicals, testified that # # (Pettoruto, Tr. 1392-94#) Mr. Pettoruto testified that # # (Pettoruto, Tr. 1393#) In Mr. Pettoruto's view,

(Pettoruto, Tr. 1427-28#) # # (CX 127-G, J#) and in other ICI documents which # #. (CX 133; CX 134#; CX 137; CX 142; CX 143#; CX 144; CX 145; Pettoruto, Tr. 1537-39)

606. Nissan, the second largest importer of Japanese isos, # # Akio Toraya, general manager of Nissan's specialty chemicals division, was deposed by counsel for both parties in Tokyo and his deposition testimony has been received into evidence by stipulation of the parties. (CX 676#) # # (CX 242-B#; CX 676-Z127-Z28#), Mr. Toraya # # (CX 676-Z128#) Nissan # # (CX 676-Z133#)

607. Mr. Toraya also testified that, # # (CX 676-Z202#), # # (CX 676-Z203#)

608. Nissan's concerns were also conveyed to # # [143] (CX 251-X#; CX 792-B#; CX 794-C#) # # (Swartley, Tr. 7381#; Turnipseed, Tr. 7905-06#) # # (CX 251-X#; CX 792-B#; Turnipseed, Tr. 7906#)

609. Earlier, in June, 1983, shortly after the Monsanto petition was filed, Nissan had expressed concern over the long-run implications for its United States market position. (CX 190) Nissan statements # # (CX 240-F,G#)

610. A representative of Toyomenka, Akira Kuroda, was deposed by counsel for both parties in Tokyo and offered similar testimony on the effects of the anti-dumping proceedings. Mr. Kuroda stated Toyomenka # # (CX 677-Z81#) # # (CX 677-Z190-91, Z194#), # # (CX 677-Z193#)

611. # (CX 617#) Another # # (CX 619-B#; CX 677-Z188-89#)

612. # # (CX 590-B#) Kitagawa, Tr. 2385-86) Also, # # (CX 596-B#; Kitagawa, Tr. 2384)

613. Documents of domestic producers confirm that the Japanese are less of a force in the United States marketplace as a result of the anti-dumping decision. Olin reported this in its 1984 report to its shareholders as having a positive impact on Olin's swimming pool chemicals business. (CX 678-U) [144] # # (CX 262-B#) Olin's George Turnipseed stated his observation, based on information from Olin's marketing personnel, that the Japanese were less aggressive in the United States after the anti-dumping decision. (CX 654-L-N) Olin's Peter Kosche estimated # # (CX 476-Z26-Z27#) Olin reported # # (CX 423-A#)

614. Monsanto also foresaw # # (CX 220-A#) Later Monsanto documents confirm # # (CX 213-D# CX 223-A#) Monsanto concluded that # # (CX 222-A#) and # # (CX 226-F#)

615. The management witnesses from FMC, Monsanto and PPG, testifying at Olin's instance, indicated the anti-dumping ruling had a significant impact on the United States market. John Furrer of FMC acknowledged that the ITC anti-dumping ruling on isos helped firm up domestic pricing by preventing the Japanese from selling at low prices in the United States. (Furrer, Tr. 3388, 3529) Michael Marcum of Monsanto also acknowledged that the anti-dumping ruling was a significant event in improving profitability (Marcum, Tr. 4007) and that, after the anti-dumping decision, Japanese prices were the same as domestic prices. (Marcum, Tr. 4013) Richard Hughes of PPG, also acknowledged that iso prices went up after the anti-dumping ruling. (Hughes, Tr. 5262-63) A PPG strategy document estimates iso prices went up by 15% after the anti-dumping decision. (CX 548-D)

616. A number of repackers who purchase and resell isos have offered similar testimony concerning the impact of the anti-dumping proceeding on Japanese iso suppliers to the United States market. Donald Wilson of Hasa, called as a witness for respondent, testified that the anti-dumping ruling "caused a tremendous upheaval and shortage." (Wilson, Tr. 4270-71) Other witnesses confirmed that the Japanese have taken a much more cautious approach to the United States since the imposition of the anti-dumping restrictions. (Kennedy, Tr. 520-21, 549; Bloom, Tr. 767-68; Christensen, Tr. 1849-51, 1940-41; Jonas, Tr. 2252) [145] Mr. Christensen of Chem Lab testified, in response to cross-examination by counsel for Olin, that he now finds it impossible to bargain with his Japanese suppliers below a certain price. (Christensen, Tr. 1941) Charles Schaub of Coastal testified that imported isos are no longer priced below domestic product since the ITC anti-dumping ruling. (Schaub, Tr. 2088) A major distributor in New England who was called as a witness by Olin testified that he has not been solicited by anyone selling Japanese product since the anti-dumping decision. (Arakelian, Tr. 5984-85)

617. A March, 1984 document of Great Lakes Chemical Co. conveys an expectation of increased prices once the ITC action is finalized. (CX 92-B) An October, 1984 document confirms the existence of two iso price increases since the anti-dumping decision the preceding April. (CX 111-C) Another Great Lakes document reflects a picture of cautious, "fearful" Japanese suppliers as early as August, 1983, a few months after the anti-dumping action was instituted. (CX 117-B)

618. It is the perception of many observers in the industry that the substantial increases in the price of isos in the United States in 1984

and 1985 were attributable to the iso anti-dumping decision. (Jonas Tr. 2252; Sossamon, Tr. 4666; Smith, Tr. 6738; Spiegel, Tr. 6852; Turnipseed, Tr. 7803-04) Mr. Polkowski, then with FMC and now with Olin, factored in price increases for FMC's iso swimming pool sales as a result of the anti-dumping ruling. (CX 478-Z10) Olin's Peter Kosche # # (CX 476-Z29#) Olin internal documents # # (CX 349-B#)

619. Documentary evidence shows that the post-dumping iso price increases were led by the domestic industry and followed by sellers of the Japanese imports. On April 24, 1984, shortly after the anti-dumping order was finalized, ICI announced a price increase (CX 131-C; CX 568-F) following an earlier increase by Monsanto (CX 131-U; CX 568-G) and FMC. (CX 568-H) Later that year, Monsanto announced a second increase to \$1.45 per pound on August 31, 1984 (CX 131-S-T; CX 568-D), followed by FMC on September 13, 1984 (CX 568-B), ICI on September 27, 1984 (CX 131-B; CX 568-A), and Toyomenka on October 1, 1984. (CX 568-E)

620. The evidence indicates that the transaction prices also went up. (CX 125-J#; CX 231-E#; Marcum, Tr. 4184, 4816#; Turnipseed, Tr. 7803-04#) Mr. Marcum of Monsanto testified that # # (Marcum, Tr. 4213-14#) The record reveals several instances of Monsanto TVAs prior to [146] 1984. (CX 191-B-D#) Marshall Bloom of Bio-Lab, the largest repackager of isos, stated that his iso bulk transaction prices have risen since 1984. (Bloom, Tr. 828) One of Olin's witnesses observed a 25 to 30% increase in iso prices at the retail level after the 1984 anti-dumping decision. (CX 755-B)

621. Dr. Ordover, Olin's economic expert, concluded that the 1984 and 1985 iso price increases were largely the result of the anti-dumping decision. (Ordover, Tr. 9198-99) During cross-examination, he agreed that the anti-dumping restrictions have caused the Japanese to watch their pricing in the United States more closely than before. (Ordover, Tr. 9662)

*c. The Recent Cal Hypo Anti-Dumping Proceedings
and Their Impact*

622. After reviewing Olin's April 15, 1984 petition (CX 377-A#), the DOC determined that it contained sufficient grounds upon which to initiate an anti-dumping investigation with respect to cal hypo imported from Japan under the amended Tariff Act and notified the ITC of its action. (CX 177-Z20)

623. Subsequently, on October 9, 1984, the DOC issued a preliminary determination that cal hypo from Japan was being, or was likely to be, sold in the United States at less than fair value and announced the imposition of margins to be assessed against future imports of all Japanese-produced cal hypo. (CX 176-Z24) As of that date, imports of Nippon Soda, Toyo Soda and Nankai cal hypo were subject to the posting of bonds or cash deposits in amounts equal to the volume of each company's product imported, multiplied by the dumping margin designated for that company. (CX 176-Z25) On February 27, 1985, the DOC issued a final determination that Japanese imports of cal hypo were being sold in the United States at less than fair value and announced final dumping margins for imports of Japanese cal hypo. (CX 176-Z29)

624. In April, 1985, the ITC made a final determination that an industry in the United States was materially injured by reason of imports from Japan of cal hypo. (CX 176) On April 17, 1985, the DOC issued an anti-dumping duty order against importers of Japanese cal hypo. As of that date, Japanese calcium hypochlorite could only be imported subject to the posting of cash deposits based upon the volumes of imported product and the final dumping margins imposed.

625. The following anti-dumping duty margins were imposed on Japanese importers of cal hypo on April 17, 1985: [147]

Nippon Soda	20.01%
Toyo Soda	0.9%
Other Japanese	
Cal Hypo Producers	12.29%

(CX 176-V) The firm Toyo Soda is referred to in the ITC reports as Nisshin Denka, a subsidiary of Toyo Soda. (CX 176-V; CX 177-Z3)

626. The cal hypo anti-dumping proceedings have had an adverse impact on the Japanese producers-importers selling cal hypo in the United States. # # (CX 677-Z163#) # # (CX 677-Z164#)

627. Also, indicating that cal hypo prices were expected to rise as a result of an anti-dumping ruling against the Japanese importers, PPG projected stabilized prices in the United States and intensified competition overseas as the result. (CX 549-C-D) A Great Lakes document predicted price increases and supply problems. (CX 111-C)

628. Olin's Mr. Turnipseed also # # (CX 471-Z8#) Mr. Turnipseed suggested that the Japanese increased their price of cal hypo in # # (CX 471-Z8-9#)

629. The 1985-1986 strategic plan of ICD, an importer of Japanese cal hypo, indicates that the anti-dumping proceedings have had an adverse impact on both Nippon Soda and its United States cal hypo marketer, Toyomenka. (CX 121-A)

630. Mr. Hughes of PPG stated that it was his perception that Japanese cal hypo imports have declined significantly from levels before the anti-dumping decision. (Hughes, Tr. 5296) Mr. Hughes projects that sales of Japanese cal hypo will not increase to pre-dumping levels. (Hughes, Tr. 5296-97; *see also* CX 548-S)

631. Some repackers also confirmed that the cal hypo anti-dumping ruling has had an adverse impact on Japanese cal hypo producers and resellers of Japanese cal hypo in the United [148] States. (Christensen, Tr. 1849-50; Jonas, Tr. 2252) Cal hypo prices have gone up as a result of the anti-dumping action (CX 30-E; Collins, Tr. 3888), but not to the same extent as iso prices. (Jonas, Tr. 2247, 2252)

d. Impact of Yen/Dollar Exchange Rate on Import Competition

632. Exchange rates are a relevant factor in assessing the extent to which foreign firms are able to influence competition in the United States. *DOJ Guidelines* §3.23. The more volatile the relevant exchange rate, the more significant the potentially adverse effects from a domestic merger can be. Ordover and Willig, *Perspectives on Mergers and World Competition*, *supra*, at 203. As a general rule, foreign producers provide less competition to domestic producers when the value of the foreign producers' currency increases relative to the United States dollar. (Kamerschen, Tr. 2711-12; Ordover, Tr. 9665)

633. The economic experts of the parties both acknowledge that the volatile nature of the yen/dollar exchange rate is a factor to be considered in assessing the competitive significance of the Japanese producers of isos and cal hypo that sell their products in the United States. (Kamerschen, Tr. 2711-13, 3139-40; Ordover, Tr. 9261-62, 9659) The yen/dollar exchange rate constrains the producers in Japan (Ishida, Tr. 1000-01) as well as the resellers of the Japanese products in the United States. (Pettoruto, Tr. 1394)

634. The Economic Report of the President contains reliable information on the yen/dollar exchange history in recent years. The Report expresses exchange rates in terms of cents per unit of foreign currency. According to the data from the 1987 Economic Report, the value of the Japanese yen has increased from approximately 0.42

cents of United States currency in 1984 to approximately 0.62 cents of United States currency by the end of 1986. (CX 710-O) Expressed another way, this represents a shift in the exchange rate from approximately 240 yen to the dollar in 1984 to approximately 160 yen to the dollar by year-end 1986. (Ordover, Tr. 9672-73) The yen/dollar exchange rate was in the 140- to 150-yen-to-the-dollar range by March and April of 1987. (Marcum, Tr. 4151)

635. The testimony of the witness from Shikoku Chemical, the largest Japanese exporter of isos into the United States, confirmed that the appreciation of the yen relative to the dollar has made it much harder to compete in the United States. (Ishida, Tr. 1000) The appreciation in the value of the yen has also required Shikoku to monitor much more closely the home market price of its product (Ishida, Tr. 1000-01), which is a [149] relevant part of monitoring compliance with the anti-dumping duty order now in place. The yen appreciation has increased the difficulty of Shikoku's pricing decisions as well. (Ishida, Tr. 1001; *see* CX 573-D#; CX 574-C#)

636. Witnesses who look to the Japanese producers-exporters as potential sources of supply have also acknowledged that the yen/dollar exchange rate is a factor, which would indicate that Japanese suppliers are unlikely to be as significant in the United States as in the past. (Kennedy, Tr. 549; Bloom, Tr. 695-96; Marshall, Tr. 1160; Jonas, Tr. 2252-53)

637. Olin and FMC corporate officials also acknowledge that the yen/dollar exchange rate is relevant information to be considered in assessing the competitive viability of Japanese producers-exporters. (Collins, Tr. 3777, 3785; Johnstone, Tr. 6396-97, 6402-03) In FMC's 1980 Strategic Plan, FMC noted that Nissan and Shikoku could be expected to have difficulty competing in the United States once the yen/dollar exchange rate dropped significantly below the 190 yen to the dollar level. (CX 664-Z26; RX 134-Q; Collins, Tr. 3785) A significantly lower yen/dollar exchange rate, in the 160 yen to the dollar range, would effectively increase the cost curve for both Nissan and Shikoku. (Collins, Tr. 3787-89) As Mr. Johnstone of Olin acknowledged, a 150-yen-per-dollar environment is very different from a 230-yen-per-dollar environment. (Johnstone, Tr. 6396-97) A strong dollar compared to a relatively weak yen was certainly a factor which assisted the Japanese in being more competitive in the iso business in the United States in the early 1980's. (CX 385-O; CX 481-I#; CX 664-P)

638. The significance of the exchange rate factor is also recognized in Olin's annual reports to its shareholders (CX 678-T, V; CX 679-D), FMC's strategic planning documents (CX 664-P, Z26, Z29), and PPG planning documents. (CX 547-E) Exchange rates were also a factor taken into consideration in cyanuric acid supply contracts # # (CX 811-B#)

639. Information obtained from Shikoku, the largest Japanese iso producer, indicates that its iso sales to the United States declined from 1984 to 1985, which is a period of time when the value of the yen was appreciating relative to the dollar. (CX 710-O) Imports of Japanese cal hypo to the United States also declined during this same time period. Nissan's sales of isos into the United States showed a decline for the first half of 1986 compared with the first half of 1985, again corresponding to a period when the value of the yen was appreciating relative to the dollar. (CX 710-O) Dr. Ordovery, respondent's economic [150] expert, acknowledged that import data he reviewed showed Japanese imports of isos declining in the last half of 1986 compared to the same time period in 1985, also a period when the yen was appreciating relative to the dollar. (CX 710-O; Ordovery, Tr. 9679)

640. According to Dr. Kamerschen, complaint counsel's economic expert witness, future projections are that the yen will remain strong relative to the dollar for at least the next three to five years. (Kamerschen, Tr. 3140) He expressed the opinion that, while Japanese producers may be willing to absorb exchange rate differentials in the short run, they could be expected in the long run to price their products according to the exchange rate. (Kamerschen, Tr. 3142)

e. Other Constraints On Import Competition Related to Capacity, Cost and Historical Marketing Patterns of Foreign Producers-Exporters

641. Nissan and Shikoku, the two Japanese iso producers who sell in the United States, # # (CX 236-J#; CX 237-J#; CX 674-D#; CX 676-Z207#); Ishida, Tr. 966#) Shikoku's # # (Ishida, Tr. 963-64#) Shikoku # # (Ishida, Tr. 965#)

642. Nissan is # # (CX 676-Z57-60#) Nissan # # (CX 676-Z60#) Nissan would # # (CX 242-B-C#) Olin internal analyses # # (CX 651-B#)

643. Mr. Ishida of Shikoku also testified that # # (Ishida, Tr. 1077-79#) Shikoku does not face # # (Ishida, Tr. 1086#) Mr.

Marcum of Monsanto was unaware of any country other than the United States with anti-dumping restrictions in place against Japanese iso manufacturers. (Marcum, Tr. 4153) Mr. Marcum also testified that Monsanto encounters strong [151] competition from the Japanese in all of its export markets throughout the world. (Marcum, Tr. 4153) Other documents in the record reflect the commitment of Japanese iso producers to other foreign markets. (CX 33-M; CX 52-A; CX 127-H#)

644. Japanese iso producers also have high chlorine, caustic, transportation, and energy costs compared to the United States domestic producers of isos. (Collins, Tr. 3818; Henske, Tr. 7287; Kosche, Tr. 8960) # # (CX 502-S#; RX 32-M#; Turnipseed, Tr. 7883#; Fortuna, Tr. 8135-36#) An Olin internal analysis suggests # # (CX 259-R#; CX 502-Y#) Olin's Mr. Swartley concluded that # # (CX 262-B#; Swartley, Tr. 7443-45#)

645. Japanese cal hypo producers have higher chlorine, caustic, and energy costs compared to the United States producers of cal hypo. (CX 259-N#; CX 332-G#; CX 377-N#; CX 545-C; Hughes, Tr. 5244; Henske, Tr. 7244; Kosche, Tr. 8960) # # and PPG internal analyses demonstrate that the Japanese cal hypo producers did not have significant cost advantages over # # and PPG at a time when the yen/dollar situation was more favorable. (CX 332-H#; CX 545-C) PPG also suggests that two of three Japanese cal hypo producers lack cost-competitive technology. (CX 545-E)

646. The same PPG document also reports that capacity expansions were announced by the three Japanese cal hypo producers in order to deter a domestic entry of a potential fourth producer in Japan and concluded that "new capacity additions in Japan are expected to be relatively small and orderly." (CX 545-B)

647. From all of the evidence reviewed hereinabove in VI. B. 3, together with further evidence showing the difficulties experienced foreign entrants disclosed hereinafter (*see* F. 723-25, 740-45, *infra*), it is found that the evidence in this case does not support the proposition that import competition can be realistically counted on effectively and timely to respond to small but significant non-transitory price increases in the relevant markets or otherwise effectively to constrain anticompetitive behavior by the market leaders in this country. [152]

648. As for the Japanese producers-exporters, the evidence is persuasive that even when and if the anti-dumping duty margin

orders are revoked eventually, Japanese iso/cal hypo producers-exporters are not likely to be as aggressive price competitors as they were before. The evidence further indicates that while the Japanese producers-exporters will attempt generally to maintain their historical level of participation in the United States market, they are more likely to follow price increases by the United States producers and to remain cautious in following any significant price reductions in the United States for some years to come.

*C. Certain Non-Market Share Factors Bearing on the
Effect of the Acquisition on Competition*

649. It should be noted here that although any non-market share factor that may facilitate an informed and realistic assessment of a merger's effect on competition should be carefully considered, some factors are more important than others and should be given more weight in reaching an overall assessment of the merger's effect. *See generally FTC Statement § III and DOJ Guidelines §§ 3.2—3.44.* Such factors as ease of entry and some elements of conduct of firms are more important than others. For example, ease of entry and rapid changes in market conditions or production technology may be sufficient to save an acquisition which is highly likely to lessen competition substantially on the basis of market share and concentration analysis, while some others may be of less significance especially in cases where the concentration level approaches a duopoly.

1. Vitality of the Merging Firms

650. It is well-recognized that the market shares of merging firms are the primary indicia of the present and probable future of their competitive significance in the market. It is reasonable to conclude, in the absence of substantial evidence to the contrary, that a firm's competitive strengths or weaknesses will be reflected in its market share.

651. However, it is also recognized that, while most businesses experience "ups and downs," factors related to the vitality or viability of the merging firms may establish that their market shares may significantly overstate or substantially misrepresent their present and probable future competitive significance. *See generally IV Areeda and Turner, Antitrust Law ¶ 932, ¶ 934. [153]*

652. In this case, respondent presented extensive and detailed evidence and arguments related to the pre-acquisition performance of Olin and FMC in the isos market. *See* RPF 138-367, 368-444; RB at 14-26, 27-32, 91-97.

653. In brief, the evidence indicates # #

654. Olin further contends that # # *See* F. 554-58, *supra*.

655. Olin finally contends that # # [154]

656. Respondent argues in essence that # #

657. Although Olin was # # (Fortuna, Tr. 8213-14#; *also see* Ordover, Tr. 9793) # # *See* CPF 1254-1272.

658. In a contemporary corporate document of Olin's Water Products and Services Division of May of 1985, the Division president stated that # # (CX 474-B, C, Z2, Z7#)

659. In the final analysis, however, the record does not show, nor could Olin seriously contend, that CA was unavailable or that it was losing its only economical CA supply. On the contrary, the evidence shows that # # *See* IV Areeda and Turner, *Antitrust Law* (1980), ¶ 934d. [155]

660. The evidence shows that Olin was able to purchase adequate supplies of cyanuric acid with which to operate its Lake Charles, Louisiana trichlor plant. Olin purchased the following amounts of CA, in thousands of pounds, for use in manufacturing isos at its Lake Charles facility:

1980	#	#
1981	#	#
1982	#	#
1983	#	#
1984	#	#

(CX 440-A#)

In the 1982 to 1984 period, most of Olin's CA purchases were from Nissan. (CX 440-A#; CX 585-A-E#; RX 50-A#) Olin purchased CA from Nissan through its United States broker, Sumitomo Corporation of America. (Kitagawa, Tr. 2337)

661. In 1980-84, Olin purchased the following quantities of CA from Nissan through Sumitomo:

Initial Decision

113 F.T.C.

	<u>Metric Tons</u>	<u>Pounds</u>
1980	#	#
1981	#	#
1982	#	#
1983	#	#
1984	#	#

(CX 585-A-E#; Kitagawa, Tr. 2338) One metric ton is 2,204.6 pounds. (Turnipseed, Tr. 7775)

662. Nissan's total capacity to produce CA for the 1980 to 1984 time frame was as follows:

	<u>Metric Tons</u>	<u>Pounds</u>
1980	#	#
1981	#	#
1982	#	#
1983	#	#
1984	#	#

(CX 234-H#)

663. Olin's internal strategic planning documents which discuss CA supply concluded that # # (CX 265-B#; CX 266-G#; CX 268-R#) **[156]**

664. Olin's projections of the worldwide supply and demand situation for CA showed # # (CX 269-P#; CX 502-Q#)

665. Olin also acknowledged to the ITC that # # (CX 375-R#) Documents prepared in 1983 show that # # (CX 269-P#; CX 502-Q#) Olin's Mr. Swartley testified that # # (Swartley, Tr. 7405#) One of the reasons Olin # # (CX 475-N#; Kosche, Tr. 8651-55#)

666. By early to mid-1981, Olin had concluded that # # (RX 18-G#; Turnipseed, Tr. 7486, 7756-57#) Olin's internal forecasts of CA availability, prepared in 1981, projected # # (CX 441-G#; RX 15-17#; RX 20-21#; Turnipseed, Tr. 7748-53, 7757-59#)

667. In 1981, # # (CX 441-F#; Turnipseed, Tr. 7747-48#) Olin # # (CX 811#; Turnipseed, Tr. 7815-17#) # # (CX 811-A#; Turnipseed, Tr. 7817-18#) # # (CX 811-A#; Turnipseed, Tr. 7834-35#) # # (CX 811-A#; Turnipseed, Tr. 7818, 7834-35#)

668. In 1982, # # (Turnipseed, Tr. 7818-19, 7827-28) **[157]** # # (CX 585-C#; RX 50-A#; Turnipseed, Tr. 7819#) In June, 1982, Olin informed # # (RX 15#; RX 16#), that Olin was # # (CX 781-A#; Turnipseed, Tr. 7826-27#) In September, 1982, Olin wrote # # (CX 741#; Turnipseed, Tr. 7828-29#) At that same time, Olin advised # # (CX 741#; CX 811-A#; Turnipseed, Tr. 7835#)

669. In January 1983, Nissan had # # (CX 782-B#; Turnipseed, Tr. 7833#) In 1983, Olin # # (RX 50-A#; Turnipseed, Tr. 7835-36#) Thus, # # (CX 811-A#; RX 50-A#; Turnipseed, Tr. 7836#)

670. The 1984 CA supply agreement # # (RX 49-C#; Swartley, Tr. 6950#) # # (RX 49-C#; Swartley, Tr. 6952#) # # (RX 49-C#; Swartley, Tr. 7048#)

671. Olin projected # # Swartley, Tr. 6966#)

672. # # (RX 49-A#; Turnipseed, Tr. 7797-98#) This would have been [158] # # (CX 269-Z49#; CX 502-S#; RX 32-M#; Turnipseed, Tr. 7798#; Kosche, Tr. 8679#) # # (Kosche, Tr. 9009#) # # (CX 474-Z9#; Swartley, Tr. 7051#)

673. The evidence shows that # # (Turnipseed, Tr. 7812, 7819, 7836-38#; Swartley, Tr. 7030)

674. Mr. Turnipseed recalled # # (Turnipseed, Tr. 7633-35, 7812) # # (CX 251-Z1#)

675. Mr. Turnipseed testified that # # (Turnipseed, Tr. 7810-13#)

676. In January of 1984, Mr. Kosche # # (RX 30-B#)

677. In April of 1982, # # (Turnipseed, Tr. 7820#) In June of 1982, # # (CX 248-F#; CX 316-A#; CX 739#; Turnipseed, Tr. 7820#) # # (CX 248-F#; CX 316-A#; CX 739#; Turnipseed, Tr. 7821-23#) [159] # # (CX 248-F#; CX 316-A#; CX 739#)

678. The total amount of CA which Olin believed would be available # # (CX 441-H, I#; CX 799#; Turnipseed, Tr. 7823#) This amount was # # (CX 266-P#) The Olin memo reflecting # # (CX 739#)

679. Olin's Mr. Swartley # # (CX 656-Z33-34#) Mr. Swartley # # (Swartley, Tr. 7041-42#)

680. Olin and Nissan notes # # (CX 251-Z2#; CX 792-C#) # # (CX 251-Z2#) # # (CX 676-Z14-15#)

681. Nissan notes [160] # # (CX 251-Z3#; CX 792-D#; CX 676-Z19-Z20#)

682. Nissan's Mr. Toraya expressed the view that, from Nissan's perspective, # # (CX 676-Z200-Z201#; *see also* CX 242-B#)

683. Nissan considered # # (CX 242-A#) Olin's Mr. Swartley has acknowledged that # # (CX 656-Z51#; Swartley, Tr. 7407-08#)

684. The record also shows that Olin was aware of other possible CA sources. A Taiwanese firm, Taiwan Ivy, is referred to in Olin documents as having excess CA available for sale. (CX 645-A) In April of 1984, # # (CX 325-A#; Turnipseed, Tr. 7863-64#) Olin was also approached by # # (CX 324#), # # (Turnipseed, Tr. 7873-74#)

685. Furthermore, Olin's cost for purchasing cyanuric acid before the FMC acquisition # # (CX 267-F#; Kosche, Tr. 8676-77#)

686. By 1983, Olin's # # (CX 502-S#), # # (CX 502-L#) In 1983, Olin's [161] # # (CX 502-S#) # # (CX 387-B#)

687. # # (RX 32-M#; Fortuna, Tr. 7980#) # # (Fortuna, Tr. 8023, 8125#) # # (CX 440-A-B#; RX 137-A-C#; Fortuna, Tr. 7965#)

688. # # (CX 401-A#; RX 49-A#; Turnipseed, Tr. 7797-98#)

689. # # (CX 401-A#; RX 49-A#) # # (CX 401-B#; CX 403#; CX 655-M; CX 656-Z30-Z31#; Turnipseed, Tr. 7916-18#; Kosche, Tr. 8502, 8922#) # # (CX 707-Z34#)

690. By using cyanuric acid produced at the South Charleston, West Virginia, facility, Olin incurs a diseconomy in the form of additional bagging and freight costs to transport this raw material to its Lake Charles trichlor plant. The shipping alone can amount to several cents per pound. (Fortuna, Tr. 8220; Kosche, Tr. 9008-09)

691. Olin's yield efficiency at its Lake Charles trichlor plant could # # Olin viewed itself as a competitive producer of trichlor. # # (CX 794-A#) # # (CX 749-A#) [162]

692. According to the financial analyst assigned to Olin's pool chemical business, # # (Fortuna, Tr. 8034#) # #

693. Comparing Olin's cost of purchased cyanuric acid with other producers' manufacturing costs is not a valid comparison, because it does not consider return on capital or risks. Olin's cost of cyanuric acid is # # (RX 137-B#) # # (Fortuna, Tr. 7978-79#)

694. Olin planned to spend about # # (CX 661-P#; RX 32-Z15#; Fortuna, Tr. 7989-90#)

695. Olin recognized that # # (CX 259-P#; CX 269-Z2#)

696. During the anti-dumping proceedings, Olin told the ITC that cyanuric acid price # # (CX 375-R, S#)

697. The record also shows that Olin had considerable leverage in negotiating a favorable CA price than # # (Turnipseed, Tr. 7813#)

698. Mr. Swartley testified that, during his tenure, # # (Swartley, Tr. 7052#) And, [163] # # (CX 656-Z31-32#; Turnipseed, Tr. 7813#)

699. # # (CX 811-A#; Turnipseed, Tr. 7816-17, 7834-35#) # # (CX 740#; Turnipseed, Tr. 7829-31#) # # (Turnipseed, Tr. 7831#) # # (RX 50-B#) # # (CX 742-A#; RX 50-B#; Turnipseed, Tr. 7831#) # # (RX 50-A, B#) # # (CX 782-B#; Turnipseed, Tr. 7832-33#)

700. Mr. Turnipseed reported that the # # (CX 742-B#) # # (CX 742-B#; Turnipseed, Tr. 7847-48#)

701. # # (CX 269-Z2#) # # (CX 387-B#)

702. # # (RX 50-A#; Swartley, Tr. 7053-54#) # # (Swartley, Tr. 7054#) # # (Swartley, Tr. 7054#), # # (RX 49-C#; RX 50-A#; Swartley, Tr. [164] 7054-55#; Turnipseed, Tr. 7799-7800#)

703. Olin's CA prices in 1984 # # (Turnipseed, Tr. 7800-04#)

704. # # (RX 50-B#) # # (RX 50-B#) In October, 1983, # # (CX 787#; Turnipseed, Tr. 7849-51#)

705. In response to a hypothetical question, Dr. Ordover, Olin's expert witness, agreed that an illustration of the exercise of "buyer power" would be a situation where a buyer was able to successfully negotiate a 25% price reduction, forcing the seller to cut his profit margin by a substantial amount in order to sell the product. (Ordover, Tr. 9730-31) The January, 1983 negotiations # #

706. From the foregoing, it is found that adequate supplies of CA were available to Olin, that Olin's alleged CA cost disadvantage was rather minimal, and that Olin's isos business remained viable at the time of the challenged acquisition.

707. The record further shows that Olin's claimed CA cost disadvantage was not decisive in terms of total isos cost, and that, in any event, Olin's CA cost was more than offset by # # as well as by Olin's in-house production of other essential input chemicals, such as chlorine and caustic. Indeed, the evidence shows that no isos manufacturer in the United States was fully integrated, producing in-house all the essential input materials that go into the production of CA and isos.

708. As regards FMC, its pre-acquisition performance is discussed in F. 399-438, *supra*. For the purposes of our discussion here, it suffices to say that the evidence does not show that FMC's market shares significantly overstate or substantially misrepresent the competitive significance of FMC in the relevant markets. [165]

709. From the foregoing, it is found that the factors related to the vitality of the merging firms fail to establish that their market shares significantly overstate or substantially misrepresent the competitive significance of the merging firms in the relevant markets or that market shares are not a reliable predictor of the probable effects of the challenged acquisition.

2. Entry Barriers to the Relevant Markets Are Substantial

710. It is well-recognized that, although the analysis of a challenged

acquisition begins with the definition of a relevant market and measurement of the concentration in that market, the Commission also looks to other qualitative considerations that bear on the likelihood of anticompetitive effects. And, the most important of these non-market share considerations is the existence of entry barriers. *See generally FTC Statement Concerning Horizontal Mergers* Section III; *DOJ Guidelines* §§ 3.21—3.45; *Echlin Mfg. Co.*, 105 FTC 410, 483-84 (1985) (“Echlin”).

711. Thus, the Commission has stated in *Echlin* that “an acquisition is not likely to have substantial anticompetitive effects if the evidence shows that there are no barriers to entry, regardless of the level of concentration that is present in the relevant market.” 105 FTC at 487.

712. In the case at hand, the evidence is clear that there are high entry barriers into the manufacture and sale of isos in the United States. With respect to cal hypo, the evidence suggests that there are significant entry barriers into the production and sale of that product in the United States. And, as for the dry pool chemicals market encompassing isos and cal hypo, the evidence shows that there exist overall substantial entry barriers. In any event, the record as a whole shows that the existence of substantial entry barriers in the relevant markets is likely to exacerbate any market power conferred by the acquisition. Thus, the challenged acquisition cannot be saved by entry conditions.

713. Dr. Ordover, Olin’s economic expert, stated, his opinion, based on his review of relevant record evidence, that entry barriers into isos production are high and “almost insurmountable.” (Ordover, Tr. 9739) Dr. Kamerschen, complaint counsel’s economic expert also concluded that there are significant entry barriers in the manufacture and sale of isos. (Kamerschen, Tr. 2270-73)

714. John Henske, Olin’s board chairman and CEO, testified that a new entry into the manufacture of trichlor would [166] require ten years and that the entrant’s difficulties would include designing a new technology around existing patents and successfully overcoming safety hazards associated with such a venture (Henske, Tr. 7310-11)

715. Dr. Marano, vice president of technology for Olin’s Chemicals Group, estimated that # # (CX 472-M-N#) And Robert Yohe, president of Olin’s Chemicals Group, suggested, based on Olin’s own experience, that even for a firm experienced in commercial chemical production such as Dow and du Pont, entry into isos production would

require three to five years. (CX 473-N) This is well in excess of the two year standard in the *DOJ Guidelines*. *DOJ Guidelines* § 3.3.

716. Olin documents also acknowledge that development of manufacturing technology for isos is # # (CX 259-G#) Technology to manufacture isos is described as # # (CX 264-D#)

717. Olin's experience with its Lake Charles, Louisiana trichlor plant is instructive in assessing the amount of time required for a new entrant into the business of isos production on a full-scale basis. After several years of design work, the trichlor pilot plant was constructed in 1973 and ran until 1976 or 1977. (Henske, Tr. 7106) Construction of a full-scale facility was authorized in 1977. (Henske, Tr. 7108) # # (CX 441-N#; RX 35-B#) The trichlor production at the facility was eventually suspended in July, 1984.

718. There are high capital costs associated with entry into the manufacture of isocyanurates. Olin estimates a plant construction cost in the range of # # per pound of nameplate capacity for trichlor. (CX 443-A#) One repacker who investigated the possibility of producing isos provided a capital cost estimate of \$2.00 per pound of production capacity. (Christensen, Tr. 1863) # # (CX 453-B, F#) Olin's Mr. Yohe estimated \$120 to \$130 million for a firm such as Dow or du Pont seeking to enter the isos business, based on Olin's own experience. (CX 473-N) Olin has estimated the [167] # # (CX 441-A#) Olin has concluded that # # (CX 259-G#) PPG's Richard Hughes estimates # # (Hughes, Tr. 5231-32#)

719. Olin has acknowledged that # # (CX 443-A#) Monsanto's Michael Marcum agreed there are high fixed costs involved in the manufacture of isos. (Marcum, Tr. 4174)

720. Olin's economic expert agreed that the sunk costs involved in the production of isos are "substantial." (Ordover, Tr. 9740) Olin's financial analyst said he treated Olin's costs at Lake Charles as "sunk." (Fortuna, Tr. 8284) Dr. Ordover agreed that high sunk costs can be an impediment to entry. (Ordover, Tr. 9740)

721. Dr. Kamerschen, complaint counsel's economic expert, testified that the existence of economies of scale might be inferred from the existence of high fixed costs along with a reading of the perceptions of some industry members. (Kamerschen, Tr. 2777) According to Dr. Kamerschen, scale economies make it more difficult for smaller firms to have a competitive impact. (Kamerschen, Tr. 3151-52)

722. Olin has estimated that # # the optimum size for a new isos

plant. (CX 443-D#) Monsanto's Michael Marcum, in June of 1986, estimated 20 million pounds of plant capacity are required to achieve scale economies. (Marcum, Tr. 4144)

723. According to a March, 1984 FMC report, Sigma Prodotti Chimici, SpA of Italy ("Sigma") spent ten years looking at the isocyanurate business and developing proprietary technology. (CX 13-A) Sigma's entry was announced in December, 1983 (CX 636), with a plant start-up projected for some time in 1985. (CX 324#) It was not until early 1986 that Sigma had obtained its EPA registration and begun selling isos in the United States. (CX 567-B; CX 638; CX 643-C) Sigma reportedly had manufacturing start-up difficulties and quality problems extending into 1986. (Schaub, Tr. 2093; Jonas, Tr. 2253; Marcum, Tr. 4044, 4165) It has been estimated that it might take a firm such as Sigma five years or longer to develop a track record as a reliable supplier of isos to the marketplace before it can make inroads with significant repacker customers. (Jonas, Tr. 2265)

724. Iso producers seeking to sell isos for pool use in the United States must have their products registered and approved for use by the EPA. (CX 443-A#; Marcum, Tr. 3969) Toxicological data required to meet EPA requirements can be [168] obtained through membership in an industry Ad Hoc Committee. (CX 443-A#; Marcum, Tr. 3969) Members of the Ad Hoc Committee share in the expense of developing the toxicity data, which have cost a total of \$2.5 million and taken a decade to develop. (Marcum, Tr. 3971) FMC has described the EPA registration process as "EPA barriers to entry" eliminating any "overnight surprises in the U.S." market. (CX 664-Z4)

725. To date, no firm has marketed isos for pool sanitization use in the United States without first becoming a member of the Ad Hoc Committee. (Pettoruto, Tr. 1382) Mr. Ishida of Shikoku testified that it took two years for his firm to become a member of the Ad Hoc Committee. Shikoku paid \$500,000 for the membership. (Ishida, Tr. 980) The EPA requirements have been cited as a reason why Nippon Soda does not sell isos in the United States. (CX 323-B#)

726. The record also contains evidence of sporadic and aborted attempts at entry into the iso manufacturing business. In the early 1960's, Allied Chemical reportedly built a pilot plant but never went into the full scale production of isos. (Christensen, Tr. 1763-64) In 1979-81, a Taiwanese firm built a small scale iso plant (CX 645-A-B) that is no longer considered operational. (CX 5-A; CX 33-C; CX 651-B#)

727. As for cal hypo, Dr. Kamerschen, complaint counsel's economic expert, concluded that there are significant entry barriers into the manufacture and sale of cal hypo. (Kamerschen, Tr. 2270-73) The time required for entry into the manufacture and sale of cal hypo in the United States is well in excess of the two-year standard in the *DOJ Guidelines*. *DOJ Guidelines* § 3.3.

728. Olin's Mr. Turnipseed has stated that a learning curve is involved in the development of calcium hypochlorite manufacturing technology. (CX 471-S#) His opinion is that # # (CX 471-R#) Mr. Turnipseed suggested that # # would be more realistic for accomplishing such an objective. (CX 471-S#)

729. Olin's Vice President of Technology, Dr. John Marano, stated that # # (CX 472-X#) Dr. Marano's opinion is that it would take # # (CX 472-Z3#) Dr. Marano's # # related to the time needed for a new firm to reach the start-up stage for a new facility. [169] (CX 472-Z4#)

730. Olin documents also acknowledge that development of manufacturing technology for cal hypo # # (CX 259-G#) Technology to manufacture cal hypo is described as # # (CX 264-D#)

731. Process patents held by incumbent cal hypo manufacturers can be a significant barrier to entry into cal hypo production. (Hughes, Tr. 5253) Olin, PPG, and two of three Japanese cal hypo producers (Nippon Soda and Toyo Soda) reportedly hold such patents. (Hughes, Tr. 5253)

732. PPG's experience in constructing its Natrium, West Virginia plant is instructive in assessing the time that may be required for a new firm to enter the cal hypo business on a large-scale basis. PPG began development of the manufacturing process now used at Natrium in 1978 and a pilot plant was constructed two years later, in the fall of 1980. (Hughes, Tr. 5247) Full-scale plant construction commenced in December, 1981. (CX 552-G#; Hughes, Tr. 5247) The plant had start-up difficulties (CX 548-F, G) and did not begin to produce cal hypo on a routine basis until October, 1984. (Hughes, Tr. 5247) # # (CX 552-G#) Thus, six years were required for PPG to develop the technology, build the plant, and achieve production at its Natrium facility.

733. Mr. Hughes testified that it would take a new entrant somewhat longer to develop and construct a cal hypo processing plant than the time required for PPG, a firm with thirty years of experience as a cal hypo producer, with the Natrium facility. (Hughes, Tr. 5249)

734. In response to a specific inquiry during the course of the FTC's investigation of the Olin/FMC acquisition, # # CX 443-B#)

735. Olin's Dr. Marano has stated that # # (CX 472-Z4#)

736. The calcium hypochlorite production process has been described by Olin's Mr. Turnipseed as "relatively difficult" and involving high fixed costs. (CX 173-K) Mr. Turnipseed has [170] estimated # # (CX 471-P#) and does not include the time to develop the technology, achieve satisfactory levels of production and gain market acceptance.

737. There are also high capital costs associated with entry into the manufacture of cal hypo. # # (CX 443-E#) # # (CX 259-G#) In 1984, Olin estimated a replacement cost # # (CX 377-N#) PPG's capital investment in its new Natrium facility is approximately \$60 million. (Hughes, Tr. 5248)

738. There are high fixed costs associated with the manufacture of cal hypo. (CX 377-N#; Hughes, Tr. 5289)

739. Olin's CEO Mr. Henske has testified that # # (Henske, Tr. 7243#) # # (Henske, Tr. 7244#)

740. The record with respect to the time required for the new Canadian producer, Saskatoon, is rather sketchy but it suggests that site preparation was underway as early as 1981. (CX 467-A) Plant construction commenced in May, 1982. (CX 467-A) Saskatoon announced it was entering into production in late 1983. (CX 173-Z49) Saskatoon reportedly had start-up difficulties, including a fire in the plant, which delayed its entry into the marketplace. (CX 175-Z65-66; CX 177-Z3-4; CX 467-A; CX 471-O#; Schaub, Tr. 2015; Hughes, Tr. 5251) Olin concluded that Saskatoon # # (CX 416-P#), # # (CX 334-A#; CX 466#)

741. Saskatoon's plant is apparently based on inferior technology, similar to that employed unsuccessfully in Yugoslavia. (CX 426-D-E; CX 467-A) Olin's Dr. Marano has stated that # # (CX 472-Z1#)

742. PPG's # # [171] (Hughes, Tr. 5239, 5241#) # # (Hughes, Tr. 5240-41#)

743. Cal hypo producers must have their products registered and approved for use by the Environmental Protection Agency ("EPA") in order to sell cal hypo for pool use in the United States. (CX 443-B#; Hughes, Tr. 5183) EPA registration for calcium hypochlorite could take from one to three years. (Hughes, Tr. 5183) Toxicological data required for EPA registration are generally publicly available. (CX 443-B#)

744. There is evidence that expansion of existing calcium hypochlorite production capacity is not easy. Nippon Soda has estimated that two years are required for expansion of existing facilities. (CX 373-B; CX 388-B) Olin's Dr. Marano # # (CX 472-Z5#) Olin # # (CX 441-B, E-G#)

745. There have been failed attempts to enter into the manufacture and sale of cal hypo. A firm known as Toa Gosei of Japan reportedly abandoned an effort to build a 22 million pound cal hypo facility in 1982. (CX 323-A#) Firms in France and Yugoslavia have also attempted unsuccessfully to enter cal hypo production. (CX 173-Z24; CX 377-T-U)

746. Wesley Industries, Inc., ("Wesley") has reportedly been attempting to produce cal hypo at a small plant in Demopolis, Alabama, as a by-product of its agricultural chemicals business. (CX 173-W-X) Wesley's imminent cal hypo production has been an industry rumor for four or five years. (Hughes, TR. 5252-53, 5361) Wesley reported producing approximately 74,000 pounds of cal hypo during the first five months of 1985 (CX 675-A), although the company's cal hypo capacity is reported at 1.2 million pounds per year. (CX 675-A) # # (CX 335-A#; CX 358#) # # (CX 355-A#) However, no industry witness has reported having seen any Wesley cal hypo being offered for sale for pool use in the United States. (Kennedy, Tr. 502; Christensen, Tr. 1851; Jonas, Tr. 2255; Castagnoli, Tr. 2433)

747. Technical problems appear to have delayed indefinitely Wesley's commencement of sustained production and sale of cal hypo in the United States. (CX 173-J; CX 340#; CX 377-G#; CX 381-D) Wesley's cal hypo is reportedly an inferior product. (CX 334-A#; CX 344-B#) Olin and PPG question whether [172] Wesley should even be considered a viable cal hypo producer. (CX 341#; CX 385-F; CX 476-Z37#; CX 548-B; Hughes, Tr. 5252, 5361)

748. Even after commencing production and obtaining EPA registration, a firm must establish a track record as a reliable supplier of acceptable quality material. It has been estimated that it might take up to five years for a supplier new to the marketplace such as Saskatoon to establish such a track record before it can make inroads with significant repacker customers. (Jonas, Tr. 2265) One pool store owner indicated that it took ten years for a supplier of Japanese cal hypo to attract even 10% of his business. (Wetzel, Tr. 5381, 5412)

749. The record reflects the 1979 exit of a domestic firm in the

production and sale of cal hypo for pool use. Pennwalt Corporation ("Pennwalt") operated a cal hypo production facility at Wyandotte, Michigan for many years (at least since 1956). (CX 177-S; Schaub, Tr. 2084; Hughes, Tr. 5251) Pennwalt marketed cal hypo as a swimming pool sanitizer under the SENTRY label. (CX 543-A, L; Christensen, Tr. 1762) In 1979, Pennwalt ceased production and closed its facility, citing a pessimistic assessment of the market and Pennwalt's position as a high-cost producer, with costs expected to increase. (CX 177-S) The Pennwalt plant was acknowledged to be an antiquated facility that was having difficulty meeting pollution standards. (CX 177-S; CX 543-Z4; Schaub, Tr. 2199) A plant fire may have been the immediate cause for Pennwalt's exit decision. (CX 543-Z4; Hughes, Tr. 5251)

3. The Acquisition Eliminated Substantial Direct Competition and Made Olin a Dominant Firm

750. Although the principal aim of Section 7 is to protect "competition" and not "competitors" as such, when a substantial direct competition involving a unique, innovative or resourceful competitor is absorbed by a rival firm resulting in the elimination of substantial direct competition, the end result may well be a substantial lessening of competition within the meaning of Section 7.

751. The evidence shows that at the time of the acquisition, Olin and FMC not only were competing manufacturers of dry sanitizer but also were vigorous competitors in the sale of branded product to the lower levels of the distribution chain. Olin and FMC, moreover, were the only two manufacturers to follow consumer marketing strategies. FMC's SUN brand of iso sanitizers and Olin's PACE and HTH brands of, respectively, iso and cal hypo sanitizers were (and are) the only three pool sanitizer brands backed by consistently high levels of [173] advertising and promotional expenditures and the only three brands with real nationwide distribution. The record is replete with evidence on the significant head-to-head competition between Olin and FMC preceding the acquisition, from 1980 through 1984. And, the aggressive competition between Olin and FMC had a salutary effect on price.

752. Olin's John Johnstone, who succeeded John Henske as CEO, # # (Johnstone, Tr. 6471#) Olin's George Turnipseed # # (Turnipseed, Tr. 7810#) Mr. Turnipseed # # (Turnipseed, Tr. 7819#; *see also* CX 471-Z24#) Olin documents # # (CX 264-A#; CX 267-C, F#; CX 270-M#; CX 461-B#; CX 462#; CX 499-F, P, Z10#; CX 880-O, W, Z3, Z4, Z21#)

753. In a September, 1981 competitive analysis of FMC's iso business, # #. (CX 880-O-P#) Other Olin documents which assess market penetration of branded sanitizer sales # # (CX 277-I#; CX 431-B#) *Also see* CX 267-C#; CX 311-Y#.

754. The competition between Olin and FMC is reflected in the marketing and advertising efforts of the two firms. (CX 545-G) Olin advertising for PACE was directed at FMC's SUN product. (CX 733; Scott, Tr. 5827-28) # # (CX 880-W#) Olin and FMC were reportedly spending millions to aggressively promote PACE and SUN in 1982. Olin's Peter Kosche has # # (Kosche, Tr. 8659#)

755. Industry observers who testified at trial described the extensive pre-acquisition competition between Olin and FMC. Most of these observations related to the aggressive direct head-to-head competition between Olin's PACE brand and FMC's SUN brand. *E.g.*, Marshall, Tr. 1121-22; Christensen, Tr. 1890; Schaub, Tr. 2107; Jonas, Tr. 2260; Castagnoli, Tr. 2460-61, 2481-82; Collins, Tr. 3572; Marcum, Tr. 4159; Wilson, Tr. 4314-16; Aston, Tr. 4516; Vonderlow, Tr. 4846, 4857; Wetzel, Tr. 5442; Hammersmith, Tr. 6115; Kent, Tr. 6583. The competition between [174] Olin and FMC contributed to a lowering of iso prices in the marketplace. (Christensen, Tr. 1811-12; Jonas, Tr. 2261)

756. The degree of head-to-head competition or rivalry between two firms is a relevant consideration in merger analysis. (Kamerschen, Tr. 2654; Ordover, Tr. 9741) Economic models have shown that a combination of two firms with respective market shares of 20 and 11% that were previously rivals might have the same effect on prices as a merger of two firms with shares of 11% and 42% that were neutral in terms of their rivalry. (Ordover, Tr. 9743; Ordover, Sykes and Willig, *Herfindahl Concentration, Rivalry, and Mergers*, 95 Harv. L. Rev. 1857 [1982] at 1869) In situations where an especially uncooperative entrepreneur is eliminated, a theoretical merger of firms with the same shares of 20% and 11% could have the same effect as a merger of firms with 11% and 64%. (Ordover, Tr. 9744; Ordover, Sykes and Willig, *op. cit.*, at 1870)

757. Dr. Ordover, respondent's economic expert, agreed that there was rivalry between Olin and FMC in the sale of branded isos from 1980 to 1984. (Ordover, Tr. 9749) Dr. Ordover also agreed that FMC perceived Olin as a rival and, similarly, that Olin perceived FMC as a rival in the years preceding the acquisition. (Ordover, Tr. 9751)

758. Dr. Kamerschen, complaint counsel's economic expert, con-

cluded that the elimination of direct, significant head-to-head competition between Olin and FMC was an aspect of the acquisition that was of special competitive concern. (Kamerschen, Tr. 2654)

759. Apart from ease of entry, certain other factors affect the likelihood that the acquisition will create, enhance or facilitate the exercise of market power. Such factors include conduct of firms in the market, market dynamics including the nature and extent of price competition, homogeneity of the relevant product and demand elasticity, among others.

4. Conduct of Firms in the Market

a. *Product Exchanges or Swaps and Raw Materials Tolling Arrangement Between Firms*

760. The record discloses a clear inclination for mutual accommodation or interdependent behavior rather than independent behavior among the firms in the market. Such practices include product swaps or exchanges between competing producers-sellers apparently designed to accommodate mutual needs. [175]

761. For example, the evidence shows that Nissan Chemical, a major producer-exporter of isos into the United States, accounting for about # #% of the U.S. isos market, entered into arrangements to supply Olin, the # # U.S. competitor with about # #% of that market, with CA, a key input material for the production of isos, for some five years until Olin acquired FMC's CA production technology and facilities in 1985. *E.g.*, CX 440-A-B#; CX 585-E#; Kitagawa, Tr. 2338; Turnipseed, Tr. 7755#.

762. The record also suggests that product swaps and exchanges between firms in the market are not an uncommon occurrence. *E.g.*, CX 174-Z-157#; CX 478-V-W#; CX 519#; CX 520-523#; Collins, Tr. 3825-26, 3870.

763. The tolling agreement entered into between Olin and Monsanto to commence on July 1, 1984, for an initial term of 2½ years and its genesis and background revealed in the record are instructive in that it indicates the willingness to enter into formal product tolling arrangements on the part of two major competitors in the market.

764. When Olin management decided to suspend its trichlor production at the Lake Charles plant in July, 1984, Olin's capability to continue marketing isos in the United States had been assured by a raw materials tolling agreement entered into between Olin, the third-ranked producer-seller of isos with # #% of that market, and

Monsanto, the second-ranked producer-seller of isos with # #%. John Johnstone, then an Olin corporate vice-president and a member of the CEO office, initiated the negotiations leading to the Monsanto Toll by contacting a high level Monsanto executive in or around January of 1984. (Johnstone, Tr. 6273, 6279)

765. Under the agreement, Olin agreed # # (CX 469-A, B, H, I#) The initial term of the agreement was # # (CX 469-B#)

766. # # [176] (CX 469-B-C#; Marcum, Tr. 4170)

767. # # (CX 469-S-T#)

768. The Olin-Monsanto agreement was the culmination of an extended consideration by Olin to # # In January, 1983, in a paper entitled "Pace Option," Olin's John Swartley described the general strategy: # # (CX 327#)

769. This Pace Option paper stated that # # (CX 327#)

770. Discussion of Olin's shutdown/supply option is also found in Olin's 1983 Pool Chemicals Strategic Plan, dated July 21, 1983 (CX 259-E#), which states the conclusions of its # # (CX 259-Q#) The Plan # # (CX 259-U-X#) # # (CX 259-W#)

771. In October, 1983, Mr. Swartley made a presentation [177] # # (CX 396-D#; Swartley, Tr. 7427#) The presentation contained # # (CX 396-I#) Mr. Swartley # # (Swartley, Tr. 7429-30#)

772. Monsanto's apparent interest in "shutdown economics" is reflected in a November 30, 1982 Olin internal memo, which reported Monsanto's inquiry as to whether Olin was "committed to Lake Charles production as opposed to a shut-down proposal on cyanuric acid and chlorinated products." The Olin response was that "the only thing we are committed to [is] making money." (CX 534)

773. Olin's 1984 PACE Strategic Plan presentation in April, 1984, reflected that # # (CX 261-C#) The 1984 PACE presentation projected that # # (Compare CX 261-E# with CX 261-G#)

774. A financial analysis of the waterbatch/toll plan was prepared # # (CX 659-A#) According to that analysis, # # (CX 659-A#) # # (CX 659-E#)

775. Mr. Swartley # # (Swartley, Tr. 7430#) Mr. Swartley acknowledged that the expected impact of the toll agreement was # # (Swartley, Tr. 7431#) Mr. Swartley # # (Swartley, Tr. 7432#)

776. During the subsequent negotiations, Monsanto's negotiators were able to conclude that a successful toll agreement would result in Olin's closing of the Lake Charles [178] trichlor plant. (CX 846-J-O)

At the initial negotiating session in February, 1984, the Olin officials, John Swartley and Frank Aiken, proposed that Olin buy 15 million pounds of isos from Monsanto each year for the next two years. (CX 846-L-M) The Monsanto officials realized that the Olin negotiators were asking for a volume equivalent to Olin's annual isos sales. (CX 846-M; Marcum, Tr. 4170) On the basis of the proposal by Swartley and Aiken, the Monsanto officials "obviously drew a conclusion that they [Olin] were interested in not manufacturing for a period of time" (CX 846-N) As one of the Monsanto negotiators explained, "I did not think they were going to double their market sales. I felt they were not going to produce." (CX 846-N) That Olin was suggesting a temporary shutdown of Lake Charles was all the more obvious to Monsanto's negotiators since they were aware that Olin's trichlor plant had a capacity of 25 million pounds, but that Olin was operating it at about only a 50% utilization rate and therefore had the "capabilities to produce this much additional" volume without buying from Monsanto. (CX 846-N)

777. The Toll Agreement did not lower Olin's iso costs. # # (CX 263#) A mid-December 1984, PACE Business Review presentation # # (CX 263-A#; Fortuna, Tr. 8178-89#) This December, 1984, Board of Directors presentation # # (CX 263-V#; Fortuna, Tr. 8182-83#)

778. Dr. Ordover, Olin's expert witness, testified:

I expressed the view frequently that tolling agreements have the potentiality for anti-competitive consequences. For example, if Monsanto and Olin were to negotiate a trichlor price which is very high, that might enable Monsanto to raise its price as well and it might also induce other firms to elevate their prices.

(Ordover, Tr. 9769)

779. Dr. Ordover acknowledged that his view of the Monsanto Toll Agreement as procompetitive might change if Olin's tolling costs were actually higher than its manufacturing costs using purchased CA. (Ordover, Tr. 9768) He conceded that, in [179] any event, it would have been more beneficial for competition if Olin had continued operation of Lake Charles rather than negotiating the Toll Agreement. (Ordover, Tr. 9771)

780. There is substantial evidence of isos shortages in the market in 1984-1986 when the Toll Agreement was in effect. *E.g.*, CX 76-C; CX 133; CX 137; CX 175-Z38P-Q; CX 406#; CX 407#; CX 563-A; CX 564; CX 569-D; CX 570-D#; CX 604-B; CX 614-A, C#; CX 615-A#;

CX 668-D#; CX 670-A; CX 677-Z90, Z180#; Ishida, Tr. 1081-83. Repackers attributed this shortage to the Toll Agreement. (Bloom, Tr. 716; Christensen, Tr. 1803-08; Jonas, Tr. 2247-48; Castagnoli, Tr. 2428-29) In fact, Monsanto placed its iso repacker customers on allocation and was not able to fulfill its supply commitments during the period of the Tolling Agreement. (CX 640; Marcum, Tr. 4036) Olin's Peter Kosche agreed that the Toll Agreement contributed to the isos shortage. (Kosche, Tr. 8499#)

781. Olin officials have acknowledged that the tolling arrangement, coupled with the shutdown of Olin's Lake Charles trichlor facility, # # (Henske, Tr. 7255-57#; Swartley, Tr. 7430-32#) Olin's economic expert acknowledged that the tolling, along with the ITC anti-dumping order, # # (Ordover, Tr. 9720, 9771, 9776-77#)

b. *The Nature and Limits of Price Competition
In the Relevant Markets*

782. Vigorous price competition among firms in the market generally suggests that the market is performing competitively. The evidence in this case is somewhat mixed. In brief, the early period (before 1984) is marked by price leadership; iso prices were led by Monsanto and cal hypo prices, by Olin. During this period, the Japanese imports were, to a limited extent, a disruptive element especially with respect to bulk sales to some large repackers. The institution of isos and cal hypo dumping proceedings in 1983, and subsequent adverse determinations and imposition of anti-dumping duty margin requirements on Japanese isos and cal hypo, put an effective end to price disruptions emanating from that source. Thus, 1984 appears to have effectively restored the historical price leadership of Monsanto (in isos) and Olin (in cal hypo). During the post-acquisition period (1986 and 1987), Olin appears to have been an aggressive price competitor, selectively discounting some prices to some large buyers. To this extent, the historical price leadership by the two has arguably been somewhat eroded. However, what will be in store once the Klieg light is removed from Olin is not known. What is known at this time is that Olin [180] achieved market power through the challenged acquisition and that the relevant markets are characterized by certain collusion facilitating features. See F. 793-821, *infra*.

783. The evidence shows that pool chemicals producers generally issue almost identical or very close list price schedules in late

September through October for the following pool season, and that the prices firm up by November when the NSPI national convention is held. During this period, major producers feature the so-called early-buy programs when the rivalry for the large-volume purchases of large buyers appears to be intense. The early-buy generally runs from November through the following April, when early-buy allowances, volume discounts and TVAs (temporary voluntary allowances) are employed. The record as a whole, however, shows that the majority of sales transactions in the industry are made at list prices and that selective price concessions made to some large repackers do not result in general price reductions. *E.g.*, CX 175-Z2; CX 476-Z24#; Wilson, TR. 4260. *Also see* F. 823-29, *infra*.

784. For example, following the ITC anti-dumping ruling in April, 1984, all major iso producers increased their iso bulk list prices in the United States to an *identical* \$1.30 per pound. (CX 32-A; CX 111-C; CX 113-B; CX 131-C, U; CX 220#; CX 568-F-H; Marcum, Tr. 4181) Olin increased its cal hypo prices by 10% during that same period. (CX 113-C) Later in 1984, a second round of price increases occurred, with the result that iso bulk list prices of all major producers increased to \$1.45 per pound (for trichlor). (CX 32-A; CX 111-C; CX 131-B, S, T; CX 222#; CX 568-A, B, D, E; Marcum, Tr. 4183) Olin increased its PACE brand iso prices by 20% in late 1984 (CX 361-C) and increased its cal hypo prices by an additional 5%, followed by PPG. (CX 312#; CX 361-B; CX 482#) These price increases met with little resistance (CX 32-B; CX 482#) and caused an increase in iso and cal hypo transaction prices as well. (Bloom, Tr. 828; Pettoruto, Tr. 1360; Jonas, Tr. 2247, 2252; Marcum, Tr. 4184; Hughes, Tr. 5361; Turnipseed, Tr. 7803-04; Kosche, Tr. 8500-01, 8673-75) Monsanto also stopped # # (Marcum, Tr. 4213-14#)

785. In August-September 1985, the bulk list prices of isos and cal hypo again moved upward. On August 2, 1985, PPG announced a 10% increase in its cal hypo prices, effective September 15, 1985. (CX 681) On September 3, 1985, shortly after the Olin/FMC acquisition was consummated, Monsanto announced an increase in the bulk list price of trichlor to \$1.60 per pound, effective November 1, 1985. (CX 223-A#; CX 448-C; Marcum, Tr. 4116) On September 13, 1985, Olin increased the bulk [181] list price of FMC trichlor to an *identical* \$1.60 per pound, effective November 1, 1985. (CX 449; Marcum, Tr. 4117-19)

786. Purchasers of isos and cal hypo have acknowledged that bulk

prices of the products tend to move together (Castagnoli, Tr. 2537) and that producer price lists are always close to identical. (Schaub, Tr. 2090-91)

787. The evidence is clear that since the advent of anti-dumping proceedings in the 1983-1984 period, Japanese producers-exporters have been cautious and fearful of appearing to be aggressive price-cutters and have, evidently as a matter of policy, tended to follow the United States domestic producer prices. *E.g.*, CX 220-A#; CX 226-F#; CX 240-F, G#; CX 566-C; CX 573-D#; CX 619-B#; CX 654-L-N; CX 676-Z133, Z203#; CX 677-Z88-Z89#; Pettoruto Tr. 1392-94#.

788. Although respondent contends, largely on the basis of post-acquisition evidence, that Olin has exerted a "downward pressure" on the price of isos of late, Olin's post-acquisition evidence is less credible than its record of pricing behavior before the challenged acquisition. (See RPF 931-933; *cf* CPF 1123-1130) *Also see Hospital Corporation of America v. FTC*, 807 F.2d 1381, 1384 (7th Cir. 1986), *cert. denied*, 107 S.Ct. 1975 (1987).

789. The record also shows instances of tying by leading producer-sellers, such as Olin. Needless to say, the challenged acquisition enhances that such tying attempts may succeed, to the detriment of price competition.

790. For example, sometime around 1980, Olin reportedly used the "strength of HTH to force distribution of PACE on a national basis" by granting preferential purchase terms and co-op advertising allowances to customers who purchased both HTH and PACE in comparison to the terms and allowances granted to customers who purchased only one of those products. (CX 320-A-B; CX 541-A, B, C, F, L; Schaub, Tr. 2139) PPG's 1982 calcium hypochlorite business strategy paper, in analyzing Olin's competitive strengths, noted that "[s]ome distributors feel pressured by Olin to sell Olin's PACE brand isocyanurates in order to have an assured source of HTH" (CX 545-D) *Also see* CX 9-Z25; CX 113-C; CX 264-A#; CX 270-M#; CX 272-L#; CX 320; CX 541; Jonas, Tr. 2269.

791. According to a 1985 memo by Olin's Peter Kosche, concerning Olin's plans # # (CX 408-C#) Olin is the only [182] significant manufacturer of both cal hypo and isos. Such activities may be accelerated after the acquisition as Olin's power in the isos market is increased. (Schaub, Tr. 2203; Jonas, Tr. 2269-70; Benson, Tr. 4961)

792. Olin's enhanced strategic position as a more powerful supplier in the isos market will not only affect customers who are coerced

through tying activities but may also make rival manufacturers, which operate in only one segment or the other, less aggressive pricewise. (Ordover, Tr. 9408-09) As Dr. Ordover has stated in an article he co-authored:

A horizontal merger can make demand more inelastic in several ways. First, the merged firm can internalize demand shifts between the merging firms' products that are induced by price rises and that served, before the merger, as constraints on the abilities of the merging firms to elevate prices. Thus, the merged firm may have incentives to raise prices because diversion of sales is less of a threat, inasmuch as the diversion is to another of its own products. Second, the merger partners can coordinate the production and pricing of their products, thereby replacing any premerger competition with cooperation. Third, the supply and pricing decisions of the merging firms' active and potential rivals might become less competitive because of the rivals' perceptions of the merged firm's new strategic position.

(Ordover and Willig, *The 1982 Department of Justice Merger Guidelines: An Economic Assessment*, 71 Cal. L. Rev. 535, 537 (1983))

c. The Industry Ad Hoc Committee and Unorganized Exchange of Price and Other Strategic Information Among Competitors

793. The record also discloses a number of market-wide and firm-specific characteristics which may tend to facilitate tacit or actual collusion among industry firms. They include the Ad Hoc Industry Committee and the unorganized exchange of price and strategic information among industry firms and, finally, procartel behavior of certain Japanese producers-exporters.

794. Every firm which markets isos for pool use in the United States is required first to register with the EPA certain [183] long-term toxicity test data. This data may be developed by the marketer of the product but usually is developed by the manufacturer. (CX 411-A-B#; CX 638-A; Pettoruto, Tr. 1382) A prospective registrant can develop this information on its own or can reduce the expense and avoid years of toxicity testing by joining the Isocyanurate Industry Ad Hoc Committee ("Industry Ad Hoc Committee"). (Christensen, Tr. 1868; Marcum, Tr. 3971)

795. The Ad Hoc Committee was organized sometime between 1978 and 1981 for the purpose of developing the requisite information at the shared expense of the Committee members. (CX 411-A#; Marcum, Tr. 3970-71) The Committee has spent \$2.5 million to develop this information and is still in the process of completing

toxicological studies begun at about the time of the Committee's organization. (Marcum, Tr. 3971, 4161)

796. The initial Committee members were Olin, FMC, Monsanto and ICI. Nissan and Shikoku joined sometime thereafter and in any event by mid-1983. (CX 411-A#) FMC dropped out of the Committee subsequent to the Olin acquisition, and Sigma joined in late 1985 or early 1986. There have been no other changes in Committee membership. (Marcum, Tr. 3971) Shikoku spent two years trying to join the Committee and paid \$500,000 for its membership. (Ishida, Tr. 980) Sigma's membership fee was \$345,714. (CX 638-A)

797. The small Industry Ad Hoc Committee is not engaged in any collusive activity. However, the evidence shows that the members of the small group are able to learn potential entry into the United States market through the Ad Hoc Committee. For example, Olin learned, through its contacts with the Ad Hoc Committee, the details of Sigma's plans to enter the United States isos market before Sigma's plant was in operation. (CX 665; Kosche, Tr. 8972) Similarly, FMC obtained advance knowledge of Sigma's entry plans through the Ad Hoc Committee. (CX 665)

798. It is well-recognized that market information is a two-edged sword, for a free market cannot function without free and efficient dissemination of relevant market information. On the other hand, organized exchange of information regarding costs, prices, capacity, output, shipments and other plans of strategic nature on a systematic basis among competitors, without economic necessity or other redeeming features is illegal and clearly incompatible with free competition. In any event, efficient market intelligence devoid of any organization or coercive mechanism may be useful and contribute to market efficiency. *See generally* Posner, *Antitrust Law: An Economic Perspective*, 135-147 (1976). [184]

799. The evidence suggests that (1) producer price lists are widely circulated and commonly available to buyers as well as to competing producers, (2) producers are able to learn about the price announcements of competitors before they are made, (3) smaller firms follow prices announced by leading firms, (4) there is unorganized yet remarkably efficient price monitoring in the market, and (5) the market is characterized by the existence of a pervasive information exchange network, all of which may contribute to price leadership and interdependent, rather than competitive, pricing in the relevant markets and tend to enhance the likelihood of tacit or actual industry collusion.

800. There is evidence that producers are able to learn the price announcements of competitors before the date of announcements. (CX 132; CX 565; CX 621#; CX 677-Z179#; RX 256#)

801. It is well recognized that collusive behavior can be facilitated by the use of announced price increases well in advance of their actual implementation. Posner, *op. cit.*, at 66.

802. It is also recognized that the existence of a system of price monitoring—where pricing information is readily available to the sellers in a particular market—is a factor facilitating tacit or actual collusion. (Kamerschen, Tr. 2800-03; Ordover, Tr. 9730)

803. The record also indicates that the monitoring of pricing by the major firms in the markets (Olin, FMC, Monsanto, and PPG) is widespread. *See, e.g.*, CX 32; CX 111-C; CX 113-B, C; CX 131; CX 174-Z110; Z114-15, Z118, Z120#; CX 191#; CX 322; CX 357#; CX 376-H-J#; CX 377-Z23-78#; CX 476-I, V#; CX 550-A; CX 568; CX 572-D#; CX 573-D#; CX 574-C#; CX 617#.

804. In March of 1984, FMC's James Collins, then the manager of FMC's CDB business, described in the ITC the # # (CX 174-Z85#) Mr. Collins # # (CX 174-Z85#) [185]

805. The evidence suggests that producers in the dry sanitizer market have the ability to coordinate their pricing behavior in an interdependent manner. (F. 782-87, *supra*)

806. Producers in the relevant market also appear to have a generally accurate picture of transaction prices in the marketplace. (Marshall, Tr. 1167-68; Sossamon, Tr. 4612; Vonderlow, Tr. 4832) Transaction pricing information is learned from repacker customers (CX 377-Z58, Z64#; CX 511#) and by looking at customer invoices. (CX 187; CX 377-Z41, Z58, Z64#; CX 723-B#) Olin's submissions to the ITC reflect # # (CX 376-H-J#; CX 377-Z30-Z78#)

807. Also, Nissan and Olin # # (RX50-B#; RX 51-A#; Swartley, Tr. 6953-54#) In fact, # # (RX 50-A#) The reasons for # # (Swartley, Tr. 7054#)

808. The record indicates that in recent years, Monsanto has communicated its "announced" price increases informally to its repacker customers several months prior to the implementation date and well in advance of issuing the price announcement form letter. (CX 132-A-B; CX 565-A-B; CX 621#) Monsanto's price plan was then circulated through the industry and was quickly discovered by Monsanto's rivals. (CX 132-A; CX 223) Then followed virtually identical price increase letters sent by all the domestic iso producers. (CX 568-A, C-E)

809. The record also discloses numerous visits, conversations, meetings, and communications and contacts between firms in the market through which confidential business information about capacity utilization, product costs, supply and demand forecasts, future plans of actual and potential competitors, competitive assessments and other strategic market information was obtained or exchanged. See CPF 966-1026.

810. Dr. Ordover, respondent's economic expert, observed that the swimming pool sanitizer business is "an industry in which people keep fairly close tabs on each other" (Ordover, Tr. 9295)

811. And Dr. Kamerschen, complaint counsel's economic expert, concluded that the industry is one characterized by a lot of competitor meetings and information exchange. (Kamerschen, Tr. 2798) While information exchanges can be procompetitive in [186] competitive markets (Kamerschen, Tr. 2795-96, 2801), where the market is highly concentrated such information exchanges can increase the likelihood of tacit or actual collusion. (Kamerschen, Tr. 2801-04)

d. *Pro-cartel Behavior of Certain Japanese Producers-Exporters*

812. The Japanese Fair Trade Commission ("JFTC") found on December 27, 1982, that Nissan Chemical and Shikoku Chemical had fixed the prices of isocyanurates sold in Japan from 1977 through 1981; raising iso prices for pool use and septic tank use. (CX 238-V; Ishida, Tr. 983-85)

813. Dr. Kamerschen, complaint counsel's economic expert, testified that the JFTC decree is further evidence of an industry which could lend itself to tacit or actual collusion. (Kamerschen, Tr. 2804-05) The past record of an industry is a relevant consideration in predicting whether tacit or actual collusion is likely to occur in the future. *DOJ Guidelines* §3.44(a); Posner, *op. cit.* at 61 (1976); Kamerschen, *An Economic Approach to the Detection and Proof of Collusion*, 17 Am. Bus. L. J. 193, 201 (1979).

e. *Elasticity of Demand*

814. It is recognized that elasticity of demand for the products offered by members of a hypothetical cartel is a relevant factor in assessing the likelihood of tacit or actual collusion. (Kamerschen, Tr. 2780-82; Ordover, Tr. 9726; Kamerschen, *op. cit.*, at 197-98; Posner, *op. cit.*, at 48, 56-57; Hay and Kelley, *An Empirical Survey of Price-Fixing Conspiracies*, 17 J.L. & Econ. 13, 15 (1974)) The more

inelastic the demand for the product, the greater the probability that firms in an industry can profitably engage in collusive behavior.

815. The evidence shows that the demand for isos and cal hypo is inelastic. The demand for pool chemicals is inelastic because the cost of the pool sanitizer is an inexpensive complement compared to the total cost of the swimming pool. (Kamerschen, Tr. 2782-84) A residential pool owner is not likely to stop using his pool or reduce his consumption of chemicals in the event of a substantial increase in the price of those products. (Pettoruto, Tr. 1490-10; Christensen, Tr. 1847; Kamerschen, Tr. 2783-84; Ordovery, Tr. 9237, 9727). [187]

f. Ratio of Fixed Costs to Variable Costs

816. The ratio of fixed costs to variable costs is also a relevant factor in assessing the likelihood of tacit or actual collusion in a particular industry. (Kamerschen, Tr. 2787-89; Kamerschen, *op. cit.*, at 200-01; Posner, *op. cit.*, at 61) Other things being equal, tacit or actual collusion is more likely to occur in an industry with high fixed-to-variable cost ratios because such high fixed costs make the risk of failure much more costly. (Kamerschen, Tr. 2787-89; Areeda and Turner, *op. cit.*, ¶921(b); Posner, *op. cit.*, at 61)

817. The evidence shows that there are high fixed costs associated with the manufacture of isos. (CX 443-A#; Marcum, Tr. 4174) The fixed cost to variable cost ratio in the manufacture of isos is also high. (Marcum, Tr. 4175) There are high fixed costs associated with the manufacture of cal hypo. (CX 377-N#; Hughes, Tr. 5289)

818. Dr. Kamerschen concluded that the high fixed costs associated with the manufacture of isos and cal hypo is another factor which contributes to the likelihood of tacit or actual collusive behavior by the firms. (Kamerschen, Tr. 2789)

g. Rate of Growth in the Market

819. The growth rate of a particular market has been recognized as a factor relevant to determining whether tacit or actual collusion is likely to occur. (Kamerschen, Tr. 2790-95; Kamerschen, *op. cit.*, at 200; Posner, *op. cit.*, at 61) Other things being equal, collusion is more likely to occur in markets with stagnant growth or declining demand. (Kamerschen, Tr. 2791, 2834; Posner, *op. cit.*, at 61) Empirical studies have shown that low profitability in such stagnant or slowly growing markets can be an important spur to collusion. (Kamerschen, Tr. 2791; Ordovery, Tr. 9808; Asch & Seneca, *Is Collusion Profitable?*,

58 Review of Economics and Statistics 1 (1976), cited with approval by Scherer, *op. cit.*, at 176)

820. The evidence shows that the demand for both isos and cal hypo has been growing slowly. Growth rates for both isos and cal hypo have been declining in recent years. There is evidence of dissatisfaction with low profitability on the part of firms in the market. (CX 225-B-G#; CX 230-C-F#; CX 259-Q#; RX 32-N#; RX 125-C) # # [188] (CX 174-W#; CX 377-Z8#) Olin's 1983 Pool Chemicals Strategic Plan # # (CX 259-Q#; RX 32-N#)

821. Dr. Kamerschen concluded that the stagnant or slow growth in the market, coupled with low profitability, was a factor indicating a likelihood that tacit or actual collusion would occur. (Kamerschen, Tr. 2792-95)

h. Buyer Concentration and Related Factors

822. It has been recognized that even in a highly concentrated market, the likelihood and duration of non-competitive pricing is affected by the size of buyers and the flow of orders. The presence of large buyers and infrequency of orders tend to discourage tacit or actual collusion and non-competitive prices in the market. (Kamerschen, Tr. 2779, 2806-07; Ordovery, Tr. 9730) *See* Areeda and Turner, *op. cit.*, ¶ 918; Posner, *op. cit.* at 53-54, 59.

823. It is also recognized that except in cases where *all* buyers are large, there is a high probability that only large buyers will be able to derive full benefit from their buying power and that pressure from a small number of large buyers may not be expected to lead to general price reductions to competitive levels. *See* Areeda and Turner, *op. cit.*, at 90.

824. The evidence shows that there are between 30 to 40 bulk purchaser-repackers of isos and cal hypo (CX 176-W; CX 179-Z26), and the record reflects a number of instances when a "large" repacker was able to extract price concessions. *See* RPF 824-35. However, the evidence is clear that there are only a handful of "large" buyers in the markets and that the instances of large-buyer-induced price concessions did not lead to general price reductions.

825. In 1985, a large repacker estimated that there were about thirty-two independent repackers. Of those, the largest was estimated to have accounted for about 11.7% and six repackers, for shares of between 2 to 5%. (CX 5-B; Kennedy, Tr. 521-30, 539-45) Dr. Kamerschen analyzed the data in CX 5 and concluded that it was

evidence of a lack of countervailing buyer concentration to offset the seller concentration in the relevant markets. (Kamerschen, Tr. 2757-66)

826. In 1984, Olin's total production of cal hypo was # # (CX 441-I#) No single United States customer of Olin accounted for more than # # pounds, or approximately # #%, of Olin's total cal hypo production. [189] (CX 900-D#) In 1984, Olin's total production of trichlor was # # (CX 441-I#) No single United States customer of Olin accounted for more than # # million pounds, or approximately # #%, of Olin's total trichlor production. (CX 900-J#) Olin's customer lists (CX 900-B-T#) identify # # who purchased cal hypo, trichlor, and dichlor from Olin in each year in the 1980-1985 period.

827. A January, 1984, FMC chart of the distribution chain for its CDB swimming pool products estimates the following number of participants at each level of the distribution chain:

Producer	5
Packager	35
Distributor	70
Retailer	5000
Consumer	Millions

(CX 84-C)

828. Purchasers of isos and cal hypo who testified indicate they have little leverage in negotiating price with their producer-suppliers. (Christensen, Tr. 1817#; Jonas, Tr. 2249#) John Christensen of Chem-Lab testified that # # (Christensen, Tr. 1817#)

829. Marshall Bloom of Bio-Lab, the largest repacker (CX 5-B; Bloom, Tr. 630-31), testified that his firm has been adversely affected by industry shortages. (Bloom, Tr. 716) Bio-Lab has been unable to prevent its iso prices from rising in recent years. (Bloom, Tr. 828) E-Z Clor, another large repacker, was unable to prevent Monsanto and other suppliers from increasing prices after the 1984 ITC anti-dumping decision. (CX 203)

830. One factor relevant to an analysis of the buyer power issue is the ability of buyers to integrate backward into the production of the product being purchased. (Kamerschen, Tr. 2807; Ordovery, Tr. 9731) Repackers testified that they were not in a position to integrate backward into the manufacture of isos or cal hypo. (Bloom, Tr. 727; Christensen, Tr. 1862-66; Jonas; Tr. 2257) No repacker of isos or cal hypo has been able to successfully integrate backward. (Christensen, Tr. 1870) Dr. Ordovery testified that "it is totally impossible for a

repacker to backward integrate into isos or cal hypo." (Ordover, Tr. 9731)

831. However, manufacturers of isos have been able to integrate forward into repacking. (Christensen, Tr. 1870; [190] Marcum, Tr. 4158-59) Monsanto, for example, has the capacity to integrate into repacking with some additional capital and marketing. (Marcum, Tr. 3965-66) It would be much easier for a manufacturer to integrate forward into repacking than it would be for a repacker to integrate backward into manufacturing. (Christensen, Tr. 1870-71; Ordover, Tr. 9731)

832. It is recognized that the potential for buyers to exercise countervailing market power is greater in markets where there are a significant number of large transactions, such as sales pursuant to long-term contracts. Conversely, where sales in a particular market are frequent, regular, and small relative to a firm's output, tacit or actual collusion is more likely because the benefits of cheating on a collusive agreement are small relative to the potential costs. *DOJ Guidelines* § 3.42. Evidence in the record indicates that relatively few purchases of dry sanitizers are made pursuant to long-term contracts. (CX 173-Z25-Z27) However, the evidence also shows that bulk purchaser-repackers of isos and cal hypo place orders for the bulk of their estimated requirements for the following pool season during the "early-buy" period, generally from December to March/April. Thus, in terms of the nature and flow of orders, the purchases by repackers are rather infrequent.

i. *Product Homogeneity*

833. It is well-recognized that homogeneity of a particular product is a factor to be considered in assessing the likelihood of tacit or actual collusion in a particular market. For producers selling homogeneous products that buyers regard as perfect substitutes for each other, competition is largely based on price and arrangements suppressing price competition are relatively easier to reach. Product heterogeneity, on the other hand, increases the means of rivalry and can discourage or impede tacit or actual price coordination. (Kamerschen, Tr. 2784-85; Ordover, Tr. 9727; Kamerschen, *op. cit.*, at 198; Posner, *op. cit.*, at 59-60; F. Scherer, *op. cit.*, at 176; Areeda and Turner, *op. cit.*, at 91; *DOJ Guidelines* § 3.41.

834. However, it is also recognized that product heterogeneity, while reducing the probability and magnitude of anticompetitive

effects flowing from seller concentration, does not eliminate those effects. Areeda and Turner, *op. cit.*, at 92.

835. Thus, while the relevance of product heterogeneity is recognized as a moderating element against presumptions of illegality based on market share analysis, especially at the lower end of the scale, it is not possible to determine, with any degree of confidence, what degree of product homogeneity or [191] heterogeneity will have what effect at various levels of concentration. Areeda and Turner, *op. cit.*, at 92.

836. The evidence shows that isos are relatively homogeneous products as is cal hypo. However, isos and cal hypo are clearly heterogeneous products.

837. Relevant qualitative evidence of the relative homogeneity of products includes the existence of price lists and inventories. (Kamerschen, Tr. 2785-86; Posner, *op. cit.*, at 60) Dr. Kamerschen concluded that these factors, along with evidence of product swaps, supported the conclusion that the products were "reasonably" but "not perfectly" homogeneous. (Kamerschen, Tr. 2785-86)

838. The evidence also shows that Olin and FMC expended large sums of monies to promote the HTH (isos), PACE (cal hypo) and SUN (isos) brands over the years and that private label brands are also widely used by other producers and repackers. The effects of such attempts at product differentiation upon price competition is not clear. However, it is doubtful that such private label usage would constitute a significant impediment to price coordination. The ITC investigations found price to be the major factor upon which competition is focused. (CX 176-L; CX 179-Q)

j. Levels of Distribution at Which the Principal Firms Sell

839. It is recognized that the feasibility of collusion is reduced when some members sell at lower levels in the distribution than others. Posner, *op. cit.*, at 60. The added difficulty to enforcement of a cartel when members sell at different distribution levels is the need for them to determine the reasonable spread between their prices. Although this factor may reduce the feasibility of tacit or actual collusion, it does not by itself make collusion unworkable or impossible. (Ordover Tr. 9731)

840. In the instant case, the two leading domestic producers (Olin and Monsanto) sell isos, for the most part, at different levels of distribution. Monsanto sells isos in bulk to repackers, while Olin sells

to both repackers and also at further down the chain of distribution to dealers and distributors.

841. The evidence shows, however, that Monsanto is able to and does obtain a fairly accurate picture of prices and costs at the repacker level. Monsanto's repacker customers are known to have shared such information with Monsanto. [192] (Bloom, Tr. 686; Christensen, Tr. 1815; Castagnoli, Tr. 2529) # # (Christensen, Tr. 1816#)

842. There is also evidence that Monsanto knew the actual pricing differential between repacker costs and retailer costs. On one occasion, Monsanto and FMC officials discussed general industry repacking costs, after which the Monsanto official wrote that a "range of 70 cents between bulk and retail isn't a bad estimate for [r]epackers." (CX 205; CX 845-D) A FMC document confirms that FMC actually considered 70 cents to be the per-pound difference between the bulk price to repackers and the repacker/distributor price to retailers. (CX 84-A, C)

843. Repacker costs do not appear to vary significantly from one repacker to another. (CX 179-Z58) As Olin informed the ITC in March, 1984: # # (CX 376-D#) (emphasis in original)

844. Monsanto's Mr. Marcum informed the ITC in the iso anti-dumping proceedings # # (CX 174-Z15#) Mr. Marcum testified in this case that he monitors Olin prices for its branded products. (Marcum, Tr. 3989)

845. The record shows instances where Monsanto is monitoring branded prices at the branded level. (CX 4-H, J; CX 191-C-D#; CX 219-A#; Christensen, Tr. 1874-79, 1885-88) PPG, which concentrates most of its business on the sale of bulk product to repackers, also monitors prices at the branded level. (Hughes, Tr. 5199) Olin has also acknowledged a relationship between bulk and branded prices. (CX 386-G-H)

846. Viewed against the level of seller concentration resulting from the acquisition, none of the relevant non-market share factors reviewed hereinabove, either singly or collectively, operates to moderate or significantly diminish the high probability of substantial anticompetitive effects of the challenged acquisition, much less save it.

k. *Likelihood of Dominant Firm Behavior*

847. The record as a whole supports the conclusion that Olin will achieve market power after the acquisition and will be in a position to exercise it successfully. [193]

848. An October, 1983 Olin document which listed the FMC acquisition as an alternative to be considered by Olin's CEO Mr. Henske identified the following "Plusses" for the acquisition: # # (CX 396-E#; *also see* CX 396-A#; Swartley, Tr. 6980-81; Henske, Tr. 7258)

849. A December, 1984, presentation to Olin's CEO and Board of Directors recommending the FMC acquisition compared a 10-year forecast of Olin/FMC combined versus Olin and FMC as separate entities. (CX 263-H#) # # (CX 263-H#; CX 475-Z2-Z3#)

850. Analyzing the proposed FMC acquisition, Olin's John Swartley noted that # # (CX 262-E#; Swartley, Tr. 7443-44#)

851. In his testimony in this proceeding, Mr. Henske acknowledged that today Olin is the strongest firm in pool chemicals. (Henske, Tr. 7169)

852. Another defense witness testified that Olin is now in a position to exercise control in the dry sanitizer market in the sense that Olin can lower or raise prices and other companies will follow. (Wilson, Tr. 4316) Shikoku Chemicals' Ken Ishida stated his firm will follow Olin's pricing lead. (Ishida, Tr. 1004) PPG's cal hypo business manager, Richard Hughes, stated PPG will follow Olin's pricing lead. (Hughes, Tr. 5290) Other witnesses expressed the view that efforts by Olin to increase price would be followed by other producers of isos and cal hypo, most notably Monsanto and PPG. (Bloom, Tr. 712; Pettoruto, Tr. 1404; Schaub, Tr. 2117; Castagnoli, Tr. 2457-58)

853. Akira Kuroda of Toyomenka, testifying by way of deposition in Japan, stated that # # (CX 677-Z159#) Mr. Kuroda's viewpoint [194] # # (CX 613-A#)

854. Toyomenka, # # (CX 613-A#)

855. The record also reflects the views of repacker witnesses that the acquisition gave Olin the power to drive independent repackers out of business by squeezing their profit margins and to enhance its market position further. (CX 175-Z72-75; Kennedy, Tr. 530-31; Marshall, Tr. 1162-63; Christensen, Tr. 1893-99; Schaub, Tr. 2112; Castagnoli, Tr. 2537-39; Wilson (defense witness) Tr. 4328-29)

856. Monsanto # # (CX 208-A#) Monsanto listed one favorable aspect of the Olin/FMC acquisition and stated "we will have only one domestic competitor and . . . repackagers should feel Olin is even more of an end-market threat to them." (CX 209-B)

857. Dr. Kamerschen, complaint counsel's economic expert, testified that the acquisition raised dominant firm concerns, in both the dry

sanitizer market and the isos-only market. (Kamerschen, Tr. 2721-22, 2745-47)

858. A number of Olin documents which were prepared after the acquisition and after the issuance of the Complaint show that in a number of instances Olin led price reductions or met lower prices of competitors, or that Olin has been encountering increasing downward pressure from competing sellers or that import competition has increased. *E.g.*, RX 114; RX 115; RX 116; RX 119#; RX 121#; RX 123#; RX 371#; RX 372#.

859. Observers of recent declines in prices have suggested that Olin has been a leading factor in such price [195] reductions. (CX 123-B; CX 573-D#; CX 620-A-B#; CX 622-A#; Marshall, Tr. 1208; Christensen, Tr. 1983; Castagnoli, Tr. 2476-78; Sossamon, Tr. 4622-23) Donald Aston of Chem-Quip acknowledged that Olin lowered its price to meet the price of a small competitor after he was named to testify as a witness for Olin. (Aston, Tr. 4508) Olin rolled back its price to another witness to meet the price of a competitor. (Vonderlow, Tr. 4801)

860. One large repacker witness observed that the FTC challenge to the acquisition has prevented Olin from exercising market power presently but added: “[O]nce they have been assured that the acquisition is going to be completed and they turn loose the power that they have, then I think you will see prices rising.” (Castagnoli, Tr. 2456-57)

861. We have considered both pre- and post-acquisition evidence presented by Olin. However, the probability of and the weight to be given to post-acquisition evidence are much less than those of pre-acquisition evidence. *Hospital Corp. of America v. FTC*, 807 F.2d at 1384.

862. On the basis of the record evidence reviewed in VI. hereina-bove, it is found that the challenged acquisition has a high probability of lessening competition substantially in the isos-only market as well as in the dry pool chemicals (isos and cal hypo) market in the United States.

VII. RESPONDENT'S DEFENSES

A. Olin's Economies Defense

863. Inasmuch as the primary objective of antitrust laws is the maintenance of competition so that economic efficiency be promoted and misallocation of resources avoided, it has been recognized that a

merger which is otherwise unlawful may be saved by establishing through substantial evidence that the merger resulted in substantial economies or significant efficiency gains and that these gains were unique to the acquisition.

864. However, in order to make an economies defense, substantial scale economies and integration economies must both be established by direct and specific proof and further significant savings in resources, and not private economies, must be shown. Thus, evidence of private economies, such as savings in production costs and other so-called cost savings are not considered unless it is clearly established that they are substantial and necessarily inure to the benefit of consumers. *American Medical International, Inc.*, 104 FTC 1, 213-20 [196] (1984). See generally Areeda and Turner, *op. cit.*, ¶ 948, ¶ 949; Kwoka and Warren-Boulton, *op. cit.*, at 433-34.

865. In this connection, it is generally recognized that pre-acquisition evidence of anticipated efficiencies is more credible than post-acquisition evidence alleged to flow from a challenged acquisition. It is fair to say that post-acquisition evidence susceptible to manipulation by the merged firms is inherently suspect. See *Hospital Corporation of America v. FTC*, 807 F.2d at 1384; Kwoka and Warren-Boulton, *op. cit.*, at 431, 435.

866. Furthermore, efficiencies defense requires that the efficiency gain, once established by substantial evidence, must be shown to be unique to the challenged acquisition. Thus, efficiency gains which could have been achieved through inter-firm managements short of merger, or through some other merger, cannot save a merger which is otherwise shown to be unlawful. Consequently, the efficiency gain that is attributable to a merger is limited to the incremental cost saving which is not available through the next best alternative. And, in order to make out that showing, the merged firm must show that it explored reasonable alternatives and that the challenged acquisition was the only feasible option. (Kamerschen, Tr. 2839-55; Kwoka and Warren-Boulton, *op. cit.*, at 433-35, 439)

867. In the instant case, Olin does not contend, nor does the evidence show, that either Olin or FMC suffered from substantial diseconomies of scale before the acquisition or that substantial scale economies or significant savings in resources were realized through the acquisition.

868. Furthermore, Olin failed to establish the alleged efficiencies by substantial evidence. It failed to establish that the claimed perfor-

mance gains were *economic* efficiencies as opposed to *private* economies. It failed to establish that the claimed "efficiencies" were unique to this particular acquisition. Most important of all, Olin failed to establish that any claimed efficiency gains or economies clearly outweigh Olin's increased market power or will necessarily inure to the benefit of consumers.

869. Our discussion of the economies defense may well end here. However, for the sake of completeness, a brief review of the state of evidence presented by respondent follows.

870. First of all, Olin's alleged efficiency gains run counter to its pre-acquisition assessment. The conclusion of Olin's pre-acquisition analysis of the FMC plant was that closing FMC's trichlor facilities and consolidating trichlor production [197] at Lake Charles would # # See CPF 1530.

871. Secondly, Olin failed to present any evidence on the basis of which the administrative law judge could make a determination with some confidence whether there in fact were any savings or whether the savings were substantial. Areeda and Turner would not consider any savings smaller than 5% of total costs. Areeda and Turner, *op. cit.*, at 168. Also see CPF 1557-58.

872. For example, Olin's economic expert testified that the essential undertaking in analyzing any cost savings resulting from the acquisition is the comparison of FMC's actual pre-acquisition costs and Olin's actual post-acquisition costs. (Ordover, Tr. 9873) Olin presented no documentary evidence comparing actual pre- and post-acquisition manufacturing costs at South Charleston. The only documentary evidence presented by Olin concerning its actual production costs at South Charleston was a # # (RX 342) Also see CPF 1523-1525.

873. Prior to the acquisition, Olin received "all the detailed costs" associated with FMC's operating results at the South Charleston plant. (Kosche, Tr. 8506-07#; Fortuna, Tr. 8052, 8059-60#) Olin presented no documentary evidence concerning FMC's pre-acquisition-1985 performance at South Charleston. Olin presented no documentary evidence concerning FMC's budget for 1985 performance at South Charleston.

874. Olin's evidence comparing its performance at South Charleston to FMC's pre-acquisition performance consisted of undocumented, conclusory statements of Olin's Messrs. Kosche and Fortuna. (Kosche, Tr. 8535; Fortuna, Tr. 8052, 8067) Such testimonial evidence alone is hardly substantial evidence capable of establishing alleged cost

savings flowing from the challenged acquisition. *Also see* CPF 1529-1534, 1557-58.

875. Similarly, Olin failed to establish by substantial evidence that the acquisition realized substantial integration economies. In any event, "there is little ground for recognizing a defense based on (a) plant specialization economies where there is no product complementary . . . or for economies in (b) capital cost, (c) procurement, (d) overhead, or (e) the combination of complementary resources (emphasis added)." IV Areeda and Turner, *op. cit.*, at 175. [198]

876. Respondent also failed to establish, through substantial evidence, any substantial improvement in plant utilization or production capacity or any substantial physical improvement to the acquired facility. *See* CPF 1535-40, 1542-53.

877. Finally, whatever economies or efficiency gains there may be, they are not shown to be unique to the challenged acquisition for, there is substantial evidence showing that Olin simply abandoned the available alternatives when the FMC acquisition opportunity surfaced and that the main reason for choosing that route was to save itself the time it would take to pursue other alternatives.

878. For example, # # *See* CPF 1276-96.

879. The record also discloses that the possibility of a joint venture with Nissan Chemical to produce CA was very much a viable option when # # *See* CPF 1298-1322.

880. Another viable alternative, the one Olin appears to have preferred over a joint venture, was the licensing of Nissan's CA technology. # # *See* CPF 1327-42.

881. Another viable alternative was to obtain access to Sulfolane technology for the production of CA through either FMC or Chlor-Chem. In fact, # # *See* CPF 1356-76.

882. Another possible alternative open to Olin was a joint venture with Shikoku Chemical of Japan. *See* CPF 1396-1401. [199]

883. From the foregoing, it is concluded that Olin failed to establish economies defense by substantial evidence.

B. Olin's "Exiting Asset" Defense

884. Finally, Olin invokes the "exiting asset" defense, relying on Kwoka and Warren-Boulton, *Efficiencies, Failing Firms and Alternatives to Merger: A Policy Synthesis*, 31 Antitrust Bull. 431, 444-50 (1986). *See* RB at 97-101.

885. In a DOJ working paper published in 1986, Messrs. Kwoka and

Warren-Boulton advance a novel policy proposal. Focusing on “the potential for achieving efficiencies through merger” and persuaded that “much of the evidence on the correlates of higher market concentration could be interpreted to indicate that mergers result in significant economic efficiencies instead of, or as well as, market power” (emphasis added), the authors attempt to “show that the present failing firm defense should be recast into an ‘exiting assets’ defense to make it consistent with efficiency analyses” (emphasis added). Kwoka and Warren-Boulton, at 432-433.

886. Messrs. Kwoka and Warren-Boulton propose that, when there is “proof that, without the merger, the assets owned by the acquired firm would shortly be leaving the market,” “an ‘exiting asset’ defense replace the current ‘failing firm’ and ‘failing division’ defenses” and that this defense be made available “even to leading firms in concentrated markets.” The authors also urge that an exiting asset defense not be “limited to cases when the acquired firm is ‘failing’ but be extended to include profitable firms or divisions that “could be earning even more by producing another product or by being acquired by a firm in another market.” Kwoka and Warren-Boulton, at 446-47.

887. However, recognizing “the practical difficulty of determining the efficiency and price effects of mergers” and formidable “evidentiary problems,” the authors would “insist, whenever possible, on alternatives short of merger to achieve particular efficiencies.” Kwoka and Warren-Boulton, at 432-433.

888. The evidence discussed in A. hereinabove, however, clearly shows that in the instant case “alternatives short of merger” were open to Olin and, therefore, the exiting asset defense would not be available to Olin.

889. Furthermore, the evidence in this case fails to show that FMC has made an unsuccessful effort to sell its isos business to a competitively preferable buyer or that there were no competitively preferable acquirers. [200] See Kwoka and Warren-Boulton, at 444, 448. On the contrary, the evidence shows that throughout the period from 1984 to mid-1985, when FMC perceived “a window of opportunity” to find a buyer for its isos business, FMC approached only a selected few it considered friendly or “logical” buyers, and other equally likely prospects, including PPG, Nissan, Shikoku, Dow Chemical, du Pont and Union Carbide were never approached with an offer to sell FMC’s isos assets and business. See RPF 439-443, 452-459; CPF 1488-1492, 1494-1505, 1512.

890. Evidently, the only prospective purchaser other than Olin contacted by FMC in the fall of 1984 was PPG. (Furrer, Tr. 3514-17) PPG's Richard Hughes testified that # # (Hughes, TR. 5228#) The chlor-alkali plant was reportedly operating # # (CX 405-P#) and, along with the chlorine and caustic business, was eventually excluded from the assets sold to Olin. (Answer, ¶ 12, Furrer, Tr. 3414; Kosche, Tr. 8504-09#)

891. It is fair to conclude, therefore, that even if we were to accept the novel "exiting assets" doctrine, it would not save the challenged acquisition in this case.

VIII. THE CHALLENGED ACQUISITION CONSTITUTES A VIOLATION OF SECTION 7 OF THE CLAYTON ACT AND SECTION 5 OF THE FEDERAL TRADE COMMISSION ACT

892. From all of the foregoing, it is found and concluded that the effects of the challenged acquisition are likely to lessen competition substantially in the production and sale of (1) isocyanurates and calcium hypochlorite and (2) isocyanurates in the United States in violation of Section 7 of the Clayton Act and Section 5 of the Federal Trade Commission Act.

IX. RELIEF

893. It is axiomatic that the normal remedy in Section 7 cases is the divestiture of what was acquired unlawfully. Indeed, divestiture is the remedy specified in Section 11(b) of the amended Clayton Act. And divestiture is particularly appropriate in this case, inasmuch as the acquired isocyanurate assets were maintained in accordance with an agreement entered into by the parties. It is also well established that the Commission's panoply of remedial sanctions includes the power to bar unauthorized future acquisitions as well as other ancillary measures reasonably calculated to restore competition in the relevant market. [201] *United States v. E.I. du Pont de Nemours & Co.*, 366 U.S. 316, 330-331 (1961); *Hospital Corp. of America v. FTC*, 807 F.2d at 1393. And, there is no indication in this record that a divestiture order may bring about a loss of substantial efficiencies or other important benefits to the consumer. Therefore, respondent should be required to divest the acquired assets, including those related to the production of cyanuric acid. Inclusion of the cyanuric acid-related assets is necessary in order to ensure the viability of the divested assets and business and to facilitate the accomplishment of the required divestiture.

894. The administrative law judge has considered less restrictive measures, including a partial divestiture which will permit Olin to retain the acquired assets directly related to CA production. *Cf. Beneficial Corp. v. FTC*, 542 F.2d 611, 619 (3rd Cir. 1976). However, the evidence is clear that in order to insure the viability of the divested business the purchaser should be enabled to enter the market with CA production capability. Anything less will be a divestiture in name only and would thrust the purchaser-entrant into an arena dominated by vertically-integrated and long entrenched firms.

895. At the same time, the Sulfolane process technology acquired from FMC need not be included in the divestiture package inasmuch as that package will include the preferred dry pyrolysis technology. The administrative law judge is persuaded that in these circumstances a partial divestiture excluding the acquired Sulfolane technology is fully justified. [202]

X. CONCLUSIONS OF LAW

1. The Federal Trade Commission has jurisdiction over the subject matter of this proceeding and over Olin Corporation ("Olin").

2. Olin was, at all times relevant herein, a corporation engaged in commerce, as "commerce" is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. 12, and is a corporation whose business is in or affecting commerce as "commerce" is defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. 44.

3. The appropriate lines of commerce within which to evaluate the competitive effects of the acquisition of FMC Corporation's ("FMC") swimming pool chemicals assets by Olin are (a) the manufacture and sale of chlorinated isocyanurates and calcium hypochlorite dry swimming pool sanitizers and (b) the manufacture and sale of chlorinated isocyanurate dry swimming pool sanitizers.

4. The appropriate geographic market within which to evaluate the competitive effects of the acquisition of FMC's swimming pool chemicals business is the United States as a whole.

5. The effect of this acquisition has been or may be substantially to lessen competition or to tend to create a monopoly in the aforesaid product and geographic markets in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. 45, in the following ways:

- (a) By eliminating FMC as a significant, independent, competitive entity in the relevant lines of commerce;
- (b) By eliminating substantial direct competition between Olin and FMC in the relevant lines of commerce;
- (c) By significantly increasing already high levels of concentration in the aforesaid lines of commerce and thereby increasing the likelihood of successful collusive behavior among the remaining firms in the relevant lines of commerce; and
- (d) By increasing the risks and barriers to entry into the aforesaid lines of commerce.

6. The order entered hereinafter is necessary and appropriate to remedy the violation of law found to exist. [203]

ORDER

For the purposes of this order, the following definitions shall apply:

1. "FMC" means the FMC Corporation swimming pool chemicals business acquired by Olin Corporation from FMC Corporation, and specified in the *Agreement to Maintain Isocyanurate Assets and to Terminate the Monsanto Tolling Agreement*, an agreement entered into by Olin Corporation and the Federal Trade Commission, dated July 18, 1985, together with all of the assets, title and properties, tangible and intangible of said business, and its associated interests, rights and privileges, including without limitation all buildings, leaseholds, machinery, equipment, raw material reserves, inventory, customer lists, copyrights, trade names, trademarks, trade secrets, patents and other property of whatever description, together with all additions and improvements thereto made subsequent to the acquisition.

2. "Commission" means the Federal Trade Commission. [204]

I.

It is ordered, That respondent Olin Corporation, a corporation, including its successors and assigns, and its officers, directors, agents, representatives, employees, subsidiaries and affiliates (hereinafter "Olin"), shall divest, subject to the prior approval of the Commission, FMC within twelve (12) months from the date this order becomes final.

II.

It is further ordered, That the divestiture required by this order shall be accomplished absolutely and in good faith and shall transfer the assets to be divested as a viable, competitive concern engaged in the manufacturing and sale of swimming pool chemicals, *provided, however,* that the Sulfolane process technology and know-how for the manufacture of cyanuric acid may be excluded from the divestiture required by this order.

III.

It is further ordered, That pending any divestiture required by this order, Olin shall not cause or permit impairment of the marketability or viability of FMC. [205]

The Federal Trade Commission may seek civil penalties and other relief available to it pursuant to § 5 (1) of the Federal Trade Commission Act, 15 U.S.C. 45 (1), or any other statute enforced by the Commission, for any failure by Olin to comply with this order and the appointment of a trustee or the failure to appoint a trustee shall not preclude the Federal Trade Commission from seeking such civil penalties or other relief.

IV.

It is further ordered, That if Olin has not divested all of the properties, assets, or enterprises required to be divested pursuant to Sections I and II of this order within the twelve-month period provided therein, the Federal Trade Commission may select a trustee to effect any ordered divestiture yet to be accomplished and bring an action pursuant to § 5 (1) of the Federal Trade Commission Act, 15 U.S.C. 45 (1), or any other statute enforced by the Commission, to appoint a trustee to effect any ordered divestiture yet to be accomplished. The trustee shall be a person with experience and expertise in acquisitions and divestitures.

Any trustee appointed by the Federal Trade Commission pursuant to this Section shall have the following powers, authority, duties, and responsibilities: [206]

A. The trustee shall have the exclusive power and authority to divest any properties required to be divested pursuant to Section I of

this order that have not been divested by Olin within the time period for the divestiture provided therein. The trustee shall have eighteen (18) months from the date of appointment to accomplish the divestiture, which shall be subject to the prior approval of the Federal Trade Commission. If, however, at the end of the eighteen-month period the trustee has submitted a plan of divestiture or believes that divestiture can be achieved within a reasonable time, the divestiture period may be extended by the Federal Trade Commission or by the court for a court-appointed trustee. Any delays in divestiture caused by Olin, shall extend the time for divestiture in accordance with the delay caused.

B. The trustee shall have full and complete access to the personnel, books, records and [207] facilities of any of the properties that the trustee has the duty to divest, and Olin shall develop such financial or other information relevant to the properties to be divested as such trustee may reasonably request. Olin shall cooperate with the trustee, and shall take no action to interfere with or impede the trustee's accomplishment of the divestiture.

C. The power and authority of the trustee to divest shall be at the most favorable price and terms available consistent with this order's absolute and unconditional obligation to divest, and the purposes of the divestiture as stated in Section I of this order.

D. The trustee shall serve, without bond or other security, at the cost and expense of Olin on such reasonable and customary terms and conditions as the Federal Trade Commission or a court may set. The trustee shall have authority to retain, at the cost and expense of Olin, such consultants, [208] attorneys, investment bankers, business brokers, accountants, appraisers, and other representatives and assistants as are reasonably necessary to assist in the divestiture. The trustee shall account for all monies derived from the sale and all expenses incurred. After approval by the Federal Trade Commission of the account of the trustee, including fees for his or her services, all remaining monies shall be paid to Olin and the trustee's power shall be terminated. The trustee's compensation shall be based at least in significant part on a commission arrangement contingent on the trustee divesting the trust property.

E. Within twenty (20) days after the appointment of the trustee, Olin shall transfer to the trustee all rights and powers necessary to divest any of the properties and to sign any of the agreements required by Section I of the order.

F. Olin shall indemnify the trustee and hold the trustee harmless against any losses, [209] claims, damages, or liabilities to which the trustee may become subject, arising in any manner out of, or in connection with, the trustee's duties under this order, unless the Federal Trade Commission determines that such losses, claims, damages, or liabilities arose out of the misfeasance, gross negligence, or the willful or wanton acts or bad faith of the trustee.

G. If the trustee ceases to act or fails to act diligently, a substitute trustee shall be appointed.

H. The trustee may ask the Federal Trade Commission or the court for a court-appointed trustee to issue, and the Federal Trade Commission or the court may issue, such additional orders or directions as may be necessary and appropriate to accomplish the divestitures required under this order.

I. The trustee shall have no obligation or authority to operate or maintain any of the properties, assets, or enterprises required [210] to be divested pursuant to Section I of this order.

J. The trustee shall report in writing to Olin and the Federal Trade Commission every sixty (60) days concerning the trustee's efforts to accomplish divestiture.

V.

It is further ordered, That for a period of ten (10) years from the date this order becomes final, Olin shall cease and desist from acquiring, directly or indirectly, through subsidiaries or otherwise, without the prior approval of the Commission, the whole or any part of the stock, share capital, or assets of, or any interest in, any concern, corporate or noncorporate, engaging in the manufacturing and sale of swimming pool chemicals, including entering into any agreement, understanding or arrangement with any such concern by which Olin would obtain the market share, in whole or in part, of such concern in the manufacturing and sale of swimming pool chemicals. [211]

VI.

It is further ordered, That within sixty (60) days from the date this order becomes final, and every sixty (60) days thereafter, until it has fully complied with Section I of this order, Olin shall submit a verified report in writing to the Commission setting forth in detail the manner

and form in which it intends to comply, is complying or has complied therewith. All such reports shall include, in addition to such other information and documentation as may hereafter be requested (a) a specification of the steps taken by Olin to make public its desire to divest the FMC swimming pool chemicals assets; (b) a list of all persons or organizations to whom notice of divestiture has been given; (c) a summary of all discussions and negotiations together with the identity and address of all interested persons or organizations; and (d) copies of all reports, internal memoranda, offers, counteroffers, communications and correspondence concerning said divestiture.

VII.

It is further ordered, That respondent Olin shall notify the Commission at least thirty (30) days prior to any proposed changes in the corporate respondents which may affect compliance obligations arising out of the order, such as dissolution, [212] assignment or sale resulting in the emergence of successor corporations, or the creation or dissolution of subsidiaries.

OPINION OF THE COMMISSION

BY AZCUENAGA, *Commissioner*:

I. INTRODUCTION

Olin Corporation, the leading domestic producer of dry swimming pool sanitizers, acquired FMC Corporation's swimming pool chemical business. Finding that the merger was likely to produce a substantial lessening of competition in the relevant markets in violation of Section 7 of the Clayton Act and Section 5 of the Federal Trade Commission Act, the Administrative Law Judge ordered divestiture. We affirm.

A. *Background*

On February 7, 1985, Olin Corporation ("Olin") signed a letter of intent to acquire the assets that constituted the swimming pool chemical business of FMC Corporation ("FMC"). The price was \$49.5 million, subject to inventory and other adjustments. The assets included FMC's production facility for swimming pool sanitizers at South Charleston, West Virginia, a repacking plant at Livonia, Michigan, the brand names used by FMC, the technology for the

production of cyanuric acid and a fifty percent interest in a British affiliate.

On July 18, 1985, the Federal Trade Commission issued a complaint challenging the transaction, and on July 20, 1985, Olin and the Commission entered an asset maintenance agreement. Under that agreement, Olin is required to maintain and manage the acquired assets to preserve the Commission's ability to order divestiture if that should prove to be appropriate at the end of the administrative proceeding, and the Commission agreed not to seek a federal court injunction against consummation of the transaction pending the outcome of the administrative proceeding. The acquisition was consummated on August 16, 1985.

The acquiring firm, Olin, is a diversified Virginia corporation that manufactures and markets chemicals, including the swimming pool sanitizers calcium hypochlorite and isocyanurates. Olin has produced calcium hypochlorite ("cal hypo") since 1928 and currently operates the world's largest cal [2] hypo plant at Charleston, Tennessee. ID ¶¶ 9, 10.¹ In the 1977-1980 period, Olin constructed plants to produce cyanuric acid, an intermediate chemical in the production of isocyanurates ("isos"), and to produce two forms of isos, sodium dichloroisocyanurate ("dichlor") and trichloroisocyanuric acid ("trichlor"). Because of production problems, Olin closed its cyanuric acid plant in 1980 but continued to produce isos at the Lake Charles, Louisiana plant with cyanuric acid purchased from other manufacturers, including Nissan in Japan. ID ¶¶ 15, 492. In August 1984, Olin discontinued production of isos and began to market isos purchased from Monsanto under a toll production agreement. During the period when it purchased isos from Monsanto, Olin maintained its Lake Charles facility in readiness to resume production of isos. ID ¶¶ 16, 17.

FMC is a diversified manufacturer that, until this transaction, produced cyanuric acid and isos at its South Charleston, West Virginia

¹ The following abbreviations are references to the record:

- ID — Initial Decision
- RB — Respondent's Appeal Brief
- CB — Complaint Counsel's Answering Brief
- RRB — Respondent's Reply Brief
- CX — Complaint Counsel's Exhibit
- RX — Respondent's Exhibit
- Tr. — Hearing Transcript.

plant. ID ¶¶ 39. FMC and Olin are not the only suppliers of these sanitizers in the United States. Monsanto produces cyanuric acid and isos in the United States, and dry sanitizers are imported, primarily from Japan. In addition to Olin, PPG Industries produces cal hypo. ID ¶¶ 153, 157-58, 335.

B. The Complaint and Initial Decision

The complaint alleged that the acquisition, if consummated, would violate Section 7 of the Clayton Act, 15 U.S.C. 18, and Section 5 of the FTC Act, 15 U.S.C. 45, and that the purchase agreement violated Section 5 of the FTC Act, 15 U.S.C. 45. The complaint alleged a substantial lessening of competition in two product markets: the “manufacture and sale of chlorinated isocyanurate and calcium hypochlorite dry swimming pool sanitizers” and the “manufacture and sale of chlorinated isocyanurate dry swimming pool sanitizers.” The Administrative Law Judge (“ALJ”) supervised extensive discovery and conducted an administrative hearing that accumulated a transcript of 9945 pages.

Administrative Law Judge Hyun found two relevant product markets in which to assess the competitive effects of the [3] transaction. First, he concluded that dry swimming pool sanitizers, isocyanurates and cal hypo together, constitute a relevant market. ID ¶¶ 181-274. This conclusion was based on the characteristics and uses of the two chemicals, their price elasticity, trade recognition of the price relationship between the two chemicals, and the perceptions of buyers and sellers. *Id.* The ALJ concluded that liquid chlorine bleach for pool use was not part of the dry sanitizer market. ID ¶¶ 285-314.

Second, the ALJ decided that isocyanurates alone constitute a relevant product market. *ID ¶¶ 275-84. Both parties agree.

The ALJ determined that the United States is the relevant geographic market. ID ¶¶ 321-54. Although both cal hypo and isos have been imported in significant quantities, the ALJ concluded that the world is not the relevant market. Antidumping duty orders have been imposed with respect to both cal hypo and isos. ID ¶¶ 343-51. Capacity constraints and fluctuations in currency exchange rates also have contributed to the absence of a world market in these products. ID ¶¶ 632-48.

The ALJ found that the markets for dry pool sanitizers and isocyanurates are highly concentrated, that the merger would significantly increase that concentration and that the merger would

eliminate substantial direct competition between the two firms. Judge Hyun found that imports of cal hypo or isos cannot be relied on to ensure competition in the United States markets. The ALJ also found that the acquisition would have anticompetitive effects in the market for isos and dry pool sanitizers. Although Olin had encountered difficulties in producing cyanuric acid and had entered a tolling agreement with Monsanto to process isos, the ALJ decided that it remained a viable isos producer. ID ¶¶ 650-709. Finally, the ALJ concluded that the evidence failed to establish an “exiting assets” defense even assuming that such a defense existed. ID ¶¶ 884-91.

Judge Hyun ordered Olin to divest the entire FMC swimming pool chemical business. ID ¶ 893. He rejected an argument that Olin should be permitted to retain the portion of the plant dedicated to the production of cyanuric acid.²

C. Questions Presented on Appeal

Olin appeals from the Administrative Law Judge’s decision and order and raises seven issues. First, Olin argues that Judge Hyun incorrectly determined that isos and cal hypo are part of the dry sanitizer product market, asserting that they are separate and distinct products. Alternatively, Olin asserts that [4] if the market is broader than isos only, it should include liquid chlorine bleach for pool use. Second, Olin argues that at the time of the acquisition, it was not a viable producer of isos and could not become one absent the acquisition. Third, Olin argues that the ALJ overstated FMC’s preacquisition market position. Fourth, Olin asserts that the conclusion that the acquisition substantially lessened competition is not supported by substantial evidence. Fifth, Olin argues that Judge Hyun erred in rejecting what it calls the “exiting assets” defense. Sixth, Olin claims that the ALJ erred in excluding certain testimony by Olin’s economic expert witness. Seventh, Olin claims that the divestiture order is overly broad and is punitive because it requires the divestiture of the portion of the plant dedicated to producing cyanuric acid. We take up each of these issues below.

II. PRODUCT AND GEOGRAPHIC MARKETS

A. Introduction

Section 7 of the Clayton Act prohibits acquisitions “where in any

² We adopt the findings of fact in the Initial Decision to the extent that they are not inconsistent with this opinion.

line of commerce or in any activity affecting commerce in any section of the country, the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly." 15 U.S.C. 18. The first step in evaluating the competitive consequences of a merger is to ascertain the relevant product and geographic markets.³

At one time, merger analysis was based on rigid categorization of the relevant product or products and the pertinent geographic area, and all further consideration was based on transactions in that market. That approach tended to make market classifications all-or-nothing decisions and failed to account for the possibility of a continuum of competitive relationships among products and geographic areas.

We no longer use such rigid analysis but incorporate in the decision-making process the economic concept of cross-elasticity of demand, which measures the sensitivity of the demand for one product to a small change in the price of a second product. The Commission has observed that if cross-elasticities can be estimated with reasonable accuracy, the precise limits of the product market become less critical to the analysis. *Grand Union Co.*, 102 FTC 812, 1040 (1983).

Citing *Grand Union*, Olin argues that affirmative proof of cross-elasticity of demand between isos and cal hypo is essential to define a product market that includes both chemicals. RB [5] at 10. Olin argues that the ALJ's reasoning "insults the integrity of antitrust market analysis." RB at 10.⁴ The identification of a product market, however, does not necessarily hinge on numerical calculation and proof of demand elasticity, the search for which is often fruitless because of the difficulty of measuring elasticities. The Supreme Court held that product markets are defined either by "the reasonable interchangeability of use or the cross-elasticity of demand. . . ." *Brown Shoe Co. v. United States*, 370 U.S. 294, 325 (1962). In *Grand Union*, the Commission observed that a product market may be defined either in terms of the "cross-elasticity of demand" or the "reasonable interchangeability of use" between the product in question and potential substitutes. 102 FTC at 1041-42. Indeed, the Commission had little information about elasticities in that case and applied its judgment on the basis of circumstantial factors. *Id.* at

³ See, e.g., *United States v. Marine Bancorporation, Inc.*, 418 U.S. 602, 618 (1974), quoting *United States v. Du Pont & Co.*, 353 U.S. 586, 593 (1957).

⁴ Olin argues that the record "unequivocally demonstrates" the absence of cross elasticity of demand between isos and cal hypo and relies on findings 192-194 in support of this claim. RB at 9. The evidence in the record, dismissed below in section IB, includes statements by Olin itself acknowledging a price relationship between isos and cal hypo.

1041. Of course, when reliable information concerning cross-elasticity of demand is available, it can be “most important” in product market definition. *Beatrice Foods Co.*, 101 FTC 733, 801 (1983).

The Commission’s approach permits and encourages, but does not require, direct numerical calculation and proof of cross-elasticity of demand and is consistent with the *Statement of Federal Trade Commission Concerning Horizontal Mergers* 12 (1982) (hereafter “*FTC Merger Statement*”) and with the Department of Justice’s *Merger Guidelines*, 49 Fed. Reg. 26,824 (1984) (hereafter “*Justice Merger Guidelines*”). The *FTC Merger Statement* recognizes that direct cross-elasticity data are “generally unavailable” and that product markets may be defined by less direct evidence. The *Justice Merger Guidelines* indicate that if a small but significant and nontransitory price increase would cause so many buyers to shift from a product to an alternative product that the price increase would not be profitable, then the alternative is included in the product market. *Justice Merger Guidelines* at §2.11. The *Justice Merger Guidelines* recognize that direct evidence of the consequences of an hypothesized future price increase will rarely be available and suggest that all relevant evidence be considered. *Id.* at §2.12. Such evidence may include the perceptions of buyers that the products are or are not substitutes, certain differences in price movements that are not explained by parallel trends, similarities or differences in use, design, physical composition and technical characteristics, and the perceptions of sellers that the products are substitutes. *Id.* We adhere to the [6] approach of considering all reliable evidence relevant to the question whether consumers would turn to an alternative product if faced with a small but significant and nontransitory price increase.

B. Product Markets

Olin argues that the product market should be defined to include only isos and not cal hypo. Olin also argues that it was not and would not become a viable isos producer, and consequently that the merger did not have a substantial adverse effect on competition.

Swimming pool sanitizers kill algae and bacteria. ID ¶65. Chlorine is the active sanitizing ingredient in isos, cal hypo and liquid bleach.⁵ *Id.* Chemical treatment of swimming pools requires the addition of

⁵ Some other chemicals, such as lithium hypochlorite and bromine compounds, can be used as swimming pool sanitizers. ID ¶¶ 315-17. These chemicals are used in only insignificant quantities and do not act as a constraint on the pricing of the chlorine based chemicals, cal hypo and isos. *Id.* Even the respondent’s expert dismissed the other chemicals as unimportant. Tr. 9136.

enough sanitizers to kill the algae and bacteria, and the addition, as appropriate, of chemicals to adjust the water's acidity or stabilize the chlorine in the pool water. ID ¶¶ 65-71. The major consumption of pool sanitizers is in maintaining the chlorine level in the pool water at 1 to 3 parts per million ("ppm"), as recommended by the Environmental Protection Agency. ID ¶¶ 65-68. Intermittently, pools are "shocked" by the addition of enough chlorine to raise the level to 5-20 ppm. ID ¶ 67. Shock treatments eliminate any bacteria and algae that have escaped the routine maintenance treatments.

The two forms of isocyanurates for pool sanitation are dichlor and trichlor. ID ¶ 79. Dichlor has a chlorine content of 56-62%, and trichlor has a chlorine content of 90%. *Id.* Both are white crystalline solids and are used principally for pool sanitation. Dichlor dissolves rapidly, must be reapplied frequently, and is generally used in a granular form that is broadcast into the pool. ID ¶ 88. Trichlor dissolves more slowly and is often applied in the form of tablets or sticks that dissolve slowly. ID ¶ 86. Trichlor is quite acidic, but dichlor is not.

Calcium hypochlorite is also a white crystalline solid, has either 65% or 70% chlorine content and is also sold for pool sanitation. ID ¶¶ 92-93. Cal hypo is sold in both a granular form and a relatively new tablet form. ID ¶¶ 95, 181. [7]

Similarities in the usage, physical composition, and technical characteristics of cal hypo and isos predominate over the minor differences between the two chemicals. The chlorine content of cal hypo is within the range of the chlorine content of the two forms of isos. Both cal hypo and isos are relatively stable chemicals, and a pool owner can purchase a year's supply of either in a single trip to the store. ID ¶ 186. Both cal hypo and isos are available in granular and stick or tablet form.

Isos appear to be somewhat more convenient to use than cal hypo. Cyanuric acid must occasionally be added to a pool treated with cal hypo to act as a stabilizer, and isos last longer than cal hypo. ID ¶ 270. The convenience of isos is reflected in a price premium that isos maintain over cal hypo. ID ¶ 269. In light of the obvious similarities in form, usage and function, it seems apparent that cal hypo and isos are effective substitutes for one another.

Circumstantial evidence regarding the price relationship between isos and cal hypo supports the conclusion that the two products are in one product market. Strong evidence comes from the antidumping

case in which Olin sought the imposition of duties on imports of cal hypo from Japan. Olin filed with the International Trade Commission (“ITC”) a “Pre-Hearing Statement of Olin Corporation” on February 26, 1985, stating:

We recognize that the domestic calcium hypochlorite industry faces increased competition from other pool chemical products, particularly from isocyanurates. Isocyanurates, however, traditionally have been priced substantially above calcium hypochlorite products. As the price of isocyanurates dropped in recent years, in large part due to Japanese dumping of that product, some consumers have chosen to purchase that product instead of either domestic or foreign-made calcium hypochlorite. CX 386I

In the same antidumping proceeding, Olin advised the ITC, “Olin recognizes that calcium hypochlorite must compete in the market with other chemical products, such as chlorinated isocyanurates. . . .” Conference Brief of Petitioner Olin Corporation, CX 380L. See also CX 383E. Olin’s statement to the ITC persuasively illustrates its belief that as the price premium for isos narrowed, customers switched from cal hypo to isos.

Internal Olin planning documents confirm the price relationship between the two chemicals. Olin’s “1983 Pool Chemicals CEO Presentation” stated that “Isocyanurates have sharply increased their share of [the chemical] ‘used most often’ since 1979, with calcium hypochlorite shouldering the loss.” RX 52K. The Olin document also stated: “A dramatic narrowing of the price differential between HTH [an Olin brand of cal hypo] [8] and isocyanurates has taken place, correlating very strongly with the change previously noted in the share relationship.” RX 52N (emphasis in original). Other Olin documents record the narrowing of the price premium of isos over cal hypo and the simultaneous market share gains by isos. ID ¶¶ 198-200. Olin’s representations to the International Trade Commission and the statements in its internal documents about the relationship between isos and cal hypo provide important evidence that the two dry sanitizers are in the same antitrust product market.⁶ We do not rely on the International Trade Commission’s determinations relating to the scope of a domestic industry, which may involve a legal standard different from those we apply in antitrust, but we do rely on Olin’s

⁶ Olin did not suggest to the International Trade Commission that the price movements might be due to coincidental, but extrinsic, circumstances, such as changes in the costs of production of the two chemicals. Had Olin been aware of any such circumstances, presumably it would not have made the statements suggesting that the prices of isos and cal hypo were related.

factual statements indicating a significant degree of cross-elasticity between the products.

Olin is not alone in making this important observation. PPG, the second largest producer of cal hypo, similarly observed that “[c]onsumption of calcium hypochlorite as a swimming pool sanitizer can be affected by chlorinated isocyanurate consumption.” CX 548D; see ID ¶¶ 212-13. Internal documents from FMC, a producer of isocyanurates, recognize that there is an equilibrium price differential between isos and cal hypo at which sales of the two chemicals grow at the same rate. ID ¶¶ 214-17. Other producers and sellers have made similar observations. ID ¶¶ 218-23.⁷

Olin argues that the Administrative Law Judge found that sellers make their isos pricing decisions based “exclusively” on the price of competing brands of isos, not cal hypo. RB at 11. Olin overstates the point. The Judge found that due to the price disparity between the two chemicals, their pricing is set “primarily” on the bases of costs and competition with the same chemical. Id ¶ 192.⁸ Sellers’ initial and primary reference to [9] the prices of the same chemical is not surprising where, as here, the greater convenience of isos over cal hypo supports a price premium. This seems particularly true if the two chemicals have reached an equilibrium price at which consumers are not switching, as a PPG witness believes has been the case since 1984. Tr. 5347-48. Evidence of what has happened during a period of equilibrium, in which convenience supports a stable customer base despite a price premium, does not serve as a predictor of what would happen if the price of isos or cal hypo rose above the competitive level.

The parties stipulated and, in a finding that we adopt, the administrative law judge concluded that isos is a relevant product market. That necessarily means that buyers, when faced with a small but significant and nontransitory price increase, would not shift to cal hypo in sufficient numbers to make the price increase unprofitable. Finding a product market in isos is consistent with the evidence that

⁷ Olin and other producers not only observed the price relationship between isos and cal hypo, but also have made business decisions on the basis of this competitive relationship. ID ¶¶ 205-10.

⁸ Some retailers and repackers testified that they looked only to the prices of the same chemical, Tr. 1698-99, but others recognized that competing chemicals played a secondary part in pricing a particular chemical. For example, Mr. Marshall, a repacker witness, testified that the “main consideration” in setting the price of a chemical is the competition for that specific product, but that the prices of the alternative (cal hypo or isos, as the case may be) “are certainly considered.” Tr. 1200.

Mr. Hughes, a PPG executive, testified that in setting the price of cal hypo, PPG generally does not consider the price of isos. Tr. 9195. He also testified, however, that in 1984, PPG believed that isos dealers would not be able to pass on a price increase to their customers because of competition with cal hypo. Tr. 5262-64. He further stated that isos and cal hypo “do compete with each other in the marketplace.” Tr. 5331.

the demand for isos is inelastic, that distributors of isos believe the price of isos could go up more than five percent without consumers switching to cal hypo, and that sellers of isos make pricing decisions based on the price of competing brands of isos. ID ¶¶ 192-194.

We also agree with the administrative law judge that cal hypo and isos together constitute a relevant market of dry pool sanitizers. These two product market findings are consistent. Market definition depends on the relative prices of products and the impact that changes in those relative prices have on consumer behavior.⁹ [10]

Before the acquisition of FMC, Olin dominated the domestic production of cal hypo. Its share of United States production of cal hypo ranged between 79% and 89% in the period from 1980 through 1984. ID ¶¶ 388, 465. The other domestic producer, PPG, was a price follower. ID ¶ 392. Some product was imported from Japan, but the antidumping action, filed in April 1984, caused a reduction in the quantity of cal hypo supplied by the Japanese firms. ID ¶¶ 626-28. Although the market structure suggests the possibility of market power in cal hypo, the price of cal hypo remained below the price of isos. During the period from 1977 to 1983, the price premium of isos over cal hypo had decreased because the price of cal hypo increased at a faster rate than that of isos. ID ¶¶ 197-98. After the price spread between cal hypo and isos narrowed, Olin could not profitably impose a small but significant and nontransitory increase in the price of cal hypo because of the danger that consumers would then switch to isos.¹⁰ ID ¶¶ 209-10.

Nevertheless, a firm with market power over both cal hypo and isos could profitably impose a small but significant and nontransitory increase in the price of both chemicals. As discussed above, consumers, when faced with similar price increases in both products, would not shift to other products, such as pool bleach, in sufficient numbers to make the price increase unprofitable. Therefore, one relevant market in which to evaluate the competitive effect of the acquisition of FMC includes both cal hypo and isos.

The relevant market in which to evaluate the competitive position of

⁹ Consumer preferences vary along a continuum and are not easily placed in all or nothing categories, but in this case, the evidence suggests enough of a consumer preference for isos that isos is a relevant product market. The evidence also suggests that the consumer preference for cal hypo was weak enough that as the price of cal hypo approached the price of isos, a small additional price increase would cause large numbers of consumers to shift from cal hypo to isos.

¹⁰ Isos had advantages over cal hypo for consumers. If the prices of isos and cal hypo were the same, most, if not all, consumers would choose to use isos. To maintain its cal hypo business, Olin was constrained to keep the price below that of isos.

Olin, as a producer of cal hypo, is the dry sanitizer market including both cal hypo and isos. The relevant market in which to evaluate the competitive position of Olin as a producer of isos includes both the market for isos and the larger market for dry pool sanitizers. It is appropriate then to consider the impact of the merger on competition both in the market for isos and in the combined market for isos and cal hypo. [11]

C. Exclusion of Expert Testimony

The respondent's argument that isos and cal hypo are not in the same product market rests heavily on testimony proffered by its economic expert that the ALJ excluded from evidence. Olin argues that the testimony should have been admitted, and that, if admitted, the testimony would establish that cal hypo prices do not influence isos prices. Judge Hyun excluded the testimony on the ground that Olin failed to provide complaint counsel with timely notice and an adequate opportunity to prepare for cross-examination. ID ¶ 204; Tr. 9078-84. The Judge also said that the basis for the expert's opinion was not, as provided in Rule 703 of the Federal Rules of Evidence, "of a type reasonably relied upon by experts in the particular field." ID ¶ 204.

First, we consider whether the Administrative Law Judge properly excluded the testimony on the ground that the respondent failed to give adequate notice to complaint counsel. Olin notified complaint counsel on April 16, 1987, that it proposed to use six documents (RX 386-91) during direct examination of its expert, who testified five days later. On April 17th, complaint counsel moved to preclude the use of these exhibits at trial.¹¹ Complaint counsel objected that this last minute notification violated paragraph 2(c) of the Prehearing Order of September 17, 1985, which provided that the proponent of tables, graphs, or charts summarizing statistical data "shall serve copies of them sufficiently in advance of the commencement of trial and shall at the same time advise opposing counsel where the underlying data may be examined. . . ." At the trial on April 21, 1987, the respondent's

¹¹ Complaint Counsel's Motion to Preclude, Dkt. No. 9196 at 2824 (April 17, 1987). Respondent points out that it sent complaint counsel a copy of statistical material on March 26, 1987, and a copy of six documents later offered as exhibits on April 3, 1987. *Id.* at App. A. Respondent's "Memorandum in Support of Motion for Reconsideration of Order Excluding Certain Testimony of Respondent's Expert Witness," May 15, 1987. The statistical material was disclosed one day after the conclusion of the expert's second deposition, and the disclosure of the graphs on April 3rd neither indicated that they would be used at trial for any purpose nor that they were based on the March 26 statistical material.

expert proffered testimony about his inferences from and analyses of the six charts and graphs.

Section 3.38(b) of the Commission's Rules provides that if a party fails to comply with a prehearing order of an Administrative Law Judge requiring advance notice of exhibits, the ALJ or the Commission may, among other things, "[r]ule that the party may not introduce into evidence . . . the documents" in question. 16 CFR 3.38(b)(3). We believe that [12] Judge Hyun did not abuse his discretion in excluding the testimony under the circumstances here. After lengthy discovery and well into the presentation of the case in defense, the respondent turned the graphs over only days before the expert was to take the stand.¹² As the official responsible for supervising discovery, Judge Hyun was particularly well situated to discern whether Olin's timing was consistent with his order. We affirm the decision of the ALJ that Olin failed to comply with the prehearing order.

Our inability to test the reliability of the data that Olin's economic expert intended to use in reaching his conclusions underscores the importance of complying with pretrial orders to provide an opportunity for adequate cross-examination.¹³ The Olin economic expert relied on a statistical compilation prepared by an Olin employee at the expert's request specifically for the purposes of the trial. Olin makes no argument that this compilation was an ordinary business document under an exception to the hearsay rule, and, on the basis of the record, we have no way to evaluate the reliability of the compilation.

The statistics on which the excluded testimony of Olin's expert relied allegedly showed that "when dumping margins were imposed on isos in 1984, isos prices rose substantially, while cal hypo prices and volumes remained stable." RB at 9 n.5. The respondent's proposed findings rely on the excluded testimony for these factual conclusions. RPF 700-04; RB at 9 n.5. These allegations were to have provided a factual basis for the proffered opinion of Olin's expert that the products were in separate markets. [13]

¹² The respondent argued that it could not have turned the material over more quickly because its expert merely extended some statistical data introduced by complaint counsel's expert in February 1987. Tr. 9803. In fact, however, respondent's expert caused an Olin employee to prepare, for this litigation, a similar set of data covering a longer time period. Tr. 9160-65. Olin made no effort to introduce the underlying statistical data in evidence.

¹³ We also agree with the Judge, in reference to Rule 703 of the Federal Rules of Evidence, that the data were not "of a type reasonably relied upon by experts in the particular field." The proposed testimony highlights a dilemma presented by expert testimony grounded on "facts" that are not introduced in evidence. See *Soden v. Freightliner Corp.*, 714 F.2d 498, 502-505 (5th Cir. 1983) (excluding expert testimony based on statistics prepared in anticipation of litigation).

The danger of reliance on “facts” prepared by one of the respondent’s employees for use at trial is highlighted by other record evidence contradicting these factual hypotheses on which Olin’s expert would have based his opinion. The confidential response to the ITC questionnaire that Olin submitted to the International Trade Commission on February 19, 1985, which was introduced in evidence as CX 384, refutes Olin’s argument that when the price of isos rose in 1984, the price of cal hypos remained stable. That questionnaire response contained Olin pricing data indicating that in 1984, prices for cal hypo products rose in many cases. CX 384V, X, Z28, Z29. Indeed, the report of the staff of the International Trade Commission in connection with its antidumping investigation indicated that cal hypo prices rose significantly in 1984. CX 176Z15, Z17. The offer of proof for the excluded testimony showed no effort to reconcile the inconsistency between the information on which the expert relied and these other facts in the record. We conclude that complaint counsel would have been prejudiced by allowing such testimony following Olin’s failure to comply with the pretrial order.

Finally, we note that the expert testimony, if admitted in evidence and found reliable, would not alter our conclusion that dry sanitizers constitute a relevant product market that includes both isos and cal hypo. The point of the expert economic testimony proffered by Olin is that when the price of isos rose following the 1984 antidumping action in isos, the expert could find little or no impact on the price and quantity of cal hypo sold. Assuming this as a fact does not impeach the dry pool sanitizer market definition we have adopted.

The parties stipulated that isos was a relevant product market. By definition that means that if the price of isos rose a small but significant and nontransitory amount, consumers would not switch to the less convenient, albeit lower priced, cal hypo in sufficient numbers to defeat the price increase. In deciding whether cal hypo and isos are in the same dry pool sanitizer market, however, the relevant question is whether if the price of cal hypo rose, thereby narrowing or eliminating the price gap between cal hypo and isos, consumers would switch to isos. Olin’s planning documents recognize that such consumer switching would take place.¹⁴ Olin’s economic expert did not propose to address that issue. [14]

¹⁴ One would expect that if the price of isos rose, Olin would take advantage of that price increase to later increase the price of cal hypo. The evidence suggests that Olin priced cal hypo at a level below that of isos but not high enough to induce consumers to switch to isos. ID ¶ 209-10.

D. Liquid Chlorine Bleach

Olin argues in the alternative that if the relevant market is not limited to isos, it is an all sanitizer market, including liquid chlorine pool bleach (sodium hypochlorite). Liquid pool bleach has a chlorine content of 10-12%, which is about twice the chlorine content of household laundry bleach. ID ¶¶ 112, 117. Pool bleach cannot be produced on the equipment used to produce household bleach. ID ¶ 117. Because of its low value and relatively high transportation cost, pool bleach is generally sold within 200-300 miles of the bleach plant. ID ¶¶ 119, 285. Most pool bleach is consumed in discrete geographic regions, notably southern California, parts of Florida, and the Detroit and Chicago areas. ID ¶¶ 119, 285.

The physical and technical characteristics of liquid pool bleach differ from those of the dry pool sanitizers. Compared with dry sanitizers, liquid pool bleach has a low concentration of chlorine. Although a consumer can purchase a season's worth of dry sanitizer at one time, he or she must repurchase liquid bleach frequently because it has a short shelf life. ID ¶ 296. It is generally sold in flats of four one-gallon bottles or in larger carboys (two and one-half or five gallon containers). ID ¶ 118. Additionally, spills or splashes of bleach can damage clothing or the interiors of vehicles. Consumers regard liquid bleach as an inconvenient product, compared with isos or cal hypo, and convenience is an important factor in the consumer's choice of a pool sanitizer. ID ¶¶ 299-302. Pool bleach is less expensive than either isos or cal hypo. ID ¶ 115.

Pool service companies, rather than homeowners, are the primary consumers of pool bleach. The use of pool cleaning services is most prevalent in southern California, Florida and the Detroit area, which areas coincide with the regions of heavy pool bleach consumption. ID ¶¶ 146-47. An Olin marketing document estimated that 73 percent of all bleach in southern California was consumed by pool service operators. ID ¶ 149. We conclude that if prices of cal hypo and isos rose, pool owners would not sign up for pool services using bleach in sufficient numbers to defeat the price rise.

Although the record does not contain detailed data on the cross-elasticity between isos or cal hypo and liquid pool bleach, circumstantial evidence indicates a low degree of substitution between dry and liquid sanitizers. Over the years, bleach's share of sales has remained quite stable, even during periods of intense price or convenience competition between cal hypo and isos, and when those products'

shares of sales changed significantly. ID ¶310. We conclude that liquid pool bleach is not in the relevant market composed of cal hypo and isos. [15]

E. *Geographic Market*

We agree with ALJ Hyun that the relevant geographic market is the United States. ID ¶354. Olin does not challenge the geographic market definition but does argue that after the acquisition, imports will ensure competition in the United States. RB at 41-44. That issue is discussed below in Section IV.

III. OLIN'S AND FMC'S PREACQUISITION MARKET POSITION

Olin claims that it was not a viable producer of isos before the FMC acquisition. Olin asserts that the ALJ incorrectly included its trichlor (isos) production capacity in assessing its preacquisition market position, arguing that it was never a viable isos producer and could not have become one. The relevant market is dry sanitizers, rather than just isos, and Olin was the number one producer in capacity and output in the market for dry sanitizers solely on the basis of its cal hypo production. ID ¶569. Nonetheless, because Olin's lead in dry sanitizers over the second largest domestic producer would be diminished if its isos capacity and output were excluded from the analysis of the market shares, the viability of Olin's isos business is significant in assessing its preacquisition market position.

Olin argues that under *United States v. General Dynamics Corp.*, 415 U.S. 486, 498 (1974), its own and FMC's preacquisition market shares are not indicative of their market power. RB at 17. Consistent with the *FTC Merger Statement*, Section III, and the *Justice Merger Guidelines*, Judge Hyun did not treat the market shares as conclusive indicators of market strength and position. ID ¶¶649, 651. Indeed, he reviewed Olin's claims of diminished competitive vitality at considerable length. ID ¶¶650-709. Olin's quarrel with the Initial Decision apparently is not over the principle that the Commission should look beyond the bare market share statistics, but rather is with the Judge's assessment of its own and FMC's competitive significance.

A. *Olin's Preacquisition Position in Isocyanurates*

Olin originally planned its Lake Charles, Louisiana plant as a four-part facility, including a cyanuric acid plant, a trichlor plant, a dichlor plant, and a packaging plant. ID ¶358. Olin planned that trichlor

would be the primary end product, and the dichlor plant was small and not critical to the plant's success. ID ¶¶ 359-60. Olin top management approved the construction of the four-part facility in 1977. RPF 154. After encountering significant technical difficulties with the cyanuric acid plant, Olin top management decided to shut down the cyanuric acid facility in October 1980. RPF 156-63. In 1981, Olin wrote off the cyanuric acid facility against earnings. RPF 165. [16]

Olin also experienced some difficulties with the dichlor plant during its start up phase, but the plant became operable and, in the view of the Chief Executive Officer of Olin, achieved its design capabilities. ID ¶ 369. The dichlor plant was shut down in 1982 after Olin concluded an agreement to swap its trichlor for FMC dichlor. ID ¶ 370. The Lake Charles packaging plant for isos was a failure. Although Olin operated the plant for several years after its construction in 1979, its automated systems were plagued with problems, and Olin shut down the facility permanently in 1982. ID ¶ 368; RPF at 175-77.

Olin continued to operate its trichlor production facility, despite the failure of its cyanuric acid plant. Beginning in 1980, it purchased cyanuric acid from Nissan, a Japanese producer of both cyanuric acid and isos. Olin purchased increasingly large quantities of cyanuric acid from Nissan in each year through 1984. ID ¶ 661. During the same 1980 to 1984 time period, Nissan substantially increased its capacity to produce cyanuric acid. ID ¶ 662. Olin's internal documents indicate that the company believed that Nissan had sufficient excess cyanuric acid capacity to satisfy Olin's entire demand for cyanuric acid. ID ¶ 665. In 1982 and 1983, Olin did not purchase as much cyanuric acid from Nissan as it had agreed to purchase in its annual supply contracts. ID ¶¶ 668-669. In 1984, Nissan had available enough cyanuric acid to supply Olin's requirements, and an Olin executive believed that it would be able to satisfy Olin's requirements for the next two to three years. ID ¶ 672. During the period 1982 to 1984, Nissan unflinchingly fulfilled its supply and delivery commitments to Olin. ID ¶ 673.

In 1982, Olin representatives were informed that Nissan wanted to continue to supply its cyanuric acid requirements "forever." ID ¶ 677. Nissan indicated that it could undertake two debottlenecking steps that would significantly expand its capacity and offered to make the expansions to accommodate Olin's needs. ID ¶¶ 679-80.

In 1984, however, Olin entered an agreement with Monsanto, which was to become effective July 1, 1984, and continue for at least two

and one-half years and thereafter to terminate only on one year's written notice. ID ¶¶ 763, 765. Olin agreed to supply caustic and chlorine to Monsanto and receive isos in return. *Id.* Olin also had the right under the contract to supply cyanuric acid but never exercised the right as it had discontinued production of cyanuric acid. ID ¶¶ 765, 767. After concluding this agreement with Monsanto, Olin "waterbatched" its trichlor plant. Waterbatching involves maintenance of the plant in a state of greater readiness to resume production than mothballing the plant. ID ¶ 17. When Olin advised Nissan of its agreement with Monsanto, Nissan considered the cyanuric acid supply agreement to be terminated. [17]

By 1984, Olin had attained a significant share of the United States isocyanurates market and was by far the leading producer of dry sanitizers. ID ¶ 583. Despite its success in penetrating the market for isocyanurates, Olin argues that before the acquisition of FMC's assets, it was not a viable producer of isocyanurates. In support of this view, Olin argues that its dependence on Nissan as a supplier of cyanuric acid rendered it vulnerable. Its second argument is that it was at a significant production cost disadvantage as a result of being forced to pay high prices for cyanuric acid. Third, Olin argues that its financial losses in this period demonstrate its nonviability.

Nothing in the record suggests that Olin's leading market share overstates its competitive vigor. Olin asserts that the ALJ overlooked the fact that Nissan was a competitor in the sale of isos and, according to Olin, had the power to exclude Olin from the isos market. RB at 19-20. Citing *Otter Tail Power Co. v. United States*, 410 U.S. 366, 370-71, 377 (1973), Olin argues that Nissan's "stranglehold" over it gave the Japanese firm the ability to control Olin's prices and output. *Otter Tail* by no means establishes a principle that reliance on a competitor as a supplier disables a firm as a matter of law. In *Otter Tail*, the evidence showed that the power company not only refused to deal with municipal power systems, but also refused to carry power produced by others to them and litigated to block alternative means of delivery of power to fledgling competitors. Entirely unlike the situation in *Otter Tail*, the evidence here indicates that Nissan was willing and able to sell cyanuric acid to Olin, and that Nissan did nothing to block Olin from obtaining cyanuric acid from another source. As indicated above, Nissan expanded its capacity to accommodate Olin's wants, and the Japanese company always faithfully delivered on its contractual commitments to Olin. Olin depicts its

vulnerability as a purchaser, while ignoring Nissan's mutual dependence on Olin as the purchaser of a large portion of its cyanuric output. ID ¶¶ 661-62.

If dependence on a competitor made Olin's management concerned about the long-term security of the business, the firm had alternative means, short of acquisition of a major competitor, to increase the stability of the situation. It could, for example, have sought to negotiate a long-term supply contract. It could and in fact did continue to pursue development of a viable technology for the production of its own cyanuric acid. It could and did seek alternative suppliers.

As Judge Hyun found, during the period preceding the decision to enter the Monsanto tolling agreement, Olin made a serious effort to develop a workable cyanuric acid production technology. ID ¶¶ 547-59. The Monsanto tolling agreement did not end these development efforts; on the contrary, they continued through the period after the agreement was signed [18] before the FMC acquisition. *Id.* In its brief, Olin disparages this effort to develop an alternative cyanuric acid technology as an idea that "makes no economic sense," because the company had already been unsuccessful. RB at 25. Olin argues that the ALJ's findings rest on documents prepared by employees, and that Olin officials testified that the Board would never have approved further spending on cyanuric acid. RB at 26. It is impossible to know with certainty what Olin's Board of Directors would have done if presented with a viable plan to produce cyanuric acid. We cannot assume, however, that the Board would have turned down any plan, no matter how sound.

Olin's second argument is that it suffered a severe cyanuric acid cost disadvantage vis-a-vis Monsanto and Nissan, and that this in turn put Olin at a cost disadvantage in the production of isocyanurates. RB at 20-23. Although a manufacturing cost disadvantage may weaken a competitor (particularly absent other strengths), Olin's claim that its significant and growing market share masked weakness is unpersuasive. Olin compares the price it paid to Nissan for cyanuric acid with figures purporting to be Monsanto's and Nissan's cost of cyanuric acid production. RB at 21. These comparisons fail to establish Olin as a weakened competitor.¹⁵ FMC's standard cost of making cyanuric acid

¹⁵ Olin's claimed cyanuric acid and isos cost disadvantage is not based on reliable data. The comparisons of Monsanto's cost with Nissan's price is not reliable because the Monsanto cyanuric acid was at a less advanced stage of processing than the Nissan product and did not include all costs, such as overhead. Tr. at 3950, 4060-63. Olin's claim about Nissan's cost rests on a document not explained by any Nissan or other knowledgeable witness. RX 263A. Based on other information, Olin managers made a considerably different estimate of Nissan's costs. ID at 704. Although we are not in a position to make definitive findings on Nissan's production

(footnote cont'd)

was higher than the price Olin had agreed to pay to Nissan. ID ¶¶ 689-90. If the cyanuric acid cost disadvantage was the driving force behind Olin's business strategy, it hardly seems reasonable to purchase a plant whose cost of production was higher than Nissan's selling price.

Finally, Olin argues that its financial losses since its entry into the production and sale of isos demonstrate its lack of viability. It seems clear that after Olin entered the isocyanurates business in 1980, it incurred substantial financial losses on those operations. RB at 20. The cause of those losses, however, is not easy to pin down. Olin would now have us find that the losses demonstrate its lack of viability as an [19] independent producer. Other explanations seem more credible. Olin itself offered another explanation to the International Trade Commission in the antidumping proceeding involving cyanuric acid and its derivatives. Although Olin now suggests that its July 1984 decision to sign the tolling agreement with Monsanto was due to its lack of viability as a domestic producer, a contemporaneous brief to the ITC contains no hint whatsoever that Olin was not a viable isos producer.¹⁶ On the contrary, Olin's brief affirmatively points to low prices by Japanese producers as the source of the problems of the domestic industry. CX 376G-M.

Olin has not made a persuasive showing that the losses demonstrate its lack of viability because there are other reasons that would appear to account for the losses. In the early 1980's, Olin was a new entrant in the production and sale of isos. It incurred costs to promote its new brand name for this pool chemical. ID ¶ 374. At the same time, it experienced difficulties with the start up of its acid plant, the dichlor plant and the packaging plant. RPF 163, 173. Strategic planning documents prepared by Olin employees in the period from 1982-1984 blame the company's problems on industry overcapacity. CX 259Q, CX 260G, CX 261A, CX 266B. Those strategic planning documents do not reflect a decision or consensus that the firm must exit the isos industry due to a lack of viability.

B. FMC's Preacquisition Market Position

Olin also argues that FMC's market share at the time of the acquisition overstated its effectiveness as a competitor. *United States*

costs, Olin has not pointed to solid evidence to show that it is at a cost disadvantage that makes its market share overstate its actual market power.

¹⁶ On March 9, 1984, Olin filed a "Pre-Hearing Brief of Olin Corporation" with the ITC in connection with the antidumping proceeding. CX 376.

v. General Dynamics Corp., 415 U.S. 486, 489 (1974). FMC has been a producer of isos since 1963, and its South Charleston plant was the second largest such facility in the world. ID ¶ 399. In 1978, it began the distribution of branded isos and thereafter undertook a major promotional effort to establish the “SUN” brand of pool sanitizers. ID ¶ 402. FMC earned a reputation for aggressive pricing. ID ¶¶ 403-06.

In 1979, FMC undertook a review of the profitability of all its business operations with a view toward divesting any units with profitability below the corporation’s internal standards. ID ¶¶ 407-10. The CDB unit, which included isocyanurates, failed to meet the corporate “hurdle rates” for continuation as part of [20] FMC. ID ¶ 412.¹⁷ In 1980, FMC’s corporate planning department predicted that improvement in the isos business was unlikely, and the company adopted an operating mode of “maintain-and-selectively-invest.” ID ¶ 416.

During the 1982 corporate planning process, the management of the CDB unit recommended that FMC exit the business, and other units supported this recommendation. ID ¶¶ 417-18. FMC shifted the CDB unit to the “run/sell” mode of operation, under which it was contemplated that FMC would continue to operate the business until such time as an acceptable purchaser could be identified. ID ¶ 420.¹⁸ In 1984, a strategic plan update was prepared, recommending a continuation of operation in the run/sell mode and rejecting the option of a shutdown, which top management affirmed in the fall of 1984. ID ¶ 423; Tr. 3863.

The value of the CDB business unit as an operating entity actually improved during the period preceding this acquisition. At the time of the 1982 strategic review, the net present value of continued operations was close to the liquidation value, but in the 1984 review, the net present value of continued operations was more than double the liquidation value. ID ¶¶ 427-28. At the time of the sale, the CDB unit was profitable, and profits were expected to continue. ID ¶¶ 429-30. During the time from 1980 to 1984 when FMC was not fully committed to the isos business, FMC believed its market share increased significantly. ID ¶¶ 432-33.¹⁹

Olin argues that the ALJ failed to “appreciate” the likelihood that

¹⁷ Because of FMC’s internal accounting procedures, it is difficult to evaluate the stand-alone profitability of the pool chemicals business. ID ¶ 413.

¹⁸ This decision did not mean that the company discontinued all investment. The company continued to invest in debottlenecking the plant’s isos capacity. ID ¶ 420.

¹⁹ After 1982, FMC reduced its promotional efforts and dealer support. ID ¶ 434. In December 1984, FMC wrote off the CDB assets and took a charge against corporate earnings. ID ¶ 435.

FMC's assets would have exited the industry absent this acquisition. RB at 32. Olin, however, has made no showing that the FMC swimming pool chemicals business was not viable or would have exited the market. At most, the evidence indicates that this business unit did not meet FMC's internal, corporate profit objectives, and the company planned to divest [21] the assets.²⁰ While such evidence may suggest that FMC would exit the market, it does not suggest that the assets would exit.

IV. EFFECT ON COMPETITION

Section 7 of the Clayton Act forecloses incipient competitive problems by prohibiting mergers the effect of which "may be substantially to lessen competition, or to tend to create a monopoly." 15 U.S.C. § 18 (1982); *United States v. Philadelphia National Bank*, 374 U.S. 321, 362 (1963).²¹ Indeed, the statute's prospective focus is fundamental to *United States v. General Dynamics Corp.*, 415 U.S. 486, 503, 505 (1974), in which the Supreme Court directed attention to the likely impact of the merger on future competition in the relevant market.

A. *The Dry Sanitizer and Isocyanurates Markets Are Highly Concentrated*

The fewer the competitors in a market, the easier it becomes for the firms to coordinate price and output decisions. *United States v. Aluminum Co. of America*, 377 U.S. 271, 280-81 (1964); *Brown Shoe Co. v. United States*, 370 U.S. 294, 343-45 (1962); *Hospital Corporation of America v. FTC*, 807 F.2d 1381, 1387 (7th Cir. 1986) (Posner, J.); see *Justice Merger Guidelines* § 3.1 (1984). The dry pool sanitizer market, including both cal hypo and isocyanurates, is highly concentrated by virtually any measure employed in antitrust analysis. On the basis of United States production capacity in 1985, the post-acquisition Herfindahl-Hirschmann Index ("HHI") is 3852, with an increase in the HHI of over 1065 points. ID ¶ 569. On the basis of United States production in 1984, the post-acquisition HHI is 4122, with an increase of 1186. ID ¶ 569. Olin's share of production capacity for dry pool sanitizers is 57 percent. *Id.* The post-merger four-firm concentration ratio approaches 95 percent. ID ¶ 571.

²⁰ An August 1984 FMC planning document indicates that the unit's profitability had improved, that the present value of continued operations was considerably greater than the liquidation value, and that there was an opportunity to sell the business. CX 29.

²¹ See *United States v. Penn-Olin Chemical Co.*, 378 U.S. 158, 170-71 (1964) (comparing standards).

The concentration in the dry sanitizer market and increase in concentration caused by this merger are far greater than the levels of concentration that typically signal an excessive danger of anticompetitive effect. Section 3.11 of the *Justice Merger Guidelines* states: “if the increase in the HHI exceeds 100 and the post-merger HHI substantially exceeds 1800, only in [22] extraordinary cases will such factors [the factors discussed in sections 3.2 to 3.5] establish that the merger is not likely to lessen competition.” This merger will raise the level of concentration to a level more than double the 1800-point threshold at which the Department is likely to challenge mergers.

Olin’s acquisition of FMC’s pool chemical business produced a degree of concentration in the dry sanitizer market extremely high in comparison to recent Commission merger precedent. In *B.F. Goodrich Co.*, 110 FTC 207, 313 (1988), the Commission found a violation of Section 7 in the vinyl chloride monomer market in which the acquisition in question increased the HHI based on practical production capacity by 253 points to 1552. In *Hospital Corporation of America*, 106 FTC 361, 487-88 (1985), *aff’d*, 807 F.2d 1381 (7th Cir. 1986), the Commission considered a market with a post-acquisition HHI of at least 2416, which the Commission found “to be of serious competitive concern. . . .” The Commission found liability and ordered divestiture. In *Weyerhaeuser Co.*, 106 FTC 172, 280 (1985), although the Commission found no violation of Section 7 where the HHI increased by 211 points to 1166, the decision was based on consideration of industry characteristics other than concentration.

We find that the level of concentration in the dry sanitizer industry and the increase in concentration caused by this acquisition raise serious competitive concerns. Nonetheless, the seriousness of these concerns does not foreclose examination of particular characteristics of competition in the market to determine if extraordinary circumstances rebut the signal of competitive hazard given by the industry structure. The level of concentration in the isocyanurates-only market proposed by Olin is also very high. In the isos-only market, based on 1985 United States capacity data, the post-acquisition HHI would be 3826 with an increase in the HHI of 1114. On the basis of 1984 United States production data for the isos-only market, the post-acquisition HHI is 3467 and the increase in the HHI is 702. ID ¶ 576. These concentration levels are similar to the concentration levels in the dry pool sanitizer market and raise the same competitive concerns.

B. *Entry Is Not Easy*

The ease or difficulty of entry is “perhaps the most important qualitative factor” in assessing whether anticompetitive conduct is likely. *FTC Merger Statement* at 5 (1982). If entry is easy, then price-elevating collusion may be defeated by an outsider. See, e.g., *United States v. Waste Management Inc.*, 743 F.2d 976, 982-84 (2d Cir. 1984); *Echlin Manufacturing Co.*, 105 FTC 410 (1985). Since absolute barriers to entry, such as control of all reserves of some necessary ingredient, rarely exist, it is useful to assess the [23] magnitude of barriers or impediments to entry in terms of the amount of time required for a motivated outsider to effect entry. The *Justice Merger Guidelines*, Section 3.3, employ a two-year threshold in considering the likelihood of entry. The longer the time required for successful entry, the greater the likelihood of a challenge to a horizontal merger.

Olin’s not inconsiderable difficulty in establishing itself as an integrated producer of isocyanurates suggests that entry in this industry is problematic. Olin’s Chairman and Chief Executive Officer estimated that it would take ten years to effect new entry in the production of trichlor. ID ¶714. Others estimated that even giant chemical companies would take from three to five years to enter. ID ¶715. The development of technology and the acquisition of manufacturing know-how and experience to produce this chemical cause entry to be a lengthy process. ID ¶716.

Similar problems confront a firm considering entry in the production of calcium hypochlorite. Olin employees estimated that a *de novo* entrant would need five to eight years to develop the manufacturing technology necessary to produce the chemical. ID ¶¶728-29. These estimates are confirmed by the experience of PPG, which took six years to develop the technology, build a plant at Natrium, West Virginia, and achieve initial production. ID ¶732. Indeed, since PPG had a long history of experience in producing cal hypo before starting on the Natrium plant, it seems likely that a novice producer might require more than six years to enter effectively. ID ¶733.

Overall, the evidence indicates that entry by new competitors is unlikely to defeat anticompetitive behavior in the dry sanitizer market for many years. This long lead time merely increases concern about the hazard of anticompetitive conduct.

C. Industry Propensity For Anticompetitive Conduct

In 1984, Olin, which was the third largest domestic producer of isocyanurates, entered an agreement with Monsanto, the leading producer of isos, to purchase sufficient isos to cover Olin's anticipated needs ("Agreement"). CX 469. The Agreement was effective July 1, 1984, and ran at least two and one-half years until December 31, 1986, after which date, it was terminable on twelve months written notice. CX 469B. For the last six months of 1984, the Agreement provided for sales of one million pounds per month; thereafter, it provided for sales of 2.5 to 4 million pounds per quarter. CX 469B-C.

Under the Agreement, Olin provided chlorine and caustic, and had the option to provide cyanuric acid. The Agreement set forth formulas for determining the fee for conversion of the chlorine and caustic to isos. CX 469D. The Agreement also contained [24] liquidated damages provisions for shortfalls in performance. CX 469Q-R.²²

The evidence strongly indicates that Olin saw the Agreement not as a way to reduce the costs of operating its plant but as a way to reduce output and increase prices. The record indicates that the plan was under consideration for some time before it was implemented. In January 1983, Mr. Swartley, who was President of Olin's consumer Products Group, prepared a document discussing the option of suspending production and marketing purchased isos. ID ¶¶ 28, 768-69; CX 327. The memorandum states: "*Removing production capacity from the market may improve profit potential. With less obvious volume pressure, pricing should be improving over time.*" CX 327 (emphasis in original). Mr. Swartley's view was that an agreement such as the one with Monsanto would reduce the surplus of trichlor on the market and would have a positive impact on pricing. Tr. 7431.

Other Olin documents indicate that the company's management was well aware of the price effect of removing its output from the market. ID ¶¶ 768-81. The "1984 Pace Strategic Plan," dated April 23, 1984, compares the alternatives of continued isos production with the Monsanto tolling agreement alternative. For the "business as usual" option, the general projection is "continued depressed industry prices," but for the Monsanto tolling alternative, it projects "recovery of industry prices." CX 261C.²³ The plan projects "netbacks" under

²² After the Agreement was signed, Olin "waterbatched" its isocyanurates plant at Lake Charles. See discussion *supra* at 16.

²³ An Olin corporate vice president initiated the contacts with Monsanto that led to the Agreement by telephoning a high level Monsanto executive in January 1984. ID ¶ 764.

the two alternatives. Under the Monsanto tolling option, the projected prices would be 24 to 30 cents per pound higher than under a scenario with continued Olin production of isos. *Compare* CX 261E with CX 261G. A financial analysis of the proposed Monsanto Agreement, prepared for the Chief Executive Officer of Olin on May 7, 1984, predicts a lower sales volume but states: "Accelerated market price increases associated with a more balanced supply/demand position than nominal increases in the 'Business As Usual' [operating mode]." CX 659A.²⁴

The Monsanto Agreement was apparently not signed to reduce the manufacturing costs of isos to Olin, as Olin now argues. In December 1984, a "Pace Business Review" was prepared for presentation to Olin's Chief Executive Officer, the Finance [25] Committee, and the Board of Directors. CX 263. This document indicates that the "total manufacturing cost" of isos by Olin using cyanuric acid purchased from Nissan was less expensive than isos purchased under the Monsanto Agreement. CX 263V; Tr. 8181-85.²⁵ It seems reasonable to conclude that price increases, brought about by decreased supply, were in fact the reason for the Monsanto Agreement.

After Olin waterbatched its isos plant, it appears that shortages of isos did occur. ID ¶ 780. Indeed, under the tolling contract, Monsanto paid significant penalties to Olin because of a shortfall in deliveries of isos. RPF 355.

Olin argues that the Monsanto Agreement gave Monsanto the funds to increase its isos production capacity and that the long-term effect of these Monsanto capacity expansions was procompetitive. RB at 37-38. A Monsanto witness testified that Monsanto accomplished "debottlenecking" steps during the term of the Agreement. Tr. 4069-70. The witness declined to characterize the capital investment in Monsanto's Sauget trichlor plant as a capacity expansion. The witness stated: "Very little of what we have done has been done for expansion's sake. It has been done to achieve cost reduction." Tr. 4072.²⁶ Presumably Monsanto would have made such cost-justified investment regardless of the Monsanto-Olin Agreement, and the record does not support Olin's attempt to tie the Monsanto investment to the Agreement.

²⁴ The document also projected some savings on fixed costs. *Id.*

²⁵ The Olin financial analyst who prepared the comparison of the manufacturing costs testified at the hearing that the Olin manufacturing cost that was compared with the Monsanto cost at CX 263V was the Olin cost using purchased cyanuric acid. Tr. 8184-85.

²⁶ The witness repeated that the Sauget investment should not be "termed as expansion" because it was driven by cost reduction motives. Tr. 4075.

D. Import Competition

Olin argues that imports limit the ability of domestic producers to collude successfully. Imports represented approximately nine percent of United States dry sanitizer capacity in 1985, ID ¶ 583, Table 3, and about twelve percent of United States dry sanitizer production in 1984. ID ¶ 583, Table 5. For isocyanurates alone, imports equalled nineteen percent of United States production in 1984. Virtually all of those imports were produced by two Japanese firms. ID ¶ 583, Table 2. [26]

In evaluating the competitive significance of a foreign firm, we consider how much additional output would flow to the United States market in response to a hypothetical, small but significant and nontransitory price increase. *See* Introduction to the *Justice Merger Guidelines* at Section 3. Because it may be impossible accurately to measure the amount of additional foreign capacity available to increase supply to the United States in response to the price increase, it may be appropriate to employ foreign shipments in the calculations of market concentration. *Id.* That is what the Administrative Law Judge did in this case and, consistent with the *Guideline's* prescription that qualitative evidence may be used to correct any distortion inherent in the quantitative data, ALJ Hyun reviewed the available evidence relating to the capabilities and problems of foreign suppliers in considerable detail.

Qualitative evidence concerning Japan, the major source of foreign dry sanitizer supply, underscores concern about the ability of these producers to defeat a price increase. First, the domestic producers of both isos and cal hypo have obtained antidumping relief against imports of these chemicals from Japan. In June 1983, Monsanto filed an antidumping petition with respect to isos, and antidumping duties were imposed in April 1984. ID ¶ 590. In April 1984, Olin filed an antidumping petition with respect to cal hypo, and an Antidumping Duty Order was entered in April 1985. ID ¶¶ 622, 625. Unlike a quota, an Antidumping Duty Order does not impose an absolute restriction on the volume of imports. Nonetheless, as the ALJ found, the evidence in this record indicates that the Antidumping Duty Order did have a restraining effect on the vigor of import competition. ID ¶¶ 599-622. Witnesses from Japanese exporters testified that the

antidumping findings had restricted the ability of the Japanese firms to compete in the United States. ID ¶¶ 600-04, 607-08, 610-11.²⁷

A second qualitative factor raising concern about the likely competitive strength of the Japanese exporters is the significant shift in the yen to dollar currency exchange rate. ID ¶ 634. The Japanese producers, purchasers of isos and domestic producers all regard the exchange rate as relevant in assessing the viability of Japanese competition. ID ¶¶ 632-40. A change in the exchange rate or any other factor that has the [27] effect of significantly increasing the cost of the Japanese product in United States dollars is a circumstance that bears on the probable future effectiveness of Japanese firms as competitors in this market.

In addition, it appears that clear and reliable information of Japanese production capacity is not available. Capacity estimates from the Japanese firms are in the record, but Olin claims that the estimates are too closely related to actual production to be entirely reliable. RPF 863-68.²⁸ Although the evidence does not conclusively establish that Japanese firms are under tight capacity constraints, it equally provides no basis to conclude that those firms have substantial excess capacity that could be used to supply the United States market in the event of a price increase.

Finally, the Japanese Fair Trade Commission found in 1982 that Nissan and Shikoku, the two leading foreign suppliers of isos to the United States market, had fixed the prices of isocyanurates sold in Japan from 1977 through 1981. ID ¶ 812. This circumstance makes it difficult to accept Olin's position that the foreign competitors are the guarantors of competition in the United States market in the event of collusion among the domestic producers.

E. Other Market Characteristics

The dry pool sanitizer market has a number of other characteristics that are at least arguably relevant to the assessment of its likely future competitive performance. Some characteristics tend to heighten the concern raised by the extremely high post-merger market

²⁷ Olin criticizes the Administrative Law Judge for relying on import data through 1985 and not considering the level of imports in 1986 and 1987. RB at 41-42. Since the hearing was in March and April 1987, the ALJ could hardly know what the 1987 import levels would be. Olin's brief at page 42 cites only its own proposed findings of fact to support the claim that imports were higher in 1986 than earlier years. These proposed findings of fact in turn cite only anecdotal testimony.

²⁸ Although the uncertainty regarding Japanese capacity gives us pause about finding that capacity constraints preclude further exports to the United States, it supports our conclusion that the Administrative Law Judge made an appropriate choice in using actual shipment data as the basis for measuring import competition in the HHI calculation.

concentration. Others may point in the opposite direction, but none of these provides sufficient comfort to alleviate the other concerns about competitive effects.

The Administrative Law Judge found that demand for dry pool sanitizers is relatively inelastic. ID ¶¶ 814-15. A homeowner with an existing swimming pool is relatively unlikely to stop or reduce his or her consumption of swimming pool chemicals because of an increase in the price of those chemicals. This relative inelasticity of demand tends to heighten the antitrust concern raised by the market concentration figures because it indicates [28] that price-elevating collusion has the potential to be quite profitable.²⁹

The Administrative Law Judge recognized that the relative size of the buyers and the flow of orders may affect the likelihood of collusion. We agree with Judge Hyun that none of the 30 to 40 repackager purchasers of dry sanitizers accounted for a large enough proportion of a supplier's total sales to be able to ensure that the market would perform competitively. ID ¶¶ 822-27.

Olin argues, nevertheless, that the sophistication of the buyers of dry sanitizers will make collusion unlikely. RB at 39. Although "sophistication" is a relatively difficult attribute to quantify, it is possible to compare the relative flexibility of the repackagers and the producers. Given the difficulty of entry in the production of isos and cal hypo, the repackagers could not easily counter a collusive price increase by integrating backward. The manufacturers, on the other hand, likely would find it not nearly so troublesome to expand their packaging and distribution capability to eliminate the role of the repackager. Once the chemical has been manufactured, it seems safe to assume that filling drums and smaller packages is relatively easy. Given the respective roles in the industry of manufacturers and repackagers, buyer sophistication appears to be a weak prop to ensure the competitiveness of the market.

Further, the ALJ concluded that the manufacturers do not all sell at the same level of distribution and that this circumstance decreases the likelihood of collusion. ID ¶¶ 839-46. Such a difference may make enforcement of a cartel more difficult if prices must be adjusted to reflect the different levels of trade. R. Posner, *Antitrust Law* 60 (1976). Here, as Judge Hyun found, the manufacturers know the cost

²⁹ The Administrative Law Judge also found that the relatively high ratio of fixed costs to variable costs in this industry contributes to the likelihood of actual or tacit collusion. ID ¶¶ 816-18. As the respondent points out, there is some academic debate about this circumstance as an indicator of likely competitive behavior, and we do not give it any significant weight.

of the repackaging step, and the adjustment to account for it should not pose a great difficulty for a possible cartel. Finally, as the ALJ found, members of this industry exchange information and monitor prices with sufficient intensity to increase the likelihood of collusion. ID ¶¶ 793-811. The availability of price information is another characteristic that supports our concern about increasing concentration in this market. [29]

V. THE “EXITING ASSET” DEFENSE

Olin argues that the Commission should adopt a novel “exiting asset” defense to Section 7 of the Clayton Act. This defense, which has been proposed as a replacement for the traditional failing company defense, would require proof that absent the merger, the acquired firm’s assets would shortly leave the market. *See Kwoka & Warren-Boulton, Efficiencies, Failing Firms and Alternatives to Merger: A Policy Synthesis*, 31 Antitrust Bull. 431, 446 (1986).

Olin asserts that the evidence discussed above in Section IIIB in connection with its argument that FMC’s market share overstates its competitive position also establishes the factual basis for the proposed “exiting asset” defense. As we have discussed, however, the evidence does not establish that FMC made the decision to close the isos business in the near future. Quite the contrary, the record indicates that FMC’s management continued to operate the facility in the expectation that the facility could at some point be sold. In addition, the record does not contain evidence that FMC’s management had conducted an exhaustive effort to sell the package of assets sold to Olin. The record contains no indication that no less anticompetitive alternative to the merger is available. In short, the facts would not support the description of the proposed defense, even if we adopted the defense, and we decline to do so in this case.

VI. DIVESTITURE IS THE APPROPRIATE RELIEF

Judge Hyun ordered Olin to divest the assets acquired from FMC except for the so-called Sulfolane technology to produce cyanuric acid. We think this is appropriate.

Olin argues that the divestiture order is improper and punitive because it requires divestiture of not only the isos production facility, but also the cyanuric acid plant, both of which are located at South Charleston, West Virginia. Olin asserts that the only possible lessening of competition occurred in the market for swimming pool sanitizers, and that cyanuric acid is not such a sanitizer. RB at 51.

Judge Hyun rejected that argument on the ground that divestiture of the cyanuric acid plant together with the isos plant is necessary to ensure the viability of the divested entity. ID ¶ 894. Olin asserts that this judgment is inconsistent with the conclusion that Olin's isos facilities were a viable force in the market even without a cyanuric acid plant.

The purpose of the remedy is to restore the competition that existed before the unlawful acquisition, and divestiture is a simple and sure way to accomplish that. *United States v. E. I. duPont de Nemours & Co.*, 366 U.S. 316, 331 (1961). Complete [30] divestiture is "particularly appropriate" in merger cases. *Ford Motor Co. v. United States*, 405 U.S. 562, 573 (1972). In fashioning a remedy for an unlawful acquisition, the Commission has ordered broad divestiture in order to increase the likelihood of a restoration of competition even if changed circumstances have made a complete restoration impossible. *See RSR Corp.*, 88 FTC 800, 892-97 (1976), *aff'd*, *RSR Corp. v. FTC*, 602 F.2d 1317 (9th Circ. 1979), *cert. denied*, 445 U.S. 927 (1980).

The isos and cyanuric acid facilities are located at the same plant in South Charleston, West Virginia. No suggestion has been made that FMC ever offered, or even considered offering, the cyanuric acid plant for sale separate from the isos plant. Olin failed to introduce evidence that the two facilities are separate, stand-alone operations, rather than integrated facilities that share common facilities for power, emission control, receiving and shipping, and other functions. The record does not support a conclusion that the isos plant would be technically and functionally viable separate from the cyanuric acid plant, quite apart from the question whether it would be commercially viable. Since the objective of requiring divestiture is to create a new competitor in this market, we must ensure that the package of assets divested is sufficient to give its acquiror a real chance at competitive success.

We conclude that Olin's acquisition of FMC's swimming pool chemical business is likely substantially to lessen competition in the markets for dry pool sanitizers and isocyanurates in violation of Section 7 of the Clayton Act and Section 5 of the FTC Act. We further conclude that divestiture of all assets covered by the Asset Maintenance Agreement, except the Sulfolane process, is the necessary and appropriate remedy.

FINAL ORDER

This matter has been heard by the Commission on the appeal of respondent from the initial decision, and on briefs and oral argument in support of and in opposition to the appeal. For the reasons stated in the accompanying opinion, the Commission has determined to deny the appeal. Accordingly,

It is ordered, That the findings of fact and initial decision of the Administrative Law Judge be adopted insofar as not inconsistent with the findings of fact and conclusions of law contained in the accompanying opinion.

It is further ordered, That the following order be, and hereby is, entered:

The following definition shall apply in this order:

1. “FMC” means the FMC Corporation swimming pool chemicals business acquired by Olin Corporation from FMC Corporation, and specified in the *Agreement to Maintain Isocyanurate Assets and to Terminate the Monsanto Tolling Agreement*, an agreement entered into by Olin Corporation and the Federal Trade Commission, dated July 18, 1985, together with all of the assets, title and properties, tangible and intangible of said business, and its associated interests, rights and privileges, including without limitation all buildings, leaseholds, machinery, equipment, raw material reserves, inventory, customer lists, copyrights, trade names, trademarks, trade secrets, patents and other property of whatever description, together with all additions and improvements thereto made subsequent to the acquisition. [2]

I.

It is further ordered, That respondent Olin Corporation, a corporation, including its successors and assigns, and its officers, directors, agents, representatives, employees, subsidiaries and affiliates (hereafter “Olin”), shall divest, subject to the prior approval of the Commission, FMC within twelve (12) months from the date this order becomes final.

II.

It is further ordered, That the divestiture required by this order

shall be accomplished absolutely and in good faith and shall transfer the assets to be divested as a viable, competitive concern engaged in the manufacture and sale of swimming pool chemicals, *provided, however,* that the Sulfolane process technology and know-how for the manufacture of cyanuric acid may be excluded from the divestiture required by this order.

III.

It is further ordered, That pending any divestiture required by this order, Olin shall not cause or permit impairment of the marketability or viability of FMC.

The Federal Trade Commission may seek civil penalties and other relief available to it pursuant to § 5(1) of the Federal Trade Commission Act, 15 U.S.C. 45(1), or any other statute enforced by the Commission, for any failure by Olin to comply with this order, and the appointment of a trustee or the failure to appoint a trustee hereunder shall not preclude the Federal Trade Commission from seeking such civil penalties or other relief.

IV.

It is further ordered, That if Olin has not divested all of the properties, assets, or enterprises required to be divested pursuant to Paragraphs I and II of this order within the twelve-month period provided therein, the Federal Trade Commission may appoint a trustee to effect divestiture and bring an action pursuant to § 5(1) of the Federal Trade Commission Act, 15 U.S.C. 45(1), or any other statute enforced by the Commission, to appoint a trustee to effect divestiture. The trustee shall be a person with experience and expertise in acquisitions and divestitures.

Any trustee appointed by the Federal Trade Commission pursuant to this paragraph shall have the following powers, authority, duties, and responsibilities: **[3]**

A. The trustee shall have the exclusive power and authority to divest any properties required to be divested pursuant to Paragraph I of this order that have not been divested by Olin within the time period for the divestiture provided therein. The trustee shall have twelve (12) months from the date of appointment to accomplish the divestiture, which shall be subject to the prior approval of the Federal

Trade Commission. The Federal Trade Commission or the court may extend the appointment of the trustee if necessary to facilitate divestiture.

B. The trustee shall have full and complete access to the personnel, books, records and facilities of any of the properties that the trustee has the duty to divest, and Olin shall develop such financial or other information relevant to the properties to be divested as the trustee may reasonably request. Olin shall cooperate with the trustee and shall take no action to interfere with or impede the trustee's accomplishment of the divestiture.

C. The power and authority of the trustee to divest shall be at the most favorable price and terms available consistent with this order's absolute and unconditional obligation to divest, and the purposes of the divestiture as stated in Paragraphs I and II of this order.

D. The trustee shall serve, without bond or other security, at the cost and expense of Olin on such reasonable and customary terms and conditions as the Federal Trade Commission or a court may set. The trustee shall have the authority to retain, at the cost and expense of Olin, such consultants, attorneys, investment bankers, business brokers, accountants, appraisers, and other representatives and assistants as are reasonably necessary to assist in the divestiture. The trustee shall account for all monies derived from the sale and all expenses incurred. After approval by the Federal Trade Commission of the account of the trustee, including fees for his or her services, all remaining monies shall be paid to Olin and the trustee's power shall be terminated. [4]

E. Within twenty (20) days after the appointment of the trustee, Olin shall transfer to the trustee all rights and powers necessary to accomplish divestiture.

F. Olin shall indemnify the trustee and hold the trustee harmless against any losses, claims, damages, or liabilities to which the trustee may become subject, arising in any manner out of, or in connection with, the trustee's duties under this order, unless the Federal Trade Commission determines that such losses, claims, damages, or liabilities arose out of the misfeasance, gross negligence, or the willful or wanton acts or bad faith of the trustee.

G. If the trustee ceases to act or fails to act diligently, a substitute trustee may be appointed.

H. The trustee may ask the Federal Trade Commission or the court-appointed trustee to issue, and the Federal Trade Commission or the

court may issue, such additional orders or directions as may be necessary and appropriate to accomplish the divestiture required under this order.

I. The trustee shall have no obligation or authority to operate or maintain any of the properties, assets, or enterprises required to be divested pursuant to Paragraph I of this order.

J. The trustee shall report in writing to Olin and the Federal Trade Commission every sixty (60) days concerning the trustee's efforts to accomplish divestiture.

V.

It is further ordered, That for a period of ten (10) years from the date this order becomes final, Olin shall cease and desist from acquiring, directly or indirectly, through subsidiaries or otherwise, without the prior approval of the Commission, the whole or any part of the stock, share capital, or assets of, or any interest in, any concern, corporate or noncorporate, engaged in the manufacture and sale of swimming pool chemicals, including entering into any agreement, understanding or arrangement with any such concern by which Olin would obtain the market share, in whole or in part, of such concern in the manufacture and sale of swimming pool chemicals. [5] One year from the date this order becomes final and annually thereafter Olin shall file with the Commission a verified written report of its compliance with this paragraph.

VI.

It is further ordered, That within sixty (60) days from the date this order becomes final, and every sixty (60) days thereafter, until it has fully complied with Paragraphs I and II of this order, Olin shall submit a report in writing to the Commission setting forth in detail the manner and form in which it intends to comply, is complying or has complied therewith. All such reports shall include, in addition to such other information and documentation as may hereafter be requested: (a) a specification of the steps taken by Olin to make public its desire to divest the FMC swimming pool chemicals assets; (b) a list of all persons or organizations to whom notice of divestiture has been given; (c) a summary of all discussions and negotiations related to divestiture together with the identity and address of all interested persons or

organizations; and (d) copies of all reports, internal memoranda, offers, counteroffers, communications and correspondence concerning said divestiture.

VII.

It is further ordered, That respondent Olin shall notify the Commission at least thirty (30) days before any proposed changes in the corporate respondents which may affect compliance obligations arising out of this order, such as dissolution, assignment or sale resulting in the emergence of successor corporations, or the creation or dissolution of subsidiaries.

Commissioner Strenio recused.