HIGH CARBON FERROCHROMIUM

Report to the President on Investigation No. TA-201-28 Under Section 201 of the Trade Act of 1974

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United States International Trade Commission / Washington, D.C. 20436

UNITED STATES INTERNATIONAL TRADE COMMISSION

COMMISSIONERS

Daniel Minchew, Chairman
Joseph O. Parker, Vice Chairman
George M. Moore
Catherine Bedell
Italo H. Ablondi
Bill Alberger

Kenneth R. Mason, Secretary to the Commission

This report was principally prepared by

Lynn Featherstone, Investigator

assisted by

Mary Youdin, Office of Industries
N. Tim Yaworski, Office of the General Counsel
Clark Workman, Office of Economic Research

E. William Fry, Supervisory Investigator

Address all communications to
Office of the Secretary
United States International Trade Commission
Washington, D.C. 20436

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Note.—The whole of the Commission's report to the President may not be made public since it contains certain information that would result in the disclosure of the operations of individual concerns. This published report is the same as the report to the President, except that the above-mentioned information has been omitted. Such omissions are indicated by asterisks.

High-carbon-ferrochromium prices have varied considerably since 1972. As shown in the following table, imported ferrochromium was slightly less expensive than the domestically produced material in 1972 and 1973, considerably more expensive in 1974 and 1975, slightly more expensive in 1976, and less expensive in January-June 1977.

High-carbon ferrochromium: Weighted average prices for the greatest volume of the imported and U.S.-produced products sold, 1972-76, January-June 1976, and January-June 1977

(Cents per pound)

Period	Price of high-carbon ferrochromium, over 65 percent chromium	
	Imported	U.S.-produced
1972	20	21
1973	20	21
1974	46	33
1975	69	55
1976	44	43
January-June--		
1976	48	44
1977	38	43

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Imports of high-carbon ferrochromium increased irregularly during 1972-75, but declined sharply in 1976, as shown in the table below.

High-carbon ferrochromium: U.S. imports for consumption and production, 1972-76, January-June 1976, and January-June 1977

Period	Imports	Production	Ratio of imports to production
	1,000 tons, chromium content	1,000 tons, chromium content	Percent
1972	44	113	39
1973	72	159	45
1974	71	145	49
1975	158	78	202
1976	107	107	100
January-June--			
1976	51	52	98
1977	68	58	117

Source: Compiled from official statistics of the U.S. Department of Commerce and the U.S. Bureau of Mines.

The Republic of South Africa is the largest source of imported high-carbon ferrochromium, followed by Rhodesia, Brazil, and Yugoslavia. Producers in all these countries except Rhodesia were represented at the public hearing; imports from Rhodesia were embargoed effective March 18, 1977. 1/ One of the domestic producers (Union Carbide Corp.) has just opened a new high-carbon ferrochromium plant in South Africa that will export all its production. The advantage of locating productive facilities near the source of the raw material (chromium ore) is that more than half the cost of importing the ore is saved (a rough guide used to determine shipping requirements is that 2-1/2 tons of chromium ore are needed to produce 1 ton of high-carbon ferrochromium).

1/ Executive Order 11322, 3 CFR 606.

REPORT TO THE PRESIDENT

United States International Trade Commission,
December 1, 1977

To the President:

In accordance with section 201(d)(1) of the Trade Act of 1974 (19 U.S.C. 2251(d)(1)), the United States International Trade Commission herein reports the results of an investigation relating to high-carbon ferrochromium.

The investigation (investigation No. TA-201-28) was undertaken to determine whether ferrochromium, containing over 3 percent by weight of carbon, provided for in item 607.31 of the Tariff Schedules of the United States (TSUS), is being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

The Commission instituted the investigation under the authority of section 201(b)(1) of the Trade Act on July 11, 1977, following receipt on July 1, 1977, of a petition for import relief filed by the Committee of Producers of High Carbon Ferrochrome.

Notice of the institution of the investigation and of the public hearing to be held in connection therewith was issued on July 12, 1977, and notice of the time and place of the hearing was issued on September 16, 1977. The notices were posted at the Commission's offices in Washington, D.C., and New York and were published in the Federal Register on July 18, 1977 (42 F.R. 36896), and September 22, 1977 (42 F.R. 47890), respectively. The public hearing was held on October 11 and 12, 1977, in Pittsburgh, Pa.

The information for this report was obtained from fieldwork and interviews by members of the Commission's staff, from other Federal agencies, from responses to the Commission's questionnaires, from information presented at the public hearing, from briefs submitted by interested parties, and from the Commission's files.

A transcript of the hearing and copies of briefs submitted by interested parties in connection with the investigation are attached. 1/

There were no imports of ferrochromium, containing over 3 percent by weight of carbon, from countries whose imports are presently subject to the rates of duty set forth in column 2 of the TSUS. The import relief recommended herein, therefore, is not addressed to imports from such countries. Certain recommended relief measures would involve the imposition of rates of duty on imports from countries whose imports are currently subject to rates of duty in column 1 which are higher than the rates set forth in column 2. Should such recommended, or any other, rates of duty higher than the column 2 rates be proclaimed by the President, it would be necessary for him to conform column 2 by proclaiming rates therefor that are not less than those proclaimed for column 1. 2/

1/ Attached to the original report sent to the President. These materials are available for inspection at the U.S. International Trade Commission, except for material submitted in confidence.

2/ See Article I, General Agreement on Tariffs and Trade (Basic Instruments and Selected Documents, vol. IV, March 1969), and General Headnote 4, Tariff Schedules of the United States (19 U.S.C. 1202).

DETERMINATIONS, FINDINGS, AND RECOMMENDATIONS OF THE COMMISSION

On the basis of its investigation, the Commission determines 1/ that ferrochromium, containing over 3 percent by weight of carbon, provided for in item 607.31 of the Tariff Schedules of the United States, is being imported into the United States in such increased quantities as to be a substantial cause of the threat of serious injury to the domestic industry producing an article like or directly competitive with the imported article.

Findings and recommendations

Commissioners Minchew, 2/ Moore, and Bedell find and recommend that--

The imposition of rates of duty as follows, in addition to the existing column 1 rate of duty, is necessary to prevent the threatened serious injury:

Ferrochromium, containing over 3 percent by weight of carbon, classifiable under item 607.31 of the TSUS:

1st year	2d year	3d year	4th year	5th year
30% ad val.	30% ad val.	25% ad val.	20% ad val.	20% ad val.

Commissioner Ablondi finds and recommends that--

The imposition of rates of duty as follows, in addition to the existing column 1 rate of duty, is necessary to prevent the threatened serious injury:

Ferrochromium, containing over 3 percent by weight of carbon, classifiable under item 607.31 of the TSUS:

1st year	2d year	3d year
8% ad val.	8% ad val.	8% ad val.

1/ Commissioners Moore, Bedell, and Ablondi determine in the affirmative, Commissioner Minchew determines in the negative, and Commissioners Parker and Alberger did not participate.

2/ Commissioner Minchew, noting that the Commission has made an affirmative determination, has made a recommendation of remedy.

VIEWS OF COMMISSIONERS GEORGE M. MOORE, CATHERINE BEDELL, AND ITALO H. ABLONDI

On July 11, 1977, following receipt of a petition from the Committee of Producers of High Carbon Ferrochrome, the United States International Trade Commission instituted an investigation to determine whether high-carbon ferrochromium, provided for in item 607.31 of the Tariff Schedules of the United States (TSUS), is being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

Section 201(b)(1) of the Trade Act requires that each of the following criteria be met if the Commission is to make an affirmative determination in this investigation and thus find a domestic industry eligible for import relief:

(1) Imports of the article concerned are entering the United States in increased quantities (either actual or relative to domestic production);

(2) The domestic industry producing an article like or directly competitive with the imported article is being seriously injured or threatened with serious injury; and

(3) Increased imports are a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article concerned.

Determination

On the basis of the evidence developed during this investigation, we have determined that high-carbon ferrochromium, provided for in item 607.31 of the TSUS, is being imported into the United States in such increased quantities as to be a substantial cause of the threat of serious injury to the domestic industry producing an article like or directly competitive with the imported article.

The domestic industry

In this investigation we have determined that the relevant domestic industry consists of the facilities in the United States used in the production of high-carbon ferrochromium. In 1977, five domestic firms produced high-carbon ferrochromium in five plants located in the continental United States.

High-carbon ferrochromium is a ferroalloy containing about 52 to 72 percent chromium and over 3 percent by weight of carbon. 1/ It is used primarily in the production of stainless steel.

Increased imports

Imports of high-carbon ferrochromium increased irregularly from 44,017 short tons, chromium content, in 1972 to 107,307 short tons, chromium content, in 1976. In relation to U.S. production, imports rose from 39 percent to 100 percent in the same time period. Imports in January-June 1976 totaled 51,287 short tons, chromium content, the equivalent of 98 percent of U.S. production, compared with 67,854 short tons, chromium content, the equivalent of 117 percent of U.S. production in the corresponding period of 1977. The statutory requirement of increased imports is clearly satisfied.

Threat of serious injury

The Trade Act of 1974 provides no precise definition of the term "threat of serious injury." However, section 201(b)(2)(B) of the act states that the Commission shall take into account all relevant economic factors in considering threat of serious injury, including (but not limited to)--

1/ Low-carbon ferrochromium, the subject of the Commission's investigation No. TA-201-20 (USITC Publication 825), contains not over 3 percent by weight of carbon.

> . . . a decline in sales, a higher and growing inventory, and a downward trend in production, profits, wages, or employment (or increasing underemployment) in the domestic industry concerned . . .

Decline in sales.--Net sales of U.S. producers of high-carbon ferrochromium declined from $103.2 million in 1974 to $88.8 million in 1976. U.S. producers' shipments of high-carbon ferrochromium declined from 154,000 short tons, chromium content, to 112,000 short tons, during the same period.

Higher and growing inventories.--U.S. producers' inventories of high-carbon ferrochromium declined from 18,441 short tons, chromium content, on January 1, 1972, to 8,957 short tons on January 1, 1975. However, these inventories increased by about 350 percent to 40,964 short tons on January 1, 1977. Although U.S. producers reduced their inventories in January-June 1977, they still remain at an inordinately high level.

In relation to annual consumption of high-carbon ferrochromium, total yearend inventories (the sum of inventories held by U.S. producers, consumers, and importers) declined from 35 percent in 1972 to 19 percent in 1974 and then increased dramatically to 89 percent in 1975. In 1976 the ratio of total inventories to consumption declined by 15 percent, but remained at a very high level and one that could have an adverse impact on the domestic industry should future demand for high-carbon ferrochromium be met from these stocks rather than from new production.

Downward trend in production.--Figure 4 on page A-16 of the Commission's report shows a sharp decline in the 5-year and 10-year trends in domestic production of high-carbon ferrochromium. U.S. production dropped from 158,550 short tons, chromium content, in 1973 to 107,445 short tons in 1976. U.S. production in 1976 was less than it had been in any year since 1972 except for 1975, when the stainless steel industry reported a 48-percent drop in production. This decrease occurred despite the fact that more high-carbon

ferrochromium was used per ton of stainless steel produced in 1976 than in 1972 because of the continuing conversion of U.S. stainless steel production to the AOD process. 1/ Evidence received during the investigation shows that production of high-carbon ferrochromium in 1977 will be at approximately the same level as that reported in 1976.

U.S. producers' capacity to produce high-carbon ferrochromium declined from 222,004 short tons, chromium content, in 1972 to 191,335 short tons in 1976. Despite this decline in production capacity only 55 percent of such capacity was used in 1976 and in January-June 1977.

Downward trend in profit.--Data obtained by the Commission clearly show that there has been a downward trend in the profit U.S. producers on their high-carbon ferrochromium operations. The aggregate net operating profit for the domestic industry dropped from $21.2 million in 1974 to $7.9 million in 1976, or by 63 percent. Net operating profit in January-June 1977 was $1.3 million, 76 percent less than the profit of $5.4 million reported in January-June 1976. The domestic firms operated profitably in 1974 and 1975. However, three of the five U.S. producers had operating losses on their high-carbon ferrochromium operations in 1976 and four had operating losses in January-June 1977.

Downward trend in employment (or increasing underemployment).--The average number of production and related workers engaged in the production of high-carbon ferrochromium declined from 539 and 674 in 1972 and 1974, respectively, to 470 in January-June 1977. In addition, man-hours worked by production and related workers fell from 1.1 million hours in 1972 to 1.0 million hours in 1976. Except for 1975, when the full impact of the recession was felt by this industry, the the number of employees and man-hours during 1972-76 were lowest in 1976. The decline in the number of persons employed and the number of

1/ The Argon-Oxygen-Decarburization (AOD) process allows the stainless steel producer to subsitute, almost wholly, lower cost high-carbon ferrochromium for higher cost low-carbon ferrochromium to obtain the chromium input.

man-hours worked per employee (39.7 hours a week in 1976, compared with 39.9 hours a week in 1972 and 40.1 hours per week in 1974) has resulted in significant unemployment and underemployment within the industry. Workers in four of the five plants in the United States in which high-carbon ferrochromium is produced have been certified as being eligible to apply for adjustment assistance under the provisions of chapter 2 of title II of the Trade Act of 1974. That chapter requires, in part, that increased imports of articles like or directly competitive with those produced by the workers' firm must have contributed importantly to unemployment or the threat of unemployment in that firm.

Excess worldwide production capacity.--Estimated worldwide production capacity for high-carbon ferrochromium is 1.5 million short tons, chromium content, or 40 to 50 percent greater than current demand. This excess capacity poses a significant threat to the domestic industry because the United States is one of the primary markets for foreign-produced high-carbon ferrochromium. The U.S. import duty of 1.9 percent (ad valorem equivalent) is low compared with the 8-percent duty applicable to imports into other major foreign markets (Japan and the European Economic Community) and makes the United States an attractive market for foreign producers. Increased demand will not absorb the excess capacity until at least 1987, assuming an optimistic annual growth rate in the production of stainless steel with no further additions to ferrochromium capacity.

Prices.--There are few quality differences between comparable grades of imported and domestically produced high-carbon ferrochromium. Sales of high-carbon ferrochromium are made primarily on the basis of price. The dramatic decrease of about 23 percent in the price for high-carbon ferrochromium 1/ that occurred between

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1/ U.S.-produced high-carbon ferrochromium, over 65 percent chromium content (p. A-29 of the Commission's report).

January-March 1975 and January-March 1977 has contributed significantly to the declining profit in the U.S. industry. Recent market developments strongly indicate that the situation is worsening. Specifically, the price of 30 cents per pound, f.o.b. African port, announced by Union Carbide Corp. in October 1977 (and guaranteed through June 1978) for high-carbon ferrochromium being produced in its South African plant has added pressure on U.S. producers to lower their prices to meet foreign competition. In mid-November 1977 at least one major U.S. producer reduced its price for domestically produced high-carbon ferrochromium in order to remain competitive with imports of such ferrochromium. Clearly, the imminent threat of serious injury is shown when domestic prices are low and fail to generate an adequate return for the domestic industry and are further suppressed by the availability of large quantities of low-price foreign high-carbon ferrochromium.

Substantial cause

The third criterion which must be met before a domestic industry is eligible for import relief is that the increased imports must be a "substantial cause" of the threat of serious injury being suffered by the domestic industry. The Trade Act of 1974 contains both a definition of the term "substantial cause" and certain guidelines to be considered by the Commission in determining whether increased imports are a substantial cause of the threatened serious injury.

Section 201(b)(4) of the Trade Act defines the term "substantial cause" as "a cause which is important and not less than any other cause." The guidelines to be considered by the Commission with regard to substantial cause are contained in section 201(b)(2)(C), which states that in making its determination the Commission shall take into account all economic factors which it considers relevant, including (but not limited to)--

> . . . an increase in imports (either actual or relative to domestic production) and a decline in the proportion of the domestic market supplied by domestic producers.

In this case it has been suggested that any injury to the domestic industry producing high-carbon ferrochromium is attributable to the depressed condition of the U.S. stainless steel industry and not to increased imports. In our opinion the facts do not support this contention. The correlation between domestic consumption of high-carbon ferrochromium and U.S. production of stainless steel is high, as would be expected, but domestic producers of high-carbon ferrochromium have not been able to maintain their share of the stainless steel market because of the increased share of this market that has been captured by imports.

It should be noted that with the introduction of the AOD process, consumption of high-carbon ferrochromium has increased significantly. However, imports have accounted for almost all of the growth in consumption. In fact, domestic production is less today than it was before the introduction of the AOD process.

Annual U.S. imports of high-carbon ferrochromium more than doubled between 1972 and 1976 and increased as a share of the U.S. market from 32 percent to 70 percent in the same period. The ability of foreign producers to sell high-carbon ferrochromium at prices consistently lower than those of domestic producers during periods of weak demand not only enabled the foreign suppliers to increase their share of the domestic market, but was also a major factor in causing the substantial decline in U.S. producers' prices between 1975 and 1977. During this period, domestic producers' costs of producing high-carbon ferrochromium increased in such important categories as chromium ore and electric power, while prices for domestically produced high-carbon ferrochromium fell by about one-third between January 1975 and October 1977. It is clear that imports are the most important cause of the threat of serious injury to the domestic high-carbon ferrochromium industry.

Conclusion

In view of the foregoing, we have determined that the domestic industry producing high-carbon ferrochromium is being threatened with serious injury within the meaning of section 201 of the Trade Act of 1974, and, therefore, we have made an affirmative determination.

VIEWS OF CHAIRMAN DANIEL MINCHEW

On July 1, 1977, the United States International Trade Commission received a petition requesting an investigation under section 201(b)(1) of the Trade Act of 1974 with respect to imports of high-carbon ferrochromium. On July 11, 1977, the Commission instituted an investigation to determine whether high-carbon ferrochromium, provided for in item 607.31 of the Tariff Schedules of the United States, is being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

Section 201(b)(1) of the Trade Act requires that each of the following criteria be met if the Commission is to make an affirmative determination in this investigation and thus find a domestic industry eligible for import relief:

(1) Imports of the article concerned are entering the United States in increased quantities (either actual or relative to domestic production);

(2) The domestic industry producing an article like or directly competitive with the imported article is being seriously injured or threatened with serious injury; and

(3) Increased imports are a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article concerned.

Determination

On the basis of the evidence obtained during this investigation, I have determined that high-carbon ferrochromium, provided for in

item 607.31 of the TSUS, is not being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article. Specifically, I find that the third criterion as listed above, i.e., that of "substantial cause", has not been met.

Since the criteria of section 201(b)(1) are cumulative, the failure to satisfy any one of them necessitates a negative determination, no matter what the facts show with respect to the other criteria. Because my negative determination is based on a finding that the "substantial cause" criterion has not been met, the following discussion is limited to that criterion alone.

The domestic industry

In this investigation we have concluded that the relevant domestic industry consists of the U.S. facilities used in the production of high-carbon ferrochromium. Five firms produced high-carbon ferrochromium in five plants in 1977.

Substantial cause

Section 201(b)(4) of the Trade Act defines "substantial cause" as a "cause which is important and not less than any other cause." In addressing the question of substantial cause the House Ways and Means Committee stated:

> The Committee intends that a dual test be met -- imports must constitute an important cause and be no less important than any other single cause. For example, if imports were just one of many factors of equal weight, imports would meet the test of being "not less than any other cause" but it would be deemed an "important" cause. If there were any other cause more important than imports, then the second test of

> of being "not less than any other cause" would not be met. On the other hand, if imports were one of two factors of equal weight and there were no other factors, both tests would be met. 1/

The Senate Finance Committee report addressed the question by stating --

> The Committee recognizes that "weighing" causes in a dynamic economy is not always possible. It is not intended that a mathematical test be applied by the Commission. The Commissioners will have to assure themselves that imports represent a substantial cause or threat of injury, and not just one of a multitude of equal causes or threats of injury. It is not intended that the escape clause criteria go from one extreme of excessive rigidity to complete laxity. An industry must be seriously injured or threatened by an absolute increase in imports, and the imports must be deemed to be a substantial cause of the injury before an affirmative determination should be made. 2/

In determining "substantial cause" it is necessary, therefore, to consider two tests. First, a cause must be important, and second, a cause must be not less than any other cause.

I have concluded as a result of the evidence obtained by the Commission in the present investigation that there were 2 important factors which may have led to any decline that the domestic industry may have suffered: (a) the dominance of Airco, Inc. in the U.S. industry, and (b) the depressed level of U.S. stainless steel production.

Airco, Inc. accounts for more than half of the domestic production of high-carbon ferrochromium and is currently operating with a very satisfactory level of profit. It is my opinion that Airco is the only U.S. producer with furnaces that are competitive with those being built

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1/ Trade Reform Act of 1973: Report of the Committee on Ways and Means. H. Rept. No. 93-571 (93d Cong., 1st sess.), pp. 46-47.

2/ Trade Reform Act of 1974: Report of the Committee on Finance, S. Rept. No. 93-1298 (93d Cong., 2d sess.), pp. 121-122.

throughout the world, and that the other U.S. producers with their smaller, less efficient furnaces, cannot now and will not be able in the future to compete with Airco or other large world producers. As high-carbon ferrochromium is a commodity that is sold primarily on the basis of price, all producers must have similar pricing strategies. The small producers cannot cover costs of production with prices at present levels. I believe that the decline in profits they have experienced is the result of their small inefficient production facilities.

In addition, I feel that the low levels of U.S. stainless steel production since 1975 have also contributed to the problems encountered by the domestic high-carbon ferrochromium industry. As shown in figure 7 of the Commission's report (p. A-38), there is a direct relationship between U.S. stainless steel production and U.S. high-carbon ferrochromium production. This would be expected since the overwhelming use of high-carbon ferrochromium is in the production of stainless steel. I believe that U.S. producers of high-carbon ferrochromium will enjoy an expanding market for high-carbon ferrochromium as stainless steel production rises. Imports are taking less of the total market for high-carbon ferrochromium as evidenced by the decline in the ratio of imports to consumption from 99 percent in 1975 to 70 in 1976 and 57 percent in January-June 1977. Thus, U.S. producers are taking an increasing share of a growing market.

After considering all the information obtained by the Commission in the present investigation, I feel that I must conclude that increased imports are a less important cause of any "serious injury" which the

domestic industry may have suffered than is the dominance of Airco in the U. S. industry or the depressed level of U.S. stainless steel production. However, I do recognize that imports have been an important cause of serious injury, although not as important as the factors mentioned above. Accordingly, I conclude that the "substantial cause" criterion has not been met.

Conclusion

In view of the above, I have determined that the domestic industry producing high-carbon ferrochromium is not being seriously injured or threatened with serious injury, within the meaning of section 201 of the Trade Act of 1974, by increased imports of the material under investigation.

ADDITIONAL VIEWS OF CHAIRMAN DANIEL MINCHEW 1/ AND COMMISSIONERS GEORGE M. MOORE AND CATHERINE BEDELL ON REMEDY

It is our view that relief in the form of increased rates of duty should be granted to the domestic industry which the Commission has found to be threatened with serious injury. Our finding with respect to the specific relief necessary to prevent such injury is set forth in the findings and recommendations appearing on page 3 of this report.

In order to make the imported and domestically produced high-carbon ferrochromium price competitive and to permit U.S. producers to cover their production costs and to earn a reasonable profit, it is necessary to add a duty of 30 percent ad valorem to the present rate of duty on high-carbon ferrochromium for a period of 2 years. Thereafter, we recommend that this additional duty be reduced in stages so that over the 5-year period of relief that we have recommended the domestic industry will have an opportunity to adjust to whatever competitive conditions will exist after the termination of import relief.

1/ Chairman Minchew is of the opinion that the Trade Act requires that in all cases of affirmative findings there shall be two separate, distinct votes, and that each Commissioner has a duty to participate in the recommendation process regardless of the Commissioners' individual votes on the question of serious injury due to increased imports. Accordingly, Chairman Minchew, although having voted in the negative in this case on the question of substantial cause is participating in this recommendation because of the Commission's finding of serious injury resulting from increased imports. See Additional Views of Chairman Daniel Minchew with regard to Recommendations of Remedy, in Mushrooms: Report to the President on Investigation No. TA-201-17 under Section 201 of the Trade Act of 1974, USITC Publication 798, pp 31-33. Commissioner Minchew notes that Section 1801 of the Tax Reform Act of 1976 (Public Law 94-455) which amended the Trade Act clearly indicates that Commissioners should participate in remedy findings regardless of their position on the question of serious injury.

ADDITIONAL VIEWS OF COMMISSIONER ITALO H. ABLONDI ON REMEDY

Section 201(d) of the Trade Act requires that if the Commission makes an affirmative determination of serious injury or the threat thereof, it must find the amount of import relief necessary to prevent or remedy such injury, or, if it finds that adjustment assistance can effectively remedy the injury, it must recommend the provision of such assistance. Pursuant to this section, the remedies which may be recommended are (1) an increase in, or the imposition of, a duty or import restriction or (2) adjustment assistance. The purpose of such relief, as stated by the Senate Finance Committee in its report on the bill which became the Trade Act, is to give the domestic industry "sufficient time to adjust to freer international competition." 1/

It is my view that relief in the form of increased rates of duty should be granted to the domestic industry which the Commission has found to be threatened with serious injury. Specifically, I recommend that an additional duty of 8 percent ad valorem be applied to high-carbon ferrochromium, provided for in item 607.31 of the Tariff Schedules of the United States, for a period of 3 years. This additional duty will assist in eliminating the price difference between imported and domestically produced high-carbon ferrochromium that resulted from the October 1977 pricing action of a large foreign producer. Furthermore, this duty increase will approximately equalize the rates of duty applicable to high-carbon ferrochromium imports into the major import markets for this commodity, i.e., the European Economic Community, Japan, and the United States. Elimination of the incentive to export to the United States because of the present disparity in the rates of duty in consuming countries will enable U.S. producers to

1/ Trade Reform Act of 1974: Report of the Committee on Finance . . ., S. Rept. No. 93-1298 (93d Cong., 2d sess.), p. 119.

compete with imports and obtain a larger share of the U.S. market without undue burden upon consumers. This moderate increase in duty will not exclude imports from the U.S. market or create windfall profit for the dominant U.S. producer, but in my opinion it will prevent the serious injury that would occur in the future if remedial action is not taken now.

INFORMATION OBTAINED IN THE INVESTIGATION

Introduction

The United States International Trade Commission instituted the present investigation with respect to imports of high-carbon ferrochromium on July 11, 1977, following receipt on July 1, 1977, of a petition for import relief under section 201 of the Trade Act of 1974 (19 U.S.C. 2251) filed by the Committee of Producers of High Carbon Ferrochrome.

The Commission conducted the investigation to determine whether high-carbon ferrochromium, provided for in item 607.31 of the Tariff Schedules of the United States (TSUS), is being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

Notice of the institution of the investigation and of the public hearing to be held in connection therewith was issued on July 12, 1977, and notice of the time and place of the hearing was issued on September 16, 1977. 1/ The notices were posted at the Commission's offices in Washington, D.C., and New York City, and were published in the Federal Register on July 18, 1977 (42 F.R. 36896) and September 22, 1977 (42 F.R. 47890), respectively. The public hearing was held on October 11 and 12, 1977, in Pittsburgh, Pa.

The Commission instituted two previous investigations covering ferrochromium products. On May 21, 1973, following receipt of a petition filed by the Ferroalloys Association, the U.S. Tariff Commisssion (the former name of the U.S. International Trade Commission) instituted an investigation (No. TEA-I-28) under section 301(b)(1) of the Trade Expansion Act of 1962 to determine whether ferrochromium, ferromanganese, ferrosilicon, ferrosilicon chromium, ferrosilicon manganese, chromium metal, manganese metal, and silicon metal were, as a result in major part of concessions granted under trade agreements, being imported into the United States in such increased quantities as to cause, or threaten to cause, serious injury to the domestic industry or industries producing like or directly competitive products. On June 28, 1973, investigation No. TEA-I-28 was discontinued by the Commission at the request of the petitioner without a determination on its merits and without prejudice.

On January 21, 1977, following receipt of a petition filed by the Committee of Producers of Low Carbon Ferrochrome, the Commission instituted an investigation (No. TA-201-20) under section 201(b)(1) of the Trade Act of 1974 that resulted in a Commission determination 2/ on

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1/ Copies of the notices are presented in appendix A.

2/ Commissioner Moore dissenting and Vice Chairman Parker not participating.

July 11, 1977, that low-carbon ferrochromium was not being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

The information in this report was obtained from fieldwork, questionnaires sent to domestic producers, importers, and consumers, the Commission's files, briefs submitted by interested parties, and other Government agencies.

Description and Uses

High-carbon ferrochromium

High-carbon ferrochromium is one of several ferroalloys that are used as sources of chromium. 1/ It is defined in the TSUS as ferrochromium 2/ containing over 3 percent, by weight, of carbon. Commercial grades of high-carbon ferrochromium contain 52 to 72 percent chromium, 4.0 to 9.5 percent carbon, and 3.0 to 10.0 percent silicon, with the remainder largely iron. 3/

Method of production.—High-carbon ferrochromium is produced in submerged-arc electric furnaces (fig. 1), which are rated in terms of the power used in their operation. A small furnace would be rated at about 10 megawatts and could produce about 60 tons, gross weight, of high-carbon ferrochromium a day; a large furnace would be rated at about 60 megawatts and have a daily production capacity of about 360 tons. Heat is generated by passing an electric current through carbon electrodes that extend downward into the "charge mix" (thus the name "submerged-arc"). Electrodes range from about 25 inches in diameter in the small furnaces to 65 inches in diameter in the larger ones. The brick furnace is constructed above the floor of the foundry so that the molten high-carbon ferrochromium can be tapped from the bottom. It is "charged," or loaded, from the top through a system of conveyor belts and chutes, and may or may not be stoked by attendants (open-top furnaces are stoked, while covered furnaces are not). The charge consists basically of chromium ore and coke, although other additives such as wood chips and quartz gravel may be used in specific applications (wood chips

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1/ Chromium is a hard, grayish-white, corrosion-resistant metal with a very high melting point (3,434 degrees Fahrenheit). In the metallurgical industry it is used primarily in the production of stainless steel, other high-chromium specialty steels, and high-temperature alloys to provide strength, hardness, and resistance to corrosion, wear, and heat. Chromium is added to these items by means of chromium-containing ferroalloys.

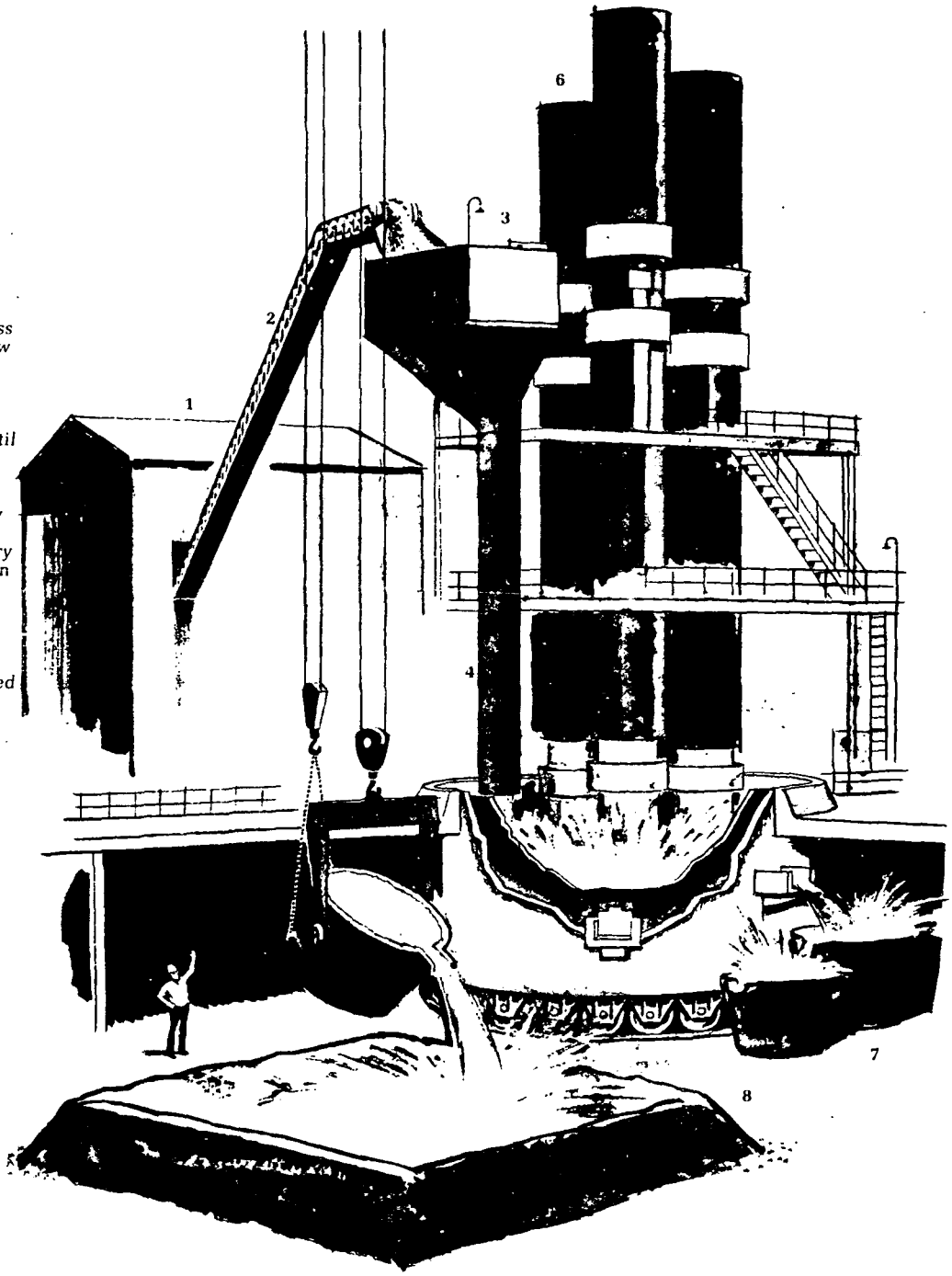
2/ Ferrochromium is defined in the TSUS as a ferroalloy which contains, by weight, over 30 percent of chromium but not over 10 percent of silicon.

3/ ASTM Specifications for Ferro-Alloys, March 1975, p. 12.

Figure 1.--High-carbon ferrochromium furnace.

The Making of Ferroalloys

The ferroalloy manufacturing process begins in the mix house **(1)** *where raw materials – ore, coke and other process ingredients – are precisely weighed and mixed. A conveyor* **(2)** *carries this mixture to mix bins* **(3)** *which store the raw materials until the furnace operator releases them through chutes* **(4)** *to the furnace* **(5)**. *Carbon electrodes* **(6)**, *which extend into the furnace, carry the electricity required to produce the extremely high temperatures (6000°F) necessary to carry out the ferroalloy production process. Finished ferroalloy, in the molten state, is tapped into a ladle* **(7)** *and poured into molds* **(8)** *for cooling. After solidifying, the ferroalloy is crushed, screened according to desired size and shipped to the customer.*



Source: Ferroalloys . . . adding character to steel, Airco, Inc., p.2.

are added to give the charge porosity, and quartz is used as a slag conditioner). As the ore and coke mixture is heated, the component metals melt and sink to the bottom of the furnace. Molten iron and chromium mix together in the lowest portion of the furnace to form high-carbon ferrochromium, and the slag floats on top of them. The molten high-carbon ferrochromium is tapped about every 1-1/2 to 2 hours and poured into molds, where it is cooled for several hours until it solidifies. It is then removed and broken or ground according to customer specification.

The tap hole (about 6 inches in diameter) is made by drilling through the refractory into the lower part of the furnace and is closed with a clay mixture when all the high-carbon ferrochromium and slag have been drained. As the electrodes are consumed with use (about 12 inches a day), it is important that the depth to which they penetrate the charge be carefully controlled. Should the distance from the bottom of the electrodes to the bottom of the furnace become too great, the ferrochromium will cool and solidify, thus making a tap extremely difficult. Electrode depth is monitored continuously and adjusted by attendants as necessary.

There are two types of electrodes in use in domestic foundries: the amorphous carbon electrode, which is purchased whole (about 5 to 6 feet in length) and the self-baking electrode, which is made in position from a carbon mix. All domestically produced amorphous carbon electrodes are made by a subsidiary of Union Carbide Corp.

Production control.--High-carbon ferrochromium is manufactured to very stringent specifications, with some customers (such as those making aircraft parts) requiring that impurities be controlled to the "parts per million" level. To achieve this level of control, most firms have installed sophisticated equipment that will analyze high-carbon ferrochromium samples almost instantaneously. Such samples may be taken with each tap or even more often, depending on customer order.

Plant managers frequently measure the efficiency of their operations in terms of the amount of chromium recovered from the chromium ore. Recovery rates are improved by reprocessing slag to remove chromium that did not sink to the bottom of the furnace. This becomes progressively more and more costly, however, and economic considerations usually dictate a maximum recovery rate of about 92 percent. Beyond this point the costs of reprocessing the slag exceed the value of the chromium recovered. Two other factors that affect recovery rates are the grade of ore used and its cost. As shown in the following table, the unit value of imported chromium ore 1/ rose dramatically after 1973, indicating that the importance of a high recovery rate has also increased.

1/ Domestic deposits of chromium ore (or "chromite") are small and of low grade, thus making the U.S. chromite-consuming industry dependent almost exclusively upon imports for its source of new supply.

Chromium ore: U.S. imports for consumption, 1972-76, January-June 1976, and January-June 1977

Period	Quantity	Value	Unit value 1/
	1,000 short tons, chromium content	Million dollars	Per short ton, chromium content
1972	441	28	$62.67
1973	388	22	56.30
1974	457	29	62.42
1975	499	61	121.51
1976	476	70	147.24
January-June--			
1976	255	36	141.24
1977	226	30	131.22

1/ Calculated from the unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Pollution control.—Ferrochromium furnaces generate a substantial amount of air pollution (primarily dust), and domestic producers have invested many millions of dollars in pollution abatement. U.S. producers reported that expenditures for pollution-control equipment represent about 15 to 20 percent of the cost of constructing a new furnace. Three of the most common types of pollution-control equipment are described below:

1. The baghouse filter cleans the furnace smoke by passing it through a series of filter bags, which collect impurities in much the same manner as a vacuum cleaner;

2. The electrostatic precipitator controls emissions by negatively charging dust particles and then attracting them to a positively charged plate. This type of system is not suitable for other than ferrochromium furnaces and thus limits furnace convertibility in plants where it is employed; and

3. The wet scrubber removes particles by spraying the furnace exhaust with water. The wet dust falls to the bottom of the unit, where it is collected and removed.

The dust that is removed from the furnace smoke is frequently packaged and sold as a filler material; current research projects are aimed at developing this "packaged smoke" into a fertilizer.

Low-carbon ferrochromium

Low-carbon ferrochromium is defined in the TSUS as ferrochromium not containing over 3 percent, by weight, of carbon. Commercial grades of this item contain 60 to 75 percent chromium, 0.01 to 0.75 percent carbon, and 1.0 to 8.0 percent silicon, with the remainder largely iron. 1/

Low-carbon ferrochromium is manufactured by two methods. The first involves a two-step process and the use of two types of electric furnaces. In one furnace, an open-arc tilting type, chromium ore and lime are melted. In the second furnace, a submerged-arc type, chromium ore, quartz, and coke are melted to make ferrosilicon chromium (also known as ferrochromium silicon and chrome silicide). 2/ The chromium ore-lime mixture is combined with the ferrosilicon chromium in a reaction vessel, and the resulting product is low-carbon ferrochromium.

The second method of manufacturing low-carbon ferrochromium is employed only by Union Carbide Corp. The starting material is standard high-carbon ferrochromium, which is ground to a fine powder, mixed with silica sand, and pressed into briquets. The briquets are placed on a flatcar and rolled into a horizontal, cylindrical, high-vacuum furnace approximately 140 feet long and 15 feet in diameter. The heating of the briquets in the vacuum results in low-carbon ferrochromium known in the trade as Simplex.

The basic difference between Simplex and conventional low-carbon ferrochromium is that Simplex contains less carbon (0.01 to 0.05 percent as opposed to 0.025 to 0.75 percent). 3/ Although some consumers prefer Simplex to conventional low-carbon ferrochromium, others do not, and both are generally considered to be competitive for most uses.

Uses of ferrochromium

The bulk of all ferrochromium is used in the manufacture of stainless steel. Chromium raw materials are available from the previously mentioned ferroalloys and from stainless steel scrap. The objective of stainless steel producers is to obtain the lowest cost chromium available, and the determining factors in obtaining the lowest cost chromium input are the relative prices of the alternative sources and power requirements. Thus, the initial steel melt will include as much stainless steel scrap as possible since it usually contains the lowest cost chromium units of alternative sources. The scrap addition will be followed with inputs of

1/ ASTM Specifications for Ferro-Alloys, March 1975, p. 12.
2/ Ferrosilicon chromium is defined in the TSUS as a ferroalloy which contains, by weight, over 30 percent of chromium and over 10 percent of silicon.
3/ ASTM Specifications for Ferro-Alloys, March 1975, p. 12.

high-carbon ferrochromium and low-carbon ferrochromium, in that order. In the final stages of melt preparation the mixture is analyzed, and, if necessary, low-carbon ferrochromium will be added to obtain the desired composition of the melt. In the conventional stainless-steel-making process, low-carbon ferrochromium is the principal chromium ferroalloy addition because it is not technologically feasible to remove the excess carbon contained in high-carbon ferrochromium.

After stainless steel production, the largest use of chromium-containing ferroalloys (although it is small in relation to total consumption of these alloys) is in the manufacture of superalloys. 1/ Superalloys, in turn, are used in such applications as jet-engine component parts. Additional smaller quantities of the chromium-containing ferroalloys are used in cast iron, welding and alloy hard-facing rods, and other miscellaneous products.

In 1968, Union Carbide Corp. introduced a stainless-steel-refining process which has significantly altered the use of high- and low-carbon ferrochromium. This process, known as Argon-Oxygen-Decarburization (AOD), allows the stainless steel producer, without prohibitive capital investments, to almost wholly substitute lower cost high-carbon ferrochromium for higher cost low-carbon ferrochromium to obtain the chromium input. All major domestic stainless steel producers have installed, or are in the process of installing, AOD capacity.

The following tabulation, which is based on consumption data from official statistics of the U.S. Bureau of Mines and stainless steel production data from the American Iron and Steel Institute, illustrates the change in the consumption pattern of the chromium-containing ferroalloys which has occurred as a result of stainless steel refining by the AOD process (in pounds of ferroalloy consumed per ton of stainless steel produced):

Ferroalloy	1968	1976
Low-carbon ferrochromium	115	41
High-carbon ferrochromium	67	132
Ferrosilicon chromium	34	27
Total	216	200

As the tabulation indicates, there has been an absolute decline in total consumption of chromium-containing ferroalloys per ton of stainless steel produced. This has resulted from an increase in the amount of stainless steel scrap consumed in the melt, which depends on the availability of the scrap and its price relative to prices of chromium-containing ferroalloys.

1/ Superalloys are alloys developed for very high temperature service where relatively high stresses are encountered and oxidation resistance is frequently required.

High-carbon ferrochromium is also used as a raw material in the production of chromium metal. It is ground and dissolved in an acid solution, and then the chromium is plated onto sheets of stainless steel through electrolysis.

Substitutability of the chromium-containing ferroalloys

The chromium-containing ferroalloys, although produced from essentially the same raw materials, are different in two principal respects--chemical composition and price.

With regard to chemical composition, the high-carbon content of high-carbon ferrochromium limits the amount of the ferroalloy which may be added to the melt in the conventional stainless-steel-refining process. If high-carbon ferrochromium were substituted entirely for low-carbon ferrochromium in that process, it would not be feasible to remove all the excess carbon, and the resulting stainless steel product would be unsuitable for use.

The ability to remove excess carbon feasibly was achieved with the introduction of the AOD stainless-steel-refining process. As a result, high-carbon ferrochromium became the principal chromium-containing ferroalloy addition to the stainless steel melt. Low-carbon ferrochromium can be substituted for high-carbon ferrochromium in both the AOD and the conventional processes; however, it would not be in the economic interest of stainless steel producers to effect such a substitution because high-carbon ferrochromium is substantially less expensive.

Ferrosilicon chromium differs from high-carbon and low-carbon ferrochromium in use as well as in chemical composition and price. This alloy is added to the stainless steel melt principally as a vehicle to return chromium oxide which has accumlated in the melt slag to the melt as chromium metal. Neither high-carbon nor low-carbon ferrochromium is capable of satifactorily performing this function.

U.S. Government stockpile programs

Stockpiles of various "critical" materials are maintained by the U.S. Government (General Services Administration) in order to insure availability should normal international trade be interrupted. At the end of June 1977, 402,695 short dry tons (SDT) of high carbon ferrochromium and 3,049,156 SDT of metallurgical-grade chromite were held in stockpile; 3,401 SDT of the chromite stockpile is committed under long-term contract for sale. There is currently no authorization to dispose of any high-carbon ferrochromium held in stockpile, and no such authorization is anticipated. These stockpiles are generally located close to ferrochromium plants, and, in fact, land for storage is sometimes leased from producers.

U.S. Tariff Treatment

High-carbon ferrochromium is classified under TSUS item 607.31 with a column 1 rate of duty of 0.625 cent per pound on chromium content. This rate has been in effect since January 1, 1948. The ad valorem equivalent of the current rate based on imports in 1976 was 1.9 percent. Low-carbon ferrochromium is classified under TSUS item 607.30, with a column 1 rate of duty of 4 percent ad valorem. The current rate represents a reduction, pursuant to the Kennedy round negotiations, from 8.5 percent ad valorem applicable on December 31, 1967. High-carbon ferrochromium is not designated as an eligible article for purposes of the Generalized System of Preferences.

History of the Rhodesian Chrome Embargo

On December 16, 1966, the United Nations Security Council, with the affirmative vote of the United States, adopted Resolution 232, which called upon all U.N. members to prevent the--

> [importation] into their territories of . . . chrome . . . originating in Southern Rhodesia and exported therefrom after [December 16, 1966].

In compliance with Resolution 232, on December 19, 1966, the President issued Executive Order 11322 1/ prohibiting the importation into the United States of, among other products, Rhodesian chrome or products made therefrom in Rhodesia or elsewhere.

The embargo on Rhodesian chrome remained in effect until January 1, 1972, the effective date of the so-called Byrd amendment to section 10 of the Strategic and Critical Materials Stock Piling Act. The Byrd amendment 2/ provides in pertinent part that--

> Notwithstanding any other provision of law . . . the President may not prohibit or regulate the importation into the United States of any material determined to be strategic and critical pursuant to the provisions of this Act, if such material is the product of any foreign country or area not listed as a Communist-dominated country or area in general headnote 3(d) of the Tariff Schedules of the United States . . . for so long as the importation into the United States of material of that kind which is the product of such Communist-dominated countries or areas is not prohibited by any provision of law.

1/ 3 CFR 606.
2/ 50 U.S.C. 98h-1.

Since Rhodesia is not a Communist-dominated country, and inasmuch as the United States imported substantial quantities of strategic and critical chromium-bearing materials from Communist countries (notably the U.S.S.R.), the Byrd amendment implied the resumption of Rhodesian chromium exports to the United States.

The Byrd amendment was in effect with respect to Rhodesian chrome until the passage, on March 18, 1977, of Public Law 95-12, 1/ an amendment to section 5 of the United Nations Participation Act of 1945. 2/ That amendment provides in part that--

> Any Executive order . . . which applies measures against Southern Rhodesia pursuant to any United Nations Security Council Resolution may be enforced, notwithstanding the provisions of any other law.

Public Law 95-12 further provides that so long as the U.N. economic sanctions with regard to Rhodesia remain in effect, shipments of chromium-containing steel mill products may not be released from customs custody for entry into the United States unless a certificate of origin with respect to each such shipment has been filed with the Secretary of the Treasury and such certificate establishes that the chromium contained in the shipment is not of Rhodesian origin.

Public Law 95-12 and the Department of the Treasury regulations implementing that statute are set out in appendix B.

U.S. Producers

Five U.S. firms produced high-carbon ferrochromium in 1977:

Airco, Inc.—production facilities in Charleston, S.C.; 3/
Chromium Mining & Smelting Corp.—production facilities in Woodstock, Tenn.; 3/
Interlake, Inc.—production facilities in Beverly, Ohio;
Satralloy, Inc.—production facilities in Steubenville, Ohio; 3/ and
Union Carbide Corp.—production facilities in Marietta, Ohio.

The Alloys Division of Airco, Inc., is by far the largest domestic producer of high-carbon ferrochromium, with an annual capacity of more than *** short tons, chromium content; in 1976 Airco's production amounted to *** tons or *** percent of total U.S. production. Airco has subsidiary plants in Sweden, the United Kingdom, and West Germany, but ***.

1/ 91 Stat. 22.
2/ 22 U.S.C. 287c.
3/ Petitioners.

Chromium Mining & Smelting Corp. is a wholly owned subsidiary of Chromasco, Ltd., Montreal, Quebec. At present, high-carbon ferrochromium is produced only in Tennessee, ***. In 1976, Chromium Mining & Smelting accounted for *** percent of total U.S. high-carbon ferrochromium production and had a production capacity of *** tons.

Interlake, Inc., produces high-carbon ferrochromium in its Globe Metallurgical Division in Beverly, Ohio. Interlake accounted for *** percent of U.S. high-carbon ferrochromium production and had a capacity of nearly *** tons in 1976.

Satralloy, Inc., is a subsidiary of Satra Corp., a trading firm which is the principal domestic supplier of chromium ore from the U.S.S.R. In 1973, Satra Corp. purchased a ferroalloy plant formerly owned by Foote Mineral Co. and established Satralloy, Inc., as an operating subsidiary. Satralloy, Inc., specializes in the production of low-carbon ferrochromium and ferrosilicon chromium, but had a high-carbon ferrochromium production capacity of about *** tons in 1976.

The Metals Division of Union Carbide Corp. had a high-carbon ferrochromium capacity of about *** tons in the United States, but used only *** of that capacity in 1976. Union Carbide affiliates operate high-carbon ferrochromium plants in Rhodesia and the Republic of South Africa.

Channels of Distribution

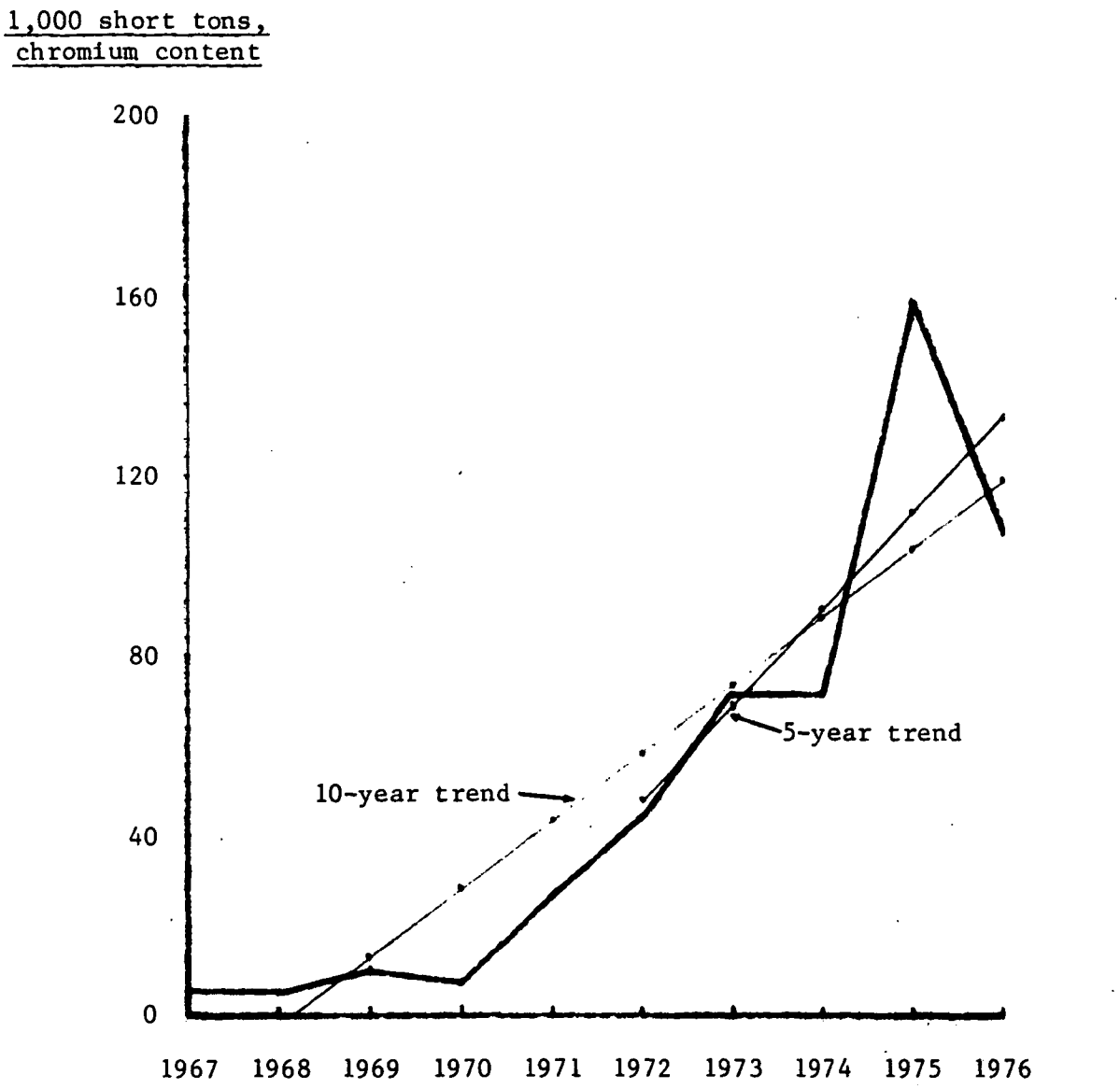
Domestically produced high-carbon ferrochromium is marketed either directly by the producer or through sales agents. Freight is normally equalized with the nearest competitive producing point, and prices may be quoted on an f.o.b., point of shipment, basis or on a delivered basis. Shipments are made by water, rail, or truck depending on available facilities. Imported high-carbon ferrochromium is generally marketed through brokers, although at least one consumer and two producers import directly from affiliated overseas plants.

The Question of Increased Imports

U.S. imports

The trend in imports of high-carbon ferrochromium is sharply upward though the quantity entered in 1976 was substantially below the record level in 1975 (fig. 2). Importers of high-carbon ferrochromium indicate that the large increase in imports in 1975 was primarily due to an overestimation of U.S. demand. Stainless steel production had almost doubled from 1971 to 1974, and the outlook was for a continuation of this trend. In 1975, when stainless steel production fell by 48 percent, high-carbon ferrochromium importers, as well as producers and consumers, were left with huge inventories.

Figure 2.--High-carbon ferrochromium: U.S. imports for consumption, 1967-76.



Source: Complied from official statistics of the U.S. Department of Commerce.

The Republic of South Africa and Rhodesia have traditionally been the principal sources of imported high-carbon ferrochromium; this situation continued in January-June 1977 despite the U.S. embargo on imports from Rhodesia. It is anticipated that imports of Rhodesian high-carbon ferrochromium will decline both absolutely and as a share of total imports in July-December 1977 and that imports of South African high-carbon ferrochromium will rise dramatically (the annual capacity of Union Carbide's new South African high-carbon ferrochromium plant alone is greater than total high-carbon ferrochromium imports from the Republic of South Africa in 1976).

Import data on high-carbon ferrochromium are detailed by sources in table 1, appendix C, and summarized on page A-14. Import data on low-carbon ferrochromium are presented in table 2.

The ratio of U.S. imports to production

The trend in the ratio of U.S. imports of high-carbon ferrochromium to U.S. production is very similar to the trend in absolute imports, as shown in figure 3. The ratio of imports to production was 100 percent in 1976, about half the ratio in 1975 but more than twice the ratio in any other year since 1967. In January-June 1977, the ratio rose to 117 percent.

The Question of Serious Injury to the Domestic Industry

U.S. production

The trend in U.S. production of high-carbon ferrochromium (fig. 4) is downward despite a substantial increase in 1976 over the 10-year production low of 78,071 tons in 1975. Production figures have shown strong cyclical variation since 1970. In January-June 1977, production increased 11 percent compared to what it was in January-June 1976. Additional production data are presented in table 3.

Utilization of productive facilities

Domestic producers operated at about 56 percent of capacity in 1976, compared with 41 percent in 1975 and 88 percent in 1974. As shown on page A-17, production capacity fell in 1973 and 1974 before leveling off at about 190,000 tons per year in 1975 and 1976. The drop in capacity between 1972 and 1976 is accounted for almost entirely by Union Carbide Corp., which cut its capacity by nearly ***. The company has indicated that ***.

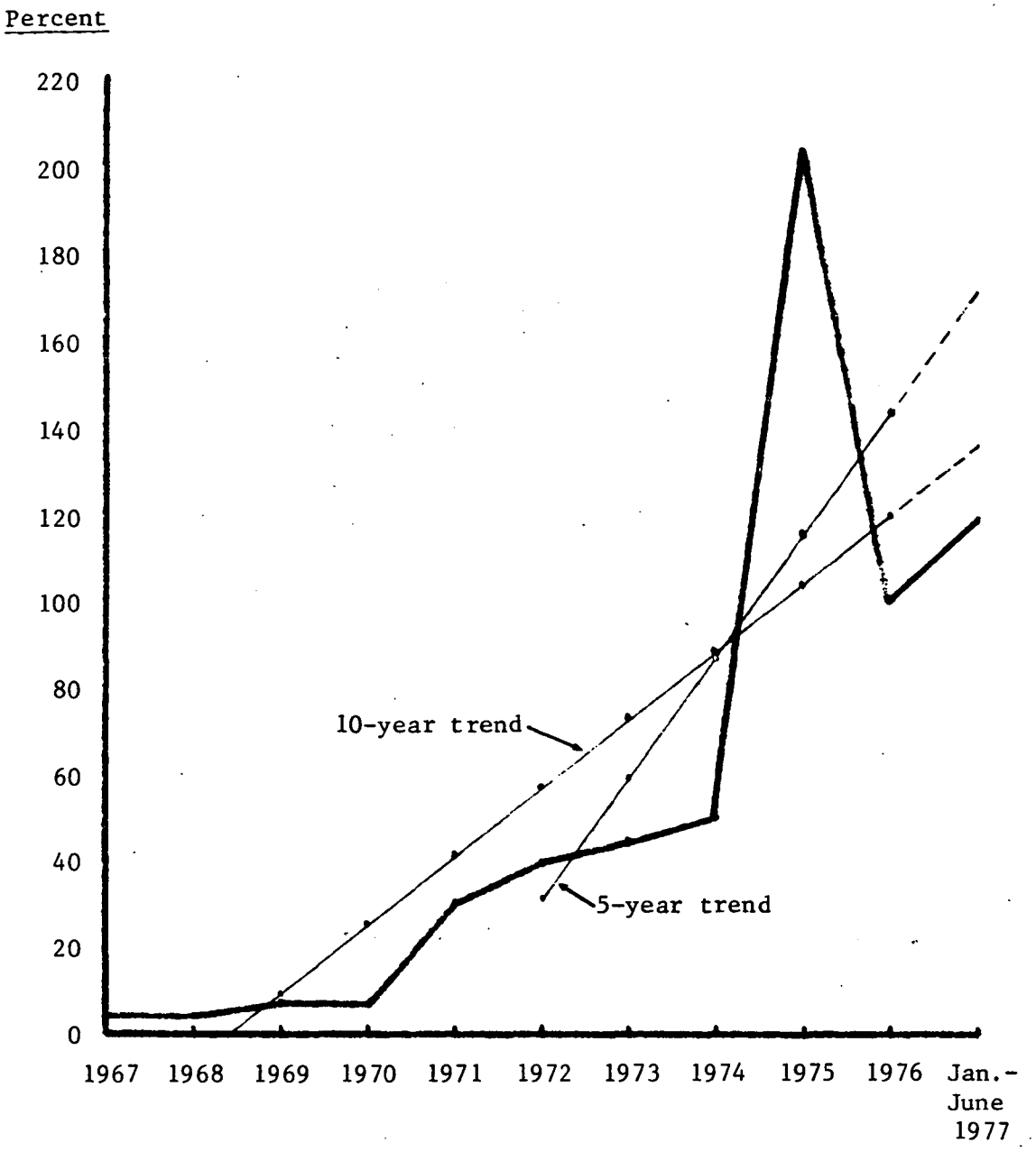
High-carbon ferrochromium: U.S. imports for consumption and production, by quarters, January 1972-June 1977

Period	Imports	Production	Ratio of imports to production
	Short tons, chromium content	Short tons, chromium content	Percent
1972:			
January-March	8,838	25,610	34.5
April-June	10,370	31,649	32.8
July-September	10,195	29,269	34.8
October-December	14,615	26,259	55.7
Total	44,017	112,805	39.0
1973:			
January-March	22,812	38,688	59.0
April-June	9,957	40,164	24.8
July-September	16,531	43,569	37.9
October-December	20,233	42,892	47.2
Total	71,916	158,550	45.4
1974:			
January-March	17,875	34,919	51.2
April-June	14,047	37,262	37.8
July-September	14,911	37,428	39.8
October-December	24,485	37,379	65.5
Total	71,319	144,910	49.2
1975:			
January-March	47,875	34,828	137.5
April-June	50,407	19,783	254.8
July-September	25,198	13,594	185.4
October-December	34,571	9,243	374.0
Total	158,055	78,071	202.5
1976:			
January-March	28,820	24,457	117.8
April-June	22,467	27,697	81.1
July-September	41,148	36,465	112.8
October-December	14,872	18,826	79.0
Total	107,307	107,445	99.9
1977:			
January-March	28,676	22,869	125.4
April-June	39,178	34,905	112.2
Total	67,854	57,774	117.4

Source: Compiled from official statistics of the U.S. Department of Commerce and the U.S. Bureau of Mines.

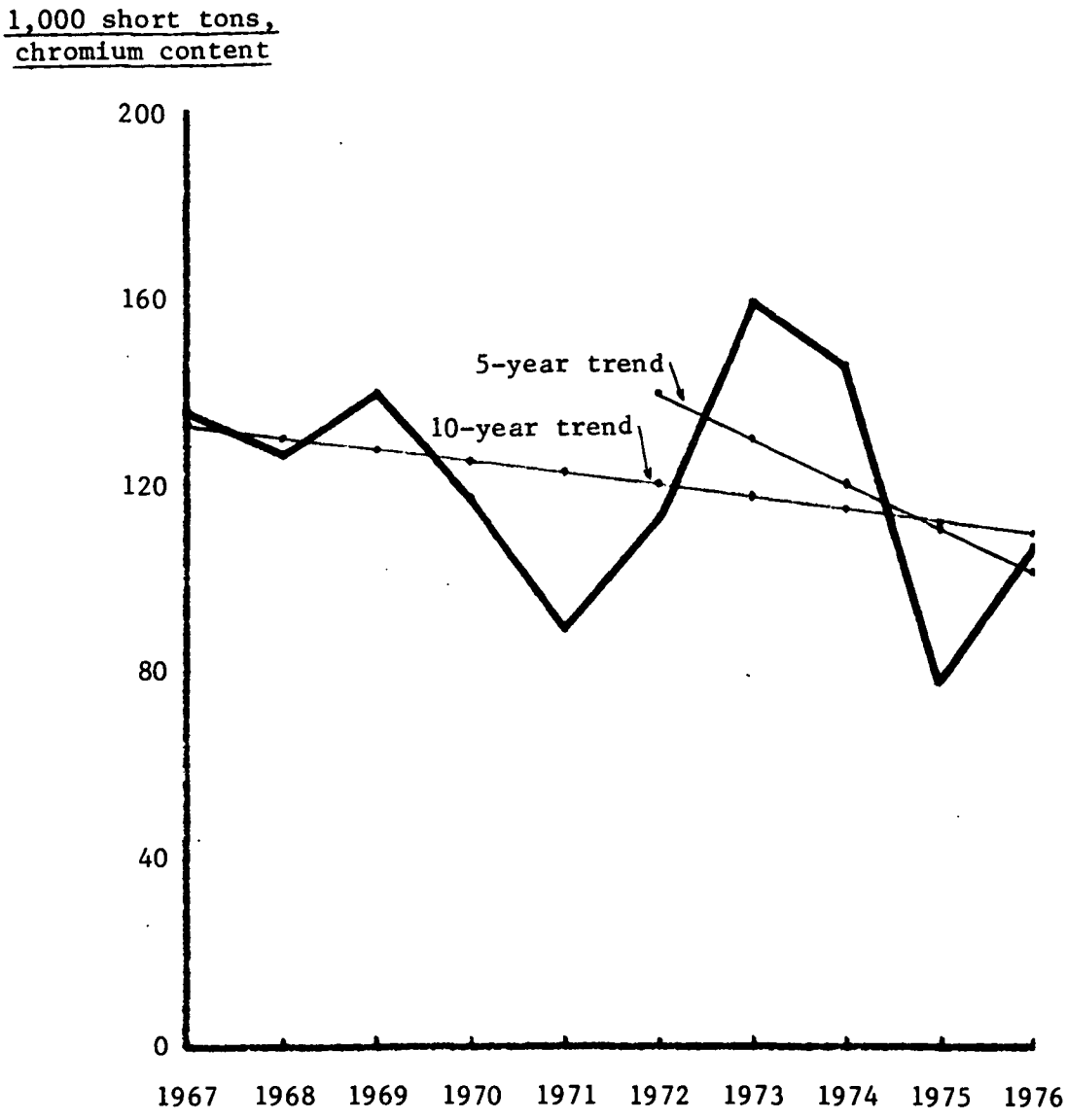
Note.--Because of revisions in annual data, quarterly figures may not add to the totals shown.

Figure 3.--High-carbon ferrochromium: Ratios of U.S. imports to production, 1967-76 and January-June 1977.



Source: Compiled from official statistics of the U.S. Department of Commerce and the U.S. Bureau of Mines.

Figure 4.--High-carbon ferrochromium: U.S. production, 1967-76.



Source: Compiled from official statistics of the U.S. Bureau of Mines.

High-carbon ferrochromium: U.S. production capacity, 1/ 1972-76, January-June 1976, and January June 1977

Period	Production capacity	Ratio of production to capacity
	Short tons, chromium content	Percent
1972	222,004	51
1973	193,906	82
1974	164,801	88
1975	188,763	41
1976	191,335	56
January-June--		
1976	104,610	50
1977	104,610	55

1/ Based on each firm's maximum potential output with a product mix which permits facilities to be operated under optimum conditions.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission and from official statistics of the U.S. Bureau of Mines.

Furnace convertibility

Submerged-arc furnaces are generally designed to make high-carbon ferrochromium, ferrosilicon chromium, high-carbon ferromanganese, and ferrosilicon without requiring any major furnace modifications. It is generally advisable, however, to perform some maintenance, such as hearth digout, during any conversion. From January 1972 through June 1977, domestic producers reported a total of five furnace conversions, as follows: High-carbon ferrochromium to high-carbon ferromanganese (1973), ferrosilicon to high-carbon ferrochromium (1974), ferrosilicon chromium to high-manganese blocking chrome (1975), high-manganese blocking chrome to high-carbon ferromanganese (1975), and high-carbon ferrochromium to ferrosilicon (1977).

It is usually not economical to produce ferrosilicon in small- or medium-size furnaces. Hence, for companies without large furnaces, such as ***, the option of changing the product mix in times of changing demand is limited.

U.S. producers' shipments

U.S. producers' shipments of high-carbon ferrochromium during 1972-76 followed generally the same trend as production (table 4 and

the table shown below). Shipments in January-June 1977 were up about 30 percent compared with those in the corresponding period of 1976.

Ferrochromium: U.S. producers' shipments, by types, 1972-76, January-June 1976, and January-June 1977

Type	1972	1973	1974	1975	1976 1/	January-June-- 1976 1/	January-June-- 1977 1/
	Quantity (1,000 short tons, chromium content) 2/						
High-carbon ferrochromium	108	171	154	78	112	52	68
Low-carbon ferrochromium	55	73	65	33	22	13	9
Total	163	243	220	111	134	65	77
	Value (million dollars)						
High-carbon ferrochromium	40	73	92	78	85	42	52
Low-carbon ferrochromium	39	46	71	56	36	21	14
Total	78	119	163	135	121	63	66
	Unit value (cents per pound, chromium content) 3/						
High-carbon ferrochromium	18	21	30	50	38	40	38
Low-carbon ferrochromium	35	32	55	86	83	82	80

1/ Values estimated by the staff of the U.S. International Trade Commission on the basis of data submitted in response to questionnaires.

2/ Estimated from gross weight based on average chromium content of production as reported by the U.S. Bureau of Mines.

3/ Calculated from the unrounded figures.

Source: Compiled from official statistics of the U.S. Bureau of Mines, except as noted.

Note.--Because of rounding, figures may not add to the totals shown.

U.S. inventories

Producers' inventories.—U.S. producers' inventories of high-carbon ferrochromium rose more than 3-1/2 times from January 1, 1975, to January 1, 1977, but then fell about 25 percent to 30,721 tons on July 1, 1977 (see fig. 5, table 5, and the table shown below). Inventories peaked at more than 51,000 tons on October 1, 1976. As a share of shipments, producers' inventories jumped dramatically in 1975 and remained high in 1976. The substantial rise in inventory levels in 1975 is attributed to an overestimation of demand throughout the industry. Importers and consumers had made substantial advance commitments to purchase high-carbon ferrochromium in 1974, when demand for stainless steel was at a very high level, but by the second quarter of 1975, it was clear that stainless steel production was off sharply, and high-carbon ferrochromium inventories grew quickly at the producer, importer, and consumer levels.

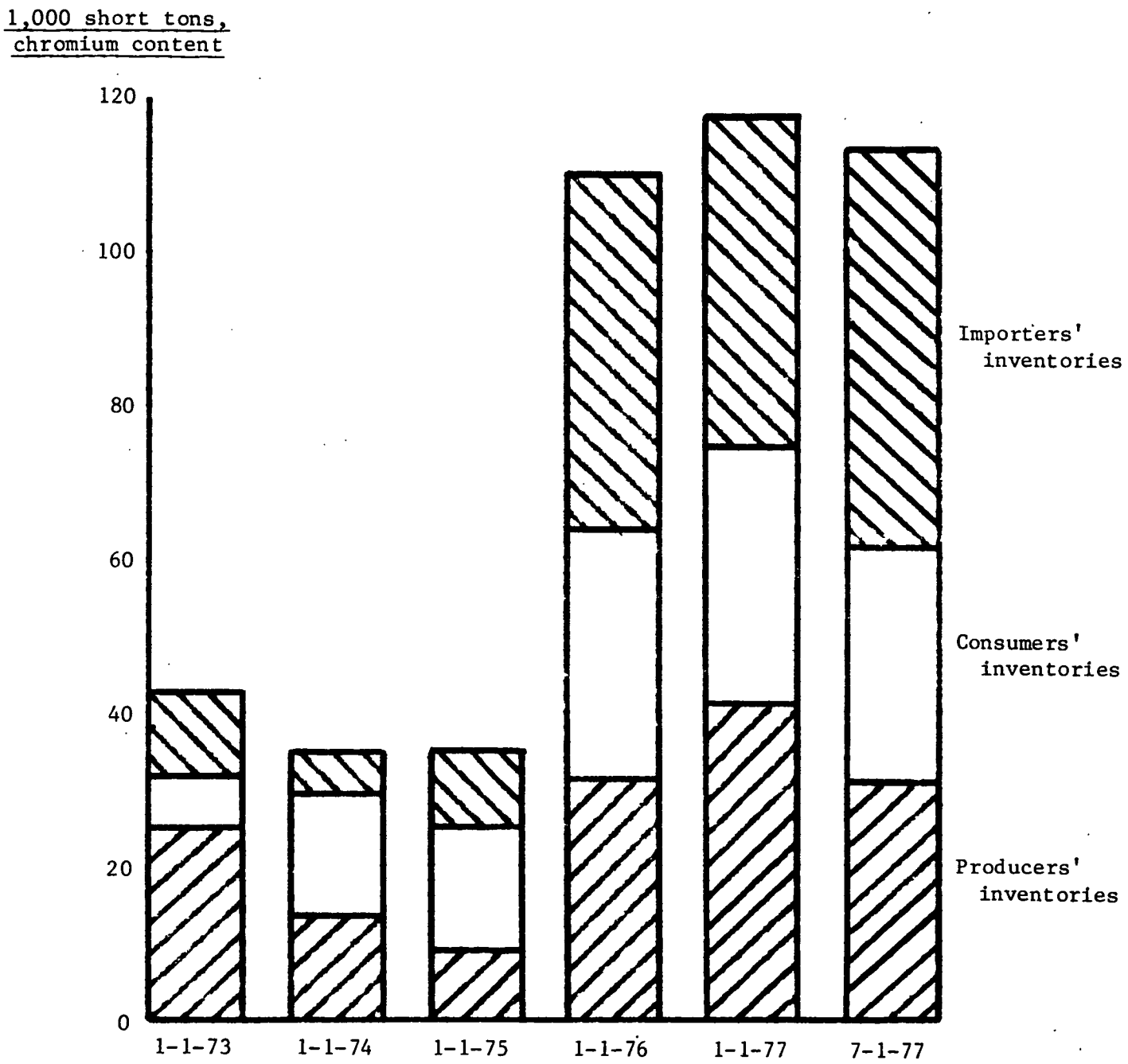
High-carbon ferrochromium: U.S. producers' shipments and end-of-period inventories, 1972-76, January-June 1976, and January-June 1977

Period	Producers' shipments	Producers' end-of-period inventories	Ratio of inventories to shipments
	Short tons, chromium content	Short tons, chromium content	Percent
1972	108,207	24,627	23
1973	170,573	13,518	8
1974	154,415	8,957	6
1975	78,412	31,022	40
1976	111,531	40,964	36
January-June			
1976	52,225	39,817	1/
1977	67,900	30,721	1/

1/ Not comparable with full-year shipment data.

Source: Compiled from official statistics of the U.S. Bureau of Mines.

Figure 5.--High-carbon ferrochromium: U.S. inventories, by types, January 1, 1973-77, and July 1, 1977.



Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission and from official statistics of the U.S. Bureau of Mines.

Importers' inventories.—High-carbon ferrochromium inventories held by importers also increased more than 3-1/2 times from January 1, 1975, to January 1, 1977 (see table below), but continued increasing in January-June 1977 to 52,260 tons on July 1, 1977, their highest level in the period under study.

High-carbon ferrochromium: U.S. importers' shipments and end-of-period inventories, 1972-76, January-June 1976, and January-June 1977

Period	Importers' shipments 1/	Importers' end-of-period inventories	Ratio of inventories to shipments
	Short tons, chromium content	Short tons, chromium content	Percent
1972	39,311	11,049	28
1973	77,201	5,764	7
1974	67,111	9,972	15
1975	121,978	46,049	38
1976	109,670	43,686	40
January-June--			
1976	54,831	42,505	2/
1977	58,099	52,260	2/

1/ Derived by adjusting total imports for changes in inventories.
2/ Not comparable with full-year shipment data.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission, except as noted.

Consumers' inventories.—Inventories held by consumers increased annually from 1972 to 1976, when they peaked in the fourth quarter at 33,459 tons. By the end of June 1977, consumers' inventories had fallen to 30,929 tons, as shown in the following table.

High-carbon ferrochromium: U.S. consumption and consumers' end-of-period inventories, 1972-76, January-June 1976, and January-June 1977

Period	Consumption	Consumers' end-of-period inventories	Ratio of inventories to consumption
	Short tons, chromium content	Short tons, chromium content	Percent
1972	122,521	7,231	6
1973	168,539	15,642	9
1974	188,728	16,225	9
1975	123,772	32,967	27
1976	155,800	33,459	22
January-June--			
1976	81,776	31,399	1/
1977	102,381	30,929	1/

1/ Not comparable with full-year consumption data.

Source: Compiled from official statistics of the U.S. Bureau of Mines.

U.S. exports

Exports of high-carbon ferrochromium have generally been small in relation to total U.S. producers' shipments (about 5 percent), but during 1973 they exceeded 15,000 tons (about 10 percent of shipments), primarily because price controls in the United States made foreign sales more attractive. Export data are presented in table 6.

Employment

The average number of persons engaged in the manufacture of high-carbon ferrochromium is shown in detail in table 7 and summarized in the following table.

Average number of employees engaged in the manufacture of high-carbon ferrochromium, total and production and related workers, 1972-76, January-June 1976, and January-June 1977

Period	All employees	Production and related workers
1972	633	539
1973	774	682
1974	770	674
1975	538	460
1976	600	502
January-June--		
1976	574	474
1977	592	470

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

The following tabulation shows the four domestic producers that petitioned the U.S. Department of Labor for adjustment assistance for their workers who were adversely affected by imports of all ferrochromium alloys during January 1975-August 1977:

Company	Number of workers involved	Status of petition
Satralloy, Inc	170	Certified, Aug. 24, 1976
Interlake, Inc	120	Certified, Nov. 12, 1976
Airco, Inc	120	Certified, Mar. 29, 1977
Union Carbide Corp	225	Certified, Aug. 29, 1977

Man-hours.—Man-hours worked by production and related workers engaged in the manufacture of high-carbon ferrochromium are detailed in table 8 and summarized as follows:

Period	Man-hours (thousand)
1972	1,117
1973	1,424
1974	1,405
1975	930
1976	1,036
January-June--	
1976	485
1977	520

Productivity.—The average amount of high-carbon ferrochromium produced per man-hour showed little variation throughout the January 1972-June 1977 period except in 1975, when productivity was down about 18 percent owing to inefficient levels of capacity utilization. In 1976, productivity recovered to about the same level as in 1974, as indicated in the following tabulation (in tons, chromium content):

Period	Output (per man-hour)
1972	0.101
1973	.111
1974	.103
1975	.084
1976	.104
January-June--	
1976	.108
1977	.111

Wages.—Earnings received by workers producing high-carbon ferrochromium are similar to earnings received by workers in the steel industry. Workers in both industries belong to the United Steel Workers of America. Average hourly and weekly earnings for U.S. production workers producing durable goods, primary metals, and basic steel products, are shown in table 9. 1/ Average hourly earnings of U.S. production workers producing basic steel products increased 85 percent from 1970 to 1976, or more than 9 percent a year.

Real hourly and weekly earnings of U.S. production workers (table 10) were derived from the figures in table 9 by using the Consumer Price Index as a price deflator. Real hourly earnings increased from 1970 to 1977,

1/ Earnings of U.S. production workers producing high-carbon ferrochromium and other ferroalloys are included in basic steel products.

but at a lower rate than unadjusted earnings. For basic steel products, real hourly earnings increased 25 percent from 1970 to 1976, or a little more than 3 percent a year.

Prices

Quarterly price data on imported and domestically produced high-carbon ferrochromium are presented, by chromium specification, in the tables on pages A-26 through A-29 and a price comparison is shown in figure 6. 1/ The prices shown in figure 6 are those for high-carbon ferrochromium containing more than 65 percent chromium and are believed to be most suitable for comparison because they represent the grade of high-carbon ferrochromium that is produced in most U.S. plants (all 5 in 1976) and imported by the most importers (11 in 1976). The graph shows that average prices for the greatest volume of imported high-carbon ferrochromium sold were generally lower than the comparable prices of U.S.-produced high-carbon ferrochromium during January 1972-December 1973 and January 1976-June 1977, but that they exceeded those for domestically produced high-carbon ferrochromium during January 1974-December 1975. Prices peaked for both imported and U.S.-produced high-carbon ferrochromium in the first two quarters of 1975 and then fell sharply during the next three quarters. The period during which prices of imported high-carbon ferrochromium exceeded prices of U.S.-produced high carbon ferrochromium is considered atypical. The combination of high actual demand in 1974 and high forecast demand in 1975 for high-carbon ferrochromium resulted in a sellers' market and artificially high prices, especially for the imported product. When it became clear that the optimistic projections for demand in 1975 were vastly overstated, prices tumbled and resumed the relationship that existed prior to 1974, i.e., prices for imported high-carbon ferrochromium were generally lower than prices for the comparable U.S.-produced product. Prices for both imported and domestically produced high-carbon ferrochromium continued to decline in July-October 1977, reaching their lowest level since mid-1974.

On October 13, 1977, Union Carbide Corp. lowered its selling price for high-carbon ferrochromium produced in its South African plant to 30 cents per pound, f.o.b., African port. This price is equivalent to about 33 to 34 cents per pound, delivered to their customers' U.S. plants. The new price, which is firm (not subject to escalation) through the first half of 1978, represents a 6- to 8-percent decrease in the net price of imported high-carbon ferrochromium of 52 to 55 percent chromium content. As of mid-November 1977 at least one major U.S. producer had made a comparable percentage reduction in its price for domestically produced high-carbon ferrochromium in order to remain competitive with the imported material.

1/ See table 11 for prices of low-carbon ferrochromium.

High-carbon ferrochromium: Ranges of lowest net prices for the imported and U.S.-produced products, by chromium specifications and by quarters, January 1972-June 1977

(Cents per pound)

Period	Over 65 percent chromium		58 percent-64 percent chromium		52 percent-55 percent chromium	
	Imported	U.S.-produced	Imported	U.S.-produced	Imported	U.S.-produced
1972:						
Jan.-Mar---	15-23	17-23	1/	24-26	16-18	1/
Apr.-June--	16-23	14-23	16-22	24-26	15-18	1/
July-Sept--	16-23	15-20	17	23-24	14-17	18
Oct.-Dec---	15-23	15-19	17	22-24	14-17	16
1973:						
Jan.-Mar---	16-22	13-19	15-19	24	14-19	16
Apr.-June--	16-22	13-20	18-20	24	15-19	18
July-Sept--	16-23	16-23	1/	25-27	15-19	20
Oct.-Dec---	20-25	16-23	21	25	15-20	20
1974:						
Jan.-Mar---	20-55	12-23	30	25	15-21	20
Apr.-June--	18-65	19-28	1/	41	15-53	27
July-Sept--	28-89	25-35	29-90	43	18-29	31
Oct.-Dec---	36-95	25-40	30-90	46	18-35	36
1975:						
Jan.-Mar---	53-95	32-53	55-100	59	25-74	49
Apr.-June--	45-78	30-57	52-90	59	25-54	49
July-Sept--	45-82	32-57	32-90	59	25-52	49
Oct.-Dec---	38-82	40-56	32-90	59	25-45	49
1976:						
Jan.-Mar---	35-50	21-45	34-55	59	36-50	44
Apr.-June--	28-51	18-45	34-49	59	28-41	44
July-Sept--	30-50	23-44	34-77	59	35-40	42
Oct.-Dec---	16-46	21-43	34-42	59	32-38	42
1977:						
Jan.-Mar---	27-40	38-43	35-47	25-59	30-41	35
Apr.-June--	25-47	38-43	36-40	22-59	34-38	35

1/ Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

High-carbon ferrochromium: Weighted average lowest net prices for the imported and U.S.-produced products, by chromium specifications and by quarters, January 1972-June 1977

(Cents per pound)

Period	Over 65 percent chromium		58 percent-64 percent chromium		52 percent-55 percent chromium	
	Imported	U.S.-produced	Imported	U.S.-produced	Imported	U.S.-produced
1972:						
Jan.-Mar	20	21	1/	25	17	1/
Apr.-June	21	17	16	26	17	1/
July-Sept	19	19	17	24	15	18
Oct.-Dec	19	17	17	23	16	16
1973:						
Jan.-Mar	20	17	16	24	16	16
Apr.-June	20	19	19	24	16	18
July-Sept	22	20	1/	26	16	20
Oct.-Dec	21	20	21	25	18	20
1974:						
Jan.-Mar	22	21	30	25	17	20
Apr.-June	27	25	1/	41	21	27
July-Sept	54	30	38	43	27	31
Oct.-Dec	58	34	72	46	27	36
1975:						
Jan.-Mar	72	46	63	59	38	49
Apr.-June	56	50	62	59	38	49
July-Sept	56	53	51	59	41	49
Oct.-Dec	50	53	48	59	40	49
1976:						
Jan.-Mar	40	31	41	59	42	44
Apr.-June	48	33	43	59	36	44
July-Sept	41	33	38	59	37	42
Oct.-Dec	37	34	36	59	35	42
1977:						
Jan.-Mar	37	42	40	28	39	35
Apr.-June	37	41	37	25	36	35

1/ Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

High-carbon ferrochromium: Ranges of prices for the greatest volume of the imported and U.S.-produced products sold, by chromium specifications and by quarters, January-1972-June 1977

(Cents per pound)

Period	Over 65 percent chromium		58 percent-64 percent chromium		52 percent-55 percent chromium	
	Imported	U.S.-produced	Imported	U.S.-produced	Imported	U.S.-produced
1972:						
Jan.-Mar----	15-23	22-23	22	24-26	16-18	1/
Apr.-June---	16-23	22-23	16-23	24-26	16-18	1/
June-Sept---	16-23	20	17-20	23-24	14-17	18
Oct.-Dec----	17-23	18-20	17	22-24	15-17	16
1973:						
Jan.-Mar----	16-36	18-20	14-19	24	15-19	16
Apr.-June---	16-24	20-22	18-20	24-25	15-19	20
July-Sept---	15-26	21-23	1/	25-27	15-20	20
Oct.-Dec----	19-27	21-23	21	25	15-20	20
1974:						
Jan.-Mar----	20-60	23-26	30	25	17-26	20
Apr.-June---	28-70	28-32	1/	41	18-53	27
July-Sept---	34-89	32-37	29-90	46	26-35	36
Oct.-Dec----	37-95	37-50	30-90	51	26-35	41
1975:						
Jan.-Mar----	56-95	48-57	55-100	59	33-75	49
Apr.-June---	58-85	50-58	55-90	59	30-54	49
July-Sept---	45-82	54-65	39-90	59	40-52	49
Oct.-Dec----	39-82	50-56	32-90	59	30-49	49
1976:						
Jan.-Mar----	38-82	45	34-55	59	36-50	44
Apr.-June---	28-76	41-45	34-77	59	38-50	44
July-Sept---	31-51	42-44	34-77	59	37-50	42
Oct.-Dec----	31-47	40-43	34-77	59	38-48	42
1977:						
Jan.-Mar----	27-41	42-43	36-47	40-49	30-41	42
Apr.-June---	25-47	39-43	36-76	40-59	34-40	42

1/ Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

High-carbon ferrochromium: Weighted average net prices for the greatest volume of the imported and U.S.-produced products sold, by chromium specifications and by quarters, January 1972-June 1977

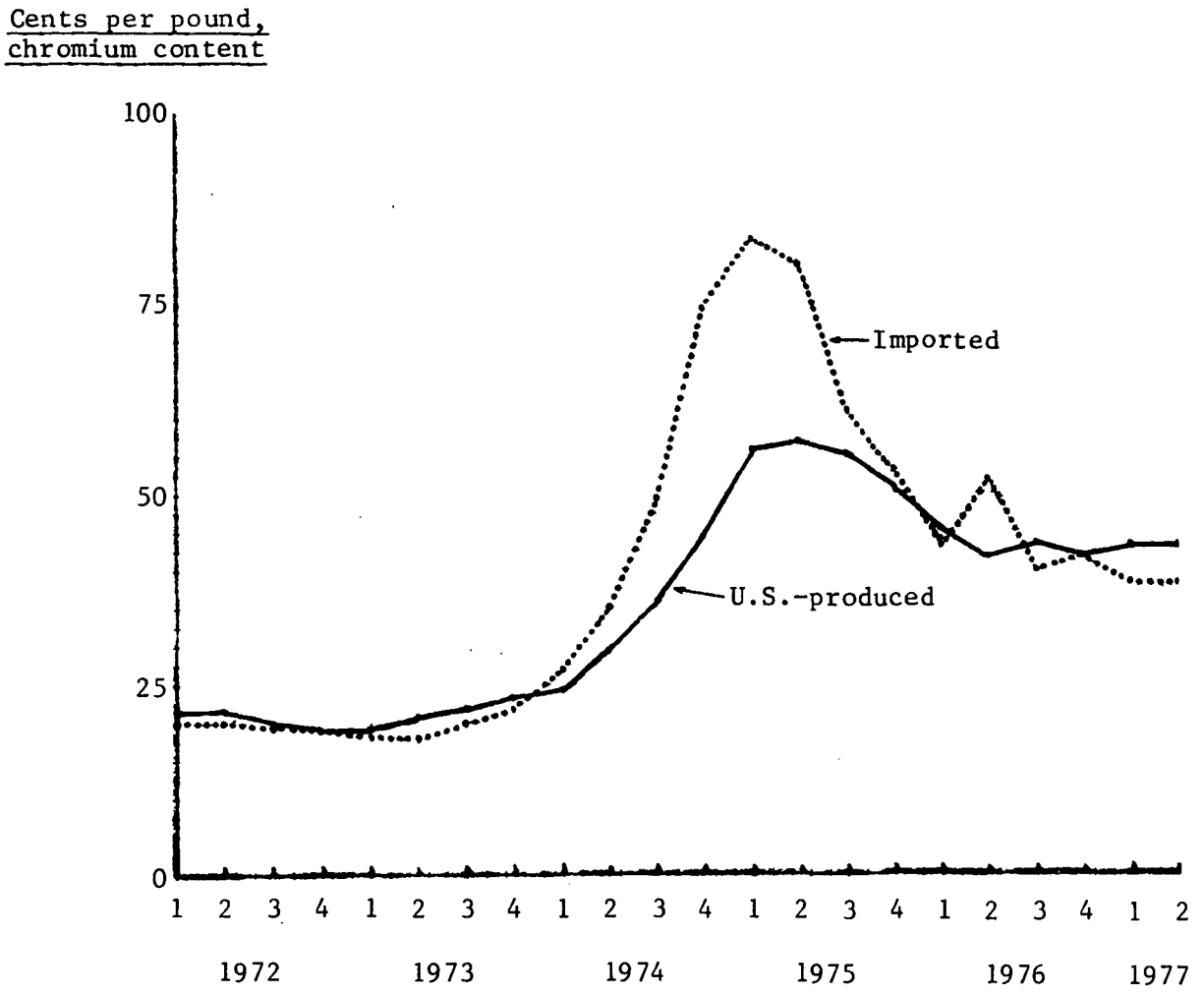
(Cents per pound)

Period	Over 65 percent chromium		58 percent-64 percent chromium		52 percent-55 percent chromium	
	Imported	U.S.-produced	Imported	U.S.-produced	Imported	U.S.-produced
1972:						
Jan.-Mar	20	22	22	1/	17	1/
Apr.-June	20	22	16	26	17	1/
July-Sept	19	20	17	24	15	18
Oct.-Dec	19	19	17	24	16	16
1973:						
Jan.-Mar	18	19	16	24	16	16
Apr.-June	18	21	19	24	17	20
July-Sept	20	22	1/	26	18	20
Oct.-Dec	22	23	21	25	19	20
1974:						
Jan.-Mar	27	24	30	25	23	20
Apr.-June	35	29	1/	41	24	27
July-Sept	49	36	39	46	28	36
Oct.-Dec	74	44	73	51	28	41
1975:						
Jan.-Mar	84	56	75	59	41	49
Apr.-June	80	57	64	59	39	49
July-Sept	61	55	65	59	46	49
Oct.-Dec	53	51	54	59	39	49
1976:						
Jan.-Mar	43	45	45	59	41	44
Apr.-June	52	42	47	59	43	44
July-Sept	40	43	39	59	39	42
Oct.-Dec	42	42	39	59	40	42
1977:						
Jan.-Mar	38	43	40	41	38	42
Apr.-June	38	43	38	40	36	42

1/ Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Figure 6.--High-carbon ferrochromium, over 65 percent chromium content: Weighted average prices for the greatest volume of the imported and U.S.-produced products sold, by quarters, January 1972-June 1977.



Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Note.--The sharp increase in the import price in the second quarter of 1976 is attributed to a large purchase made by *** at a relatively high price.

Price data are not available on a country-by-country basis, but as shown in table 1, the unit value of imports from each country of origin rose sharply in 1974 and 1975 and fell in 1976. Thus, all supplying countries participated in the opportunistic selling in 1974 and 1975, although only one--Japan--appears to have entered the market during the period and left following it.

High-carbon ferrochromium price trends are roughly in line with those for pig iron and all ferroalloys, as shown in the following table of price indexes. In 1974 and 1975, however, high-carbon ferrochromium prices rose much more than did prices for related products.

Indexes of U.S. wholesale prices for high-carbon ferrochromium and other selected commodities, 1972-76 and January-June 1977

(1972=100)

Period	All commodities	Intermediate materials	Pig iron and ferroalloys	High-carbon ferrochromium	
				Imported 1/	U.S.-produced 1/
1972	100	100	100	100	100
1973	113	111	103	100	102
1974	134	137	150	237	160
1975	147	152	211	355	264
1976	154	159	209	227	207
1977 (January-June)	161	168	205	195	207

1/ Calculated from data submitted in response to questionnaires of the U.S. International Trade Commission.

Source: Compiled from official statistics of the U.S. Bureau of Labor Statistics, except as noted.

As there are few differences in quality between comparable grades of imported and U.S.-produced high-carbon ferrochromium, sales are made primarily on the basis of price. Importers as well as domestic producers are generally able to "buy" their way into a market by offering the specified grade of high-carbon ferrochromium at a discounted price. According to testimony presented during the public hearing held in connection with this investigation, prices of high-carbon ferrochromium are established by market factors rather than production costs:

Mr. Richard Giordano, President, Airco, Inc.	". . . imports have consistently been offered at a 10 to 15 percent discount below published domestic prices. . . ." 1/
Mr. A. D. Gate, Vice President, Globe Metallurgical Division of Interlake, Inc.	". . . this is predatory pricing. And it is aimed at capturing an increasing share of market." 2/
Mr. John C. Hall, Vice Chairman, Ferro Alloy Producers' Association of South Africa	". . . the importer has offered a lower price than the domestic industry for a variety of reasons, one of which is the chrome content. . . ." 3/
Mr. William Silverman, Counsel for Yugoslav ferrochrome producer	"In a competitive marketplace, each seller has to face competition. I think it [price] will be determined by the forces in the market. If we could get $0.80, $2.00 a ton [more], we would do that, too." 4/

In addition, importers and consumers indicated that imported high-carbon ferrochromium sells at a discount compared with the U.S.-produced product because of the longer lead times required on orders and the relatively higher risk associated with reliance on a foreign source of raw material.

Profit-and-loss experience of U.S. producers

Overall operations of the establishments.—Net operating profit of the five U.S. producers of high-carbon ferrochromium on their overall establishment operations in which this product was produced increased from $12.8 million in 1973 to $54.1 million in 1974, and then declined to

1/ Transcript of the hearing, pp. 203-204.
2/ Transcript of the hearing, p. 225.
3/ Transcript of the hearing, p. 385.
4/ Transcript of the hearing, p. 347.

$29.3 million in 1976, as shown in the following table. Profit as a percentage of net sales was 5.8 percent in 1973, 16.7 percent in 1974, and 9.4 percent in 1976. In January-June 1977, net operating profit fell to 4.0 percent of net sales.

Operations on high-carbon ferrochromium.—Net operating profit of the five U.S. producers of high-carbon ferrochromium on their high-carbon ferrochromium operations increased from $4.9 million in 1973 to $21.2 million in 1974 before declining to $7.9 million in 1976. As a percentage of net sales, net operating profit was 6.8 percent in 1973, 20.6 percent in 1974, and 8.9 percent in 1976. Net operating profit in January-June 1977 was $1.3 million (2.6 percent of sales), compared with $5.4 million (12.9 percent of sales) in January-June 1976.

The impact of production costs and selling prices on profits can be seen in the following ratios of cost-of-sales to sales:

Period	Percent
1973	89
1974	75
1975	78
1976	86
January-June--	
1976	82
1977	92

Increasing production costs and stable or declining prices since 1975 resulted in the sharply lower profits.

It should be noted that profit-and-loss data for high-carbon ferrochromium operations are very strongly influenced by the largest producer, Airco, Inc. In 1976, for example, all producers except Airco reported before-tax losses, and in January-June 1977 all producers except Airco, reported both operating and before-tax losses. All high-carbon ferrochromium producers operated profitably in 1974 and 1975, while operating losses were incurred by two producers in 1972 and one producer in 1973.

Investment in productive facilities.—To provide an additional measure of profitability, domestic producers were asked to supply information on their investment in productive facilities. As shown in the table on page A-35 , the ratio of net operating profit to investment in productive facilities followed the same trend as did the ratio of net operating profit to net sales, rising in 1973 and 1974 and falling in 1975 and 1976. The ratio of net operating profit to investment in productive facilities should not be construed as a return on total investment. Total investment includes, in addition to investment in productive facilities, investment in working capital, nonproductive facilities, and other fixed assets.

Profit-and-loss experience of 5 U.S. producers on their ferrochromium operations, by types, 1972-76, 1/ January-June 1976, and January-June 1977

Item and year	Net sales	Cost of sales	Gross profit	General, administrative and selling expenses	Net operating profit or (loss)	Other expense, net	Net profit or (loss) before income taxes	Ratio of net operating profit or (loss) to net sales	Ratio of net profit or (loss) before income taxes to net sales
	1,000 dollars							Percent	Percent
Total establishment operations:									
1972 2/	***	***	***	***	***	***	***	2.0	-
1973	***	***	***	***	***	***	***	5.8	5.0
1974	***	***	***	***	***	***	***	16.7	16.0
1975	***	***	***	***	***	***	***	15.1	14.0
1976	***	***	***	***	***	***	***	9.4	7.1
January-June--									
1976	***	***	***	***	***	***	***	13.2	11.2
1977	***	***	***	***	***	***	***	4.0	1.8
Operations on high-carbon ferrochromium:									
1972 2/	19,342	18,630	712	1,413	(701)	1,214	(1,915)	(3.6)	(9.9)
1973	71,004	63,296	7,708	2,853	4,855	442	4,413	6.8	6.2
1974	103,216	77,615	25,601	4,381	21,220	1,137	20,083	20.6	19.5
1975	82,220	63,921	18,299	4,604	13,695	490	13,205	16.7	16.1
1976	88,772	75,902	12,870	4,946	7,924	1,117	6,807	8.9	7.7
January-June--									
1976	41,581	33,893	7,688	2,316	5,372	324	5,048	12.9	12.1
1977	48,095	44,063	4,032	2,766	1,266	652	614	2.6	1.3
Operations on low-carbon ferrochromium:									
1972 2/	26,648	23,852	2,796	1,581	1,215	258	957	4.6	3.6
1973	44,448	43,235	1,213	2,040	(827)	276	(1,103)	(1.9)	(2.5)
1974	70,109	55,824	14,285	2,363	11,922	242	11,680	17.0	16.7
1975	53,493	37,456	16,037	2,168	13,869	502	13,367	25.9	25.0
1976	36,203	27,024	9,179	1,703	7,476	709	6,767	20.6	18.7
January-June--									
1976	21,832	15,878	5,954	971	4,983	432	4,551	22.8	20.8
1977	13,995	10,947	3,048	701	2,347	355	1,992	16.8	14.2

1/ The accounting year of each of the 5 producers ended on or about Dec. 31.
2/ 1 producer was unable to supply data for 1972.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Investment in productive facilities and net operating profit of 5 U.S. producers of high-carbon ferrochromium, 1972-76

Item and year	Investment in productive facilities at yearend			Net operating profit	Ratio of net operating profit to investment in productive facilities in terms of--		
	Actual cost	Net book value	Replacement value		Actual cost	Net book value	Replacement value
	Million dollars	Million dollars	Million dollars	Million dollars	Percent	Percent	Percent
Total establishment operations:							
1972	360	131	1/	2/ 3	2/	2/	1/
1973	348	122	1/	13	3.7	10.5	1/
1974	361	132	1/	54	15.0	41.0	1/
1975	388	149	1/	41	10.6	27.6	1/
1976	427	177	2/ 975	29	6.9	16.6	2/ 3.0
Operations on high-carbon ferrochromium:							
1972	45	22	1/	2/	2/	2/	1/
1973	47	23	1/	5	10.3	21.5	1/
1974	43	21	1/	21	49.8	102.5	1/
1975	44	21	1/	14	31.4	66.2	1/
1976	46	21	2/ 85	8	17.3	37.0	2/ 9.3

1/ Not available.
2/ Data for 4 producers.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Note.—Ratios are calculated from the unrounded figures.

Research and development expenditures.—The five domestic producers had combined research and development expenditures incident to the production of chromium ferroalloys as follows:

Period	1,000 dollars
1972	224
1973	267
1974	460
1975	682
1976	608
January-June--	
1976	277
1977	258

The Question of Imports as a Substantial Cause of Serious Injury

U.S. consumption and the ratio of imports to consumption

Data collected by the U.S. Bureau of Mines show that U.S. consumption of high-carbon ferrochromium rose in 1973 and 1974, fell sharply in 1975, and then recovered in 1976 to 155,800 tons, chromium content, an amount exceeded only in the recordsetting years of 1973 and 1974 (table 12). Consumption in January-June 1977 was up 25 percent compared with that in the corresponding period of 1976. Imports of high-carbon ferrochromium have grown substantially in relation to U.S. consumption, as shown in the following table.

High-carbon ferrochromium: U.S. imports for consumption and U.S. consumption, 1972-76, January-June 1976, and January-June 1977

Period	Imports	Consumption	Ratio of imports to consumption
	Short tons, chromium content	Short tons, chromium content	Percent
1972	44,017	122,521	36
1973	71,916	168,539	43
1974	71,319	188,728	38
1975	158,055	123,772	128
1976	107,307	155,800	69
January-June--			
1976	51,287	81,776	63
1977	67,854	102,381	66

Source: Compiled from official statistics of the U.S. Bureau of Mines and the U.S. Department of Commerce.

The import-to-consumption ratio of more than 100 percent in 1975 is explained by the substantial buildup of importers' inventories in that year--i.e., at least 35,000 tons of imported high-carbon ferrochromium was placed in inventory and not consumed. When imports are adjusted for changes in inventories, the import-to-consumption ratios for high-carbon ferrochromium are as follows:

Period	Percent
1972	32
1973	46
1974	36
1975	99
1976	70
January-June--	
1976	67
1977	57

The adjusted ratio for 1975 remains very high and is believed to be attributable to understated inventory data.

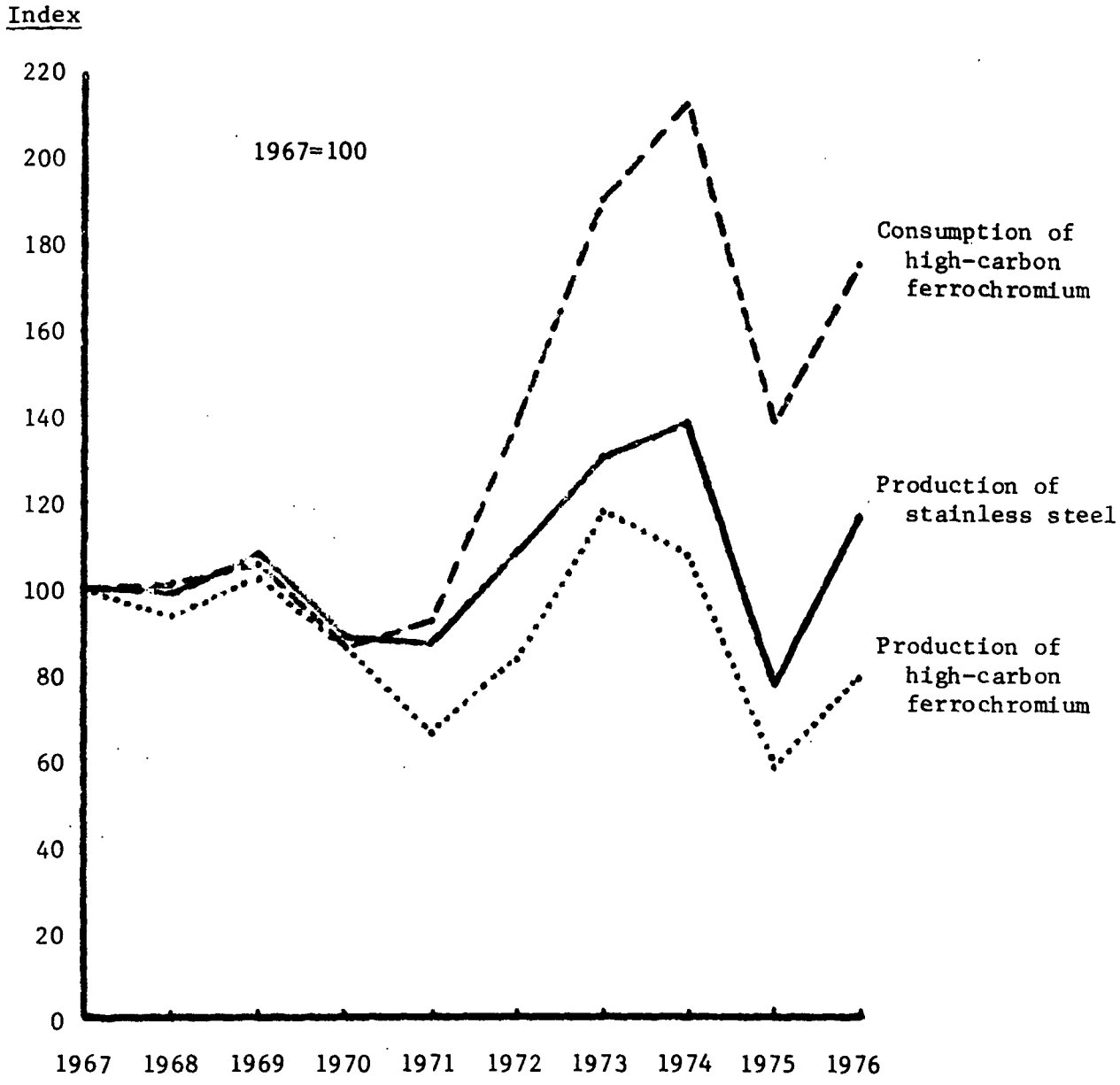
Possible substantial causes of serious injury, or the threat of serious injury, other than imports

Stainless steel production.--Consumption of high-carbon ferrochromium is directly related to domestic production of stainless steel, as shown in figures 7 and 8. The relationship between domestic high-carbon ferrochromium production and stainless steel production is also strong, but high-carbon ferrochromium production clearly has not maintained its formerly close relationship with consumption as both imports and inventories have played greater roles in supplying the stainless steel industry.

The different rates of growth of high-carbon ferrochromium consumption and stainless steel production in the early 1970's are explained by the conversion from the conventional stainless steel production process to the AOD process, which uses more high-carbon ferrochromium per ton of stainless steel. Despite this conversion, U.S. consumption, U.S. production, and U.S. producers' shipments of high-carbon ferrochromium all declined sharply in 1975, when the stainless steel industry was operating at a depressed level during the economic recession that bottomed out in that year.

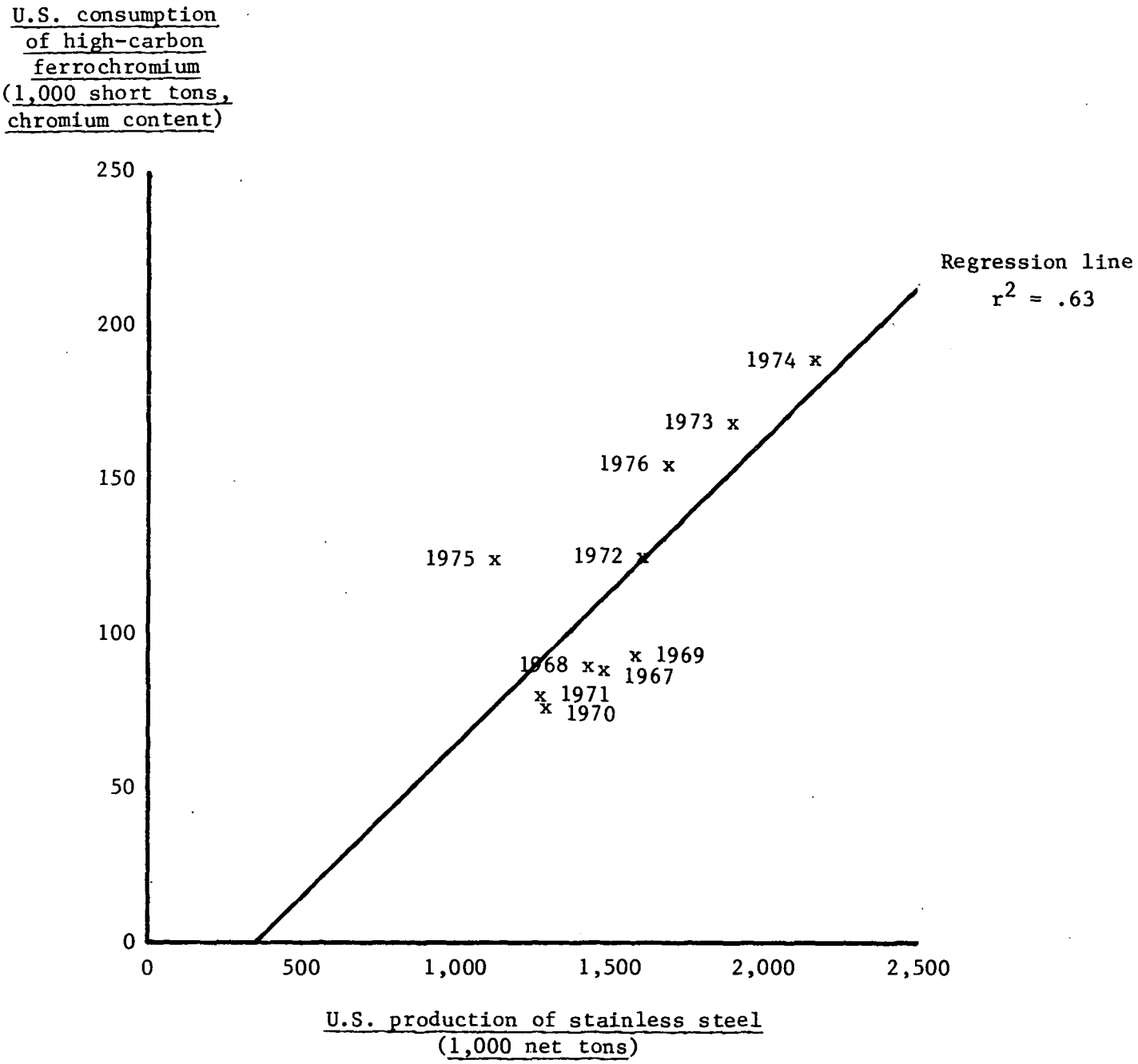
The amount of stainless steel scrap consumed by stainless steel producers also influences ferrochromium consumption, as shown in the table of indexes on page A-40. Stainless steel producers generally use as much scrap as they can obtain in their melt because it is an economical raw-material source. As scrap use per ton of stainless steel production rises,

Figure 7.--Indexes of U.S. production and consumption of high-carbon ferrochromium and U.S. production of stainless steel, 1967-76.



Source: Compiled from official statistics of the U.S. Bureau of Mines and from the Annual Statistical Report of the American Iron and Steel Institute.

Figure 8.--Scatter diagram of U.S. production of stainless steel and U.S. consumption of high-carbon ferrochromium, 1967-76.



Source: Compiled from official statistics of the U.S. Bureau of Mines and from the Annual Statistical Report of the American Iron and Steel Institute.

Indexes of the amount of chromium consumed per ton of stainless steel produced, by chromium sources, and indexes of stainless steel production, 1967-76

(1967 = 100)

Year	Chromium consumed per ton of stainless steel produced using--				Stainless steel production
	Ferrochromium			Stainless steel scrap	
	High-carbon	Low-carbon	Total		
1967	100	100	100	100	100
1968	100	109	106	103	99
1969	91	102	98	128	108
1970	94	117	108	126	88
1971	106	96	100	129	87
1972	150	77	106	104	108
1973	179	79	118	96	130
1974	185	85	124	94	148
1975	197	51	108	120	77
1976	194	38	99	109	116

Source: Compiled from official statistics of the U.S. Bureau of Mines.

consumption of ferrochromium tends to fall. In periods of high demand for stainless steel, such as 1973 and 1974, scrap is commonly in short supply, and ferrochromium use increases accordingly. About 60 to 65 percent of the stainless steel scrap used in the production of stainless steel is known as in-process scrap, i.e., it is generated during the production process and recycled.

Operating costs.—U.S. producers of high-carbon ferrochromium have been faced with rapidly rising costs in recent years, and this trend is likely to continue. The two main costs incurred in the production of high-carbon ferrochromium are those for chromium ore (roughly 50 percent of total costs) and electric power (roughly 25 percent of total costs). An indication of the impact of these cost increases can be seen in the indexes presented in the following table.

Indexes of the value of imported chromium ore, U.S. producers' cost for for electric power, and prices of U.S.-produced high-carbon ferrochromium, 1972-76 and January-June 1977

(1972 = 100)

Period	Value of imported chromium ore	U.S. producers' cost for electric power	Prices of U.S.-produced high-carbon ferrochromium 1/
1972	100	100	100
1973	90	105	102
1974	100	171	160
1975	194	217	264
1976	235	235	207
1977 (January-June)	209	273	207

1/ Over 65 percent chromium.

Source: Compiled from official statistics of the U.S. Department of Commerce and from data submitted in response to questionnaires of the U.S. International Trade Commission.

The Foreign Industry

A list of the principal world ferrochromium producers 1/ is presented in appendix D. Worldwide production capacity for high-carbon ferrochromium is estimated to be approximately 1.5 million short tons, chromium content. 2/ This estimated capacity exceeds estimated demand in 1977 by 40 to 50 percent; the excess capacity could be absorbed by increases in stainless steel production in about 10 years assuming no additional increases in high-carbon ferrochromium capacity and an annual growth in demand of 6 percent. Available production data for important producing countries and a brief discussion of the Japanese, South African, and Rhodesian industries follow.

1/ Excluding the U.S.S.R.
2/ Transcript of the hearing, p. 396.

Ferrochromium: Production by principal producing countries, 1972-76

(In thousands of short tons, gross weight)

Country 1/	1972	1973	1974	1975	1976
Japan	344	488	597	536	2/
Republic of South Africa	2/	2/	203	239	263
United States 3/	238	321	301	172	196
Finland	26	44	53	44	2/
Brazil	13	17	37	2/	2/
Norway	32	33	34	30	2/

1/Data are not available for the U.S.S.R. or Rhodesia, but both are known to have large ferrochromium industries.

2/ Not available.

3/ Production of high- and low-carbon ferrochromium.

Source: Compiled from official statistics of the U.S. Bureau of Mines and the U.S. Department of State.

Japan

The Japanese ferrochromium industry is probably the largest in the world, and in addition to domestic operations, all major Japanese producers are involved in smelting overseas. Japan's five leading ferrochromium producers have a 49-percent interest in a Brazilian mining and smelting operation, and there are also Japanese interests in South Africa. Japanese producers appear to export ferrochromium to the United States when the demand for imports is strong (as in 1975) and when satisfactory prices can be obtained (the average unit value per pound of contained chromium for imports of high-carbon ferrochromium from Japan in 1975 was 61 cents, substantially higher than the average of 43 cents per pound for all imports in that year). Because Japan is a major steel-producing country, it is also a major consumer of ferrochromium.

Republic of South Africa

The high-carbon ferrochromium industry in the Republic of South Africa is expanding rapidly as ferrochromium producers (notably from the United States and Japan) move their production facilities to the source of the raw material (by far the largest known chromium resource is in the Bushveld Complex, Transvaal, South Africa). The three-furnace Tubatse plant (a joint venture of Union Carbide Corp. and General Mining of South Africa) in Steelpoort began operation in 1977 and has a conservatively estimated capacity of 120,000 tons, gross weight, of high-carbon ferrochromium. All of Tubatse's production is for export, and at least 50 percent of it is expected to be shipped to the United States.

Rhodesia

Ferrochromium production data for Rhodesia are not available, but output is substantial, as evidenced by the 47,000 tons, gross weight, of high- and low-carbon ferrochromium that was exported to the United States in 1976. Rhodesia has the world's second largest reserve of chromium ore and the world's largest reserve of high-quality chromium ore, so future growth of its ferrochromium industry is very likely.

APPENDIX A

UNITED STATES INTERNATIONAL TRADE COMMISSION
NOTICES OF INVESTIGATION AND HEARING

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

[TA-201-28]

HIGH-CARBON FERROCHROMIUM

Notice of Investigation and Hearing

Investigation instituted. Following receipt of a petition on July 1, 1977, filed by the Committee of Producers of High Carbon Ferrochrome, the United States International Trade Commission on July 11, 1977, instituted an investigation under section 201(b) of the Trade Act of 1974 to determine whether ferrochromium, containing over 3 percent by weight of carbon, provided for in item 607.31 of the Tariff Schedules of the United States, is being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

Public hearing. A public hearing in connection with this investigation will be held beginning on Tuesday, October 11, 1977, in Pittsburgh, Pennsylvania, at a location to be announced at a later date. Requests for appearances at the hearing should be filed, in writing, with the Secretary of the Commission at his office in Washington not later than noon, Friday, October 7, 1977.

Investigation to be expedited. It is the belief of the Commission that the investigation can be expedited and it is the intention of the Commission to report to the President by December 1, 1977, if possible.

Inspection of the petition. The petition filed in this case is

available for public inspection at the Office of the Secretary, United States International Trade Commission, 701 E Street NW., Washington, D.C. 20436, and at the New York City Office of the United States International Trade Commission located at 6 World Trade Center.

By order of the Commission:

KENNETH R. MASON
Secretary

Issued: July 12, 1977

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

[TA-201-28]

HIGH-CARBON FERROCHROMIUM

Time and Place of Public Hearing

Notice is hereby given that the public hearing in this matter scheduled to begin on Tuesday, October 11, 1977, in Pittsburgh, Pa., will commence at 10:00 a.m., e.d.t., in the Allegheny Room of the William Penn Hotel, Mellon Square, Pittsburgh, Pa. Requests to appear at the hearing should be filed, in writing, with the Secretary of the United States International Trade Commission at his office in Washington, D.C., not later than noon, Friday, October 7, 1977.

Notice of the investigation and hearing was published in the Federal Register of July 18, 1977 (42 F.R. 36896).

By order of the Commission.

Kenneth R. Mason
Secretary

Issued: September 16, 1977

APPENDIX B

PUBLIC LAW 95-12 AND RELATED INFORMATION

RHODESIAN CHROME

Public Law 95-12
95th Congress

An Act

Mar. 18, 1977
[H.R. 1746]

To amend the United Nations Participation Act of 1945 to halt the importation of Rhodesian chrome.

Rhodesian chrome. Importation prohibition

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 5 of the United Nations Participation Act of 1945 (22 U.S.C. 287c) is amended—

(1) by adding at the end of subsection (a) the following new sentences: "Any Executive order which is issued under this subsection and which applies measures against Southern Rhodesia pursuant to any United Nations Security Council Resolution may be enforced, notwithstanding the provisions of any other law. The President may exempt from such Executive order any shipment of chromium in any form which is in transit to the United States on the date of enactment of this sentence."; and

(2) by adding at the end thereof the following new subsection:

Steel mill products, certificate of origin.

"(c)(1) During the period in which measures are applied against Southern Rhodesia under subsection (a) pursuant to any United Nations Security Council Resolution, a shipment of any steel mill product (as such product may be defined by the Secretary) containing chromium in any form may not be released from customs custody for entry into the United States if—

"(A) a certificate of origin with respect to such shipment has not been filed with the Secretary; or

"(B) in the case of a shipment with respect to which a certificate of origin has been filed with the Secretary, the Secretary determines that the information contained in such certificate does not adequately establish that the steel mill product in such shipment does not contain chromium in any form which is of Southern Rhodesian origin;

unless such release is authorized by the Secretary under paragraph (3) (B) or (C).

Infra.

Regulations.

"(2) The Secretary shall prescribe regulations for carrying out this subsection.

Subpenas.

"(3)(A) In carrying out this subsection, the Secretary may issue subpenas requiring the attendance and testimony of witnesses and the production of evidence. Any such subpena may, upon application by the Secretary, be enforced in a civil action in an appropriate United States district court.

Certification requirement, exemption.

"(B) The Secretary may exempt from the certification requirements of this subsection any shipment of a steel mill product containing chromium in any form which is in transit to the United States on the date of enactment of this subsection.

Release from customs custody.

"(C) Under such circumstances as he deems appropriate, the Secretary may release from customs custody for entry into the United States, under such bond as he may require, any shipment of a steel mill product containing chromium in any form.

"(4) As used in this subsection— Definitions.

"(A) the term 'certificate of origin' means such certificate as the Secretary may require, with respect to a shipment of any steel mill product containing chromium in any form, issued by the government (or by a designee of such government if the Secretary is satisfied that such designee is the highest available certifying authority) of the country in which such steel mill product was produced certifying that the steel mill product in such shipment contains no chromium in any form which is of Southern Rhodesian origin; and

"(B) the term 'Secretary' means the Secretary of the Treasury.".

SEC. 2. (a) Upon the enactment of this Act, the President may suspend the operation of the amendments contained in this Act if he determines that such suspension would encourage meaningful negotiations and further the peaceful transfer of governing power from minority rule to majority rule in Southern Rhodesia. Such suspension shall remain in effect for such duration as deemed necessary by the President. Operation of amendments, suspension. 22 USC 287c note.

(b) If the President suspends the operation of the amendments contained in this Act, he shall so report to the Congress. In addition, the President shall report to the Congress when he terminates such suspension. Report to Congress.

(c) If the President suspends the operation of the amendments contained in this Act, any reference in those amendments to date of enactment shall be deemed to be a reference to the date on which such suspension is terminated by the President.

Approved March 18, 1977.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 95-59 (Comm. on International Relations).
SENATE REPORT No. 95-37 accompanying S. 174 (Comm. on Foreign Relations).
CONGRESSIONAL RECORD, Vol. 123 (1977):
Mar. 11, S. 174 considered in Senate.
Mar. 14, considered and passed House; S. 174 considered in Senate.
Mar. 15, considered and passed Senate, in lieu of S. 174.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 13, No. 12:
Mar 18, Presidential statement.

O

Title 31 - Money and Finance: Treasury
Chapter V - Office of Foreign Assets Control
Department of the Treasury
Part 530 - Rhodesian Sanctions Regulations

Prohibitions Against Imports of Strategic and Critical Materials of Southern Rhodesian Origin and of Ferrochromium and Chromium Steel Products from any Country, Except as Authorized

The Rhodesian Sanctions Regulations are being amended in connection with the enactment of Public Law 95-12.

The amendments are:

(1) A revocation of §530.518 which has permitte the importation of strategic and critical materials of Southern Rhodesian origin. The effect of this revocation is to again restrict the importation of a list of Rhodesian strategic commodities such as chromium ore, ferrochromium, nickel, asbestos, beryllium, and other strategic materials. It also again restricts the importation of ferrochromium produced in any other country from Rhodesian ores or concentrates.

(2) A new prohibition (§530.202) against the importation of chromium ore from any country except when imported directly or on a through bill of lading. Also, a new prohibition against the importation from any country of ferrochromium and steel mill products containing more than 3% chromium, except as authorized.

(3) A new section (§530.313) defining "steel mill products" and identifying those products affected by the import restrictions.

(4) An amendment of §530.503 to authorize the importation of ferrochromium and steel mill products whenever they have been specially certified by the Government of the producing country not to contain any chromium of Southern Rhodesian origin. These special certificates may be issued only pursuant to special certification procedures to be agreed upon between the certifying country and the Treasury Department. Notices of the availability of special certificates will be published from time to time in the Federal Register.

(5) A new section explaining that in-transit shipments of strategic and critical materials of Southern Rhodesian origin may be authorized to be imported, but in such cases a specific license will have to be obtained from the Office of Foreign Assets Control. The application should be supported by satisfactory documentary proof of exportation from Southern Rhodesia before March 18, 1977.

(6) A General License (§530.520) authorizing the importation, without application to Treasury, of ferrochromium and steel mill products from third countries when the materials were in-transit as of March 18, 1977. The ocean bill of

lading must have been issued before March 18, 1977. Other in-transit shipments may be authorized to be imported, but in such cases a specific license will have to be obtained from the Office of Foreign Assets Control. The application should be supported by satisfactory documentary proof of exportation from the producing country before March 18, 1977.

(7) A new section (§530.521) explaining that imports of merchandise subject to the Regulations may be refused when there is reason to believe the merchandise contains Rhodesian materials. Refusal of these imports may occur although a special certificate of origin or license may have been obtained.

(8) A new section (§530.522) describing special certificates of origin and explaining that other certificates of origin are not acceptable for purposes of these Regulations.

(9) A technical amendment to §530.808, authorizing certain Customs transactions in connection with these new controls.

In addition to these controls, the Office of Foreign Assets Control is also instructing Customs to sample all imports of chromium ore and ferrochromium from South Africa. The samples are to be forwarded for Customs' laboratory testing. This testing will ensure that Rhodesian chromium ore and ferrochromium does not enter the United States misdescribed as being of South African origin.

As the material contained herein involves a foreign affairs function, the provisions of the Administrative Procedure Act (5 U.S.C. 533) requiring notice of proposed rule making, opportunity for public participation, and delay in effective date, are inapplicable.

For further information, contact George F. Hazard, Chief of Licensing, Office of Foreign Assets Control, Treasury Department, Washington, D. C. 20220, telephone (202) 376-0428. The principal author of this amendment is Stanley L. Sommerfield.

31 CFR Part 530, is amended to revoke Section 530.518; to revise Sections 530.503 and 530.808; and to add Sections 530.202, 530.313, 530.519, 530.520, 530.521, and 530.522. The revised and added sections read as follows:

Section 530.202 Imports of chromium ore, ferrochromium, and steel mill products containing chromium

(a) All of the following direct or indirect transactions by any person subject to the jurisdiction of the United States are prohibited, except as authorized by the Secretary of the Treasury (or any person, agency, or instrumentality designated by him) by means of regulations, rulings, instructions, general or specific licenses or otherwise:

(1) Importation from any country of non-Rhodesian chromium ore except when imported directly or on a through bill of lading.

(2) Importation from any country of ferrochromium.

(3) Importation from any country of steel mill products in their basic shapes and forms which contain more than 3% chromium. Steel mill products subject to this prohibition are specified in §530.313.

Section 530.313 Chromium ore, ferrochromium, and steel mill products

The terms "chromium ore", "ferrochromium", and "steel mill products" as used in Section 530.202 mean:

(1) Chromium ore provided for in item 601.15 of the Tariff Schedules of the United States (BTN ch. 26.01).

(2) Ferrochromium provided for in items 607.30 and 607.31 of the Tariff Schedules of the United States (BTN ch. 73, ch. note 1.(c)).

(3) Stainless steel and other alloy steels in their basic shapes and forms containing more than 3% chromium provided for in Schedule 6, Part 2, Subpart B, of the Tariff Schedules of the United States (BTN ch. 73, ch. note 1.(d)).

Section 530.503 Certain transactions with respect to merchandise affected by §530.201 and §530.202

(a) With respect to materials the unauthorized importation of which is prohibited by §530.201 or §530.202, all Customs transactions are authorized except the following:

(1) Entry for consumption (including any appraisement entry, and entry of goods imported in the mails, regardless of value, and any other informal entries);

(2) Entry for immediate exportation;

(3) Entry for transportation and exportation;

(4) Withdrawal from warehouse;

(5) Transfer or withdrawal from a foreign-trade zone; or

(6) Manipulation or manufacture in a warehouse or in a foreign-trade zone.

This paragraph is intended solely to allow certain restricted disposition of merchandise which is imported without proper authorization. This paragraph does not authorize the purchase or importation of any merchandise.

(b) With respect to materials the unauthorized importation of which is prohibited by §530.202(a), (2), and (3), importation is authorized if there is presented to the District Director of Customs in connection with such importation the original of a special certificate of origin as defined in section 530.522. The materials must have been shipped to the United States directly, or on a through bill of lading, from the country issuing the special certificate of origin.

Section 530.519 In-Transit Materials of Southern Rhodesian Origin

Specific licenses may be issued authorizing the importation into the U.S. of strategic and critical materials of Southern Rhodesian origin which were in transit on March 18, 1977. Applications will be decided on a case-by-case basis in the discretion of the Office of Foreign Assets Control. In such cases, importations will not be authorized unless the Office is satisfied that undue hardship would result from denial. Applications must be supported by documentary proof establishing the goods were in-transit on March 18, 1977, and establishing the claim of undue hardship.

Section 530.520 In-Transit Steel Mill Products

(a) All transactions incidental to the importation into the United States of ferrochromium and steel mill products subject to the prohibitions of Section 530.202 are authorized, provided the pertinent ocean bill of lading was issued before March 18, 1977.

(b) Such materials may also be licensed to be imported if the Office of Foreign Assets Control is satisfied the materials were exported from the producing country before March 18, 1977. The application must be supported by documentary proof establishing exportation before March 18, 1977.

(c) The authorization contained in paragraph (a) shall expire at the close of business on May 18, 1977.

Section 530.521 Rejection of Imports

Imports of merchandise subject to Section 530.202 will be refused, although a special certificate of origin or a special license has been obtained, if there is reason to believe the merchandise is of Southern Rhodesian origin or contains chromium materials of Southern Rhodesian origin.

Section 530.522 Special Certificates of Origin

There are many types of certificates of origin issued by governmental and commercial agencies abroad. However, the only certificates of origin which will be accepted by Customs for Foreign Assets Control purposes in connection with imports of commodities subject to Section 530.202 are certificates issued pursuant to special agreements between the country of issue and the Treasury Department. The availability of special certificates of origin which are acceptable for Office of Foreign Assets Control purposes is announced in the Federal Register. The

special certificate must bear a statement by the issuing foreign government agency referring to the Rhodesian Sanctions Regulations, stating that the special certificate has been issued under procedures agreed upon with the United States Government. The name of the issuing agency in each country will be published in the Federal Register.

The Office of Foreign Assets Control reserves the right to refuse importations when the special certificate of origin presented to Customs in connection with an importation under §530.202 has been improperly issued. Certificates must be requested from the certifying country prior to exportation. Certificates may be improperly issued if the goods were not produced in the certifying country or were produced in the certifying country by a non-registered producer. Further, if the certificate does not fully and specifically describe the merchandise to which it refers, the importation may likewise be rejected.

§530.808 Customs procedures; merchandise specified in §530.201 and 530.202.

(a) With respect to merchandise specified in §530.201 and §530.202, whether or not such merchandise has been imported into the United States, District Directors of Customs shall not accept or allow any:

(1) Entry for consumption (including any appraisement entry, any entry of goods imported in the mails, regardless of value, and any other informal entries);

(2) Entry for immediate exportation;

(3) Entry for transportation and exportation;

(4) Withdrawal from warehouse;

(5) Transfer or withdrawal from a foreign-trade zone; or

(6) Manipulation or manufacture in a warehouse or in a foreign-trade zone,

unless either:

(i) The merchandise was imported prior to March 18, 1977, in the case of merchandise subject to Section 530.202; or

(ii) An applicable general license appears in subpart E hereof; or

(iii) A specific license issued pursuant to this part is presented; or

(iv) Instructions from the Office of Foreign Assets Control, either directly or through the Federal Reserve Bank of New York, authorizing the transactions are received; or

(v) The original of a special certificate of origin as defined in Section 530.522 is presented; or

(vi) The merchandise is chromium ore of non-Rhodesian origin and is imported directly or on a through bill of lading from the country of origin.

(b) Whenever a specific license is presented to a District Director of Customs in accordance with this section, one additional legible copy of the entry, withdrawal or other appropriate document with respect to the merchandise involved shall be submitted to the District Director of Customs at the port where the transaction is to take place. Each copy of any such entry, withdrawal, or other appropriate document, including the additional copy, shall bear plainly on its face the number of the license pursuant to which it is submitted. The original copy of the specific license shall be presented to the District Director in respect to each such transaction. It shall bear a notation in ink by the licensee or person presenting the license showing the description, quantity, and value of the merchandise to be entered, withdrawn, or otherwise dealt with. This notation should be so placed and so written that there will exist no possibility of confusing it with anything placed on the license at the time of its issuance. If the license in fact authorizes the entry, withdrawal or other transaction with regard to the merchandise, the District Director or other authorized Customs employee shall verify the notation by signing or initialing it. He shall first assure himself that it accurately describes the merchandise it purports to represent. The license shall thereafter be returned to the person presenting it.

The additional copy of the entry, withdrawal, or other appropriate document shall be forwarded by the District Director to the Office of Foreign Assets Control.

(c)(1) The original of a special certificate of origin as defined in §530.522 must be presented to a District Director of Customs in accordance with the provisions of this section. An additional legible copy of the entry, withdrawal or other appropriate document with respect to the merchandise involved shall be submitted to the District Director of Customs at the port where the transaction is to take place. Each copy of the entry, withdrawal or other appropriate document, including the additional copy, shall bear plainly on its fact the following statement: "This document is presented under the provisions of §530.503(b) of the Rhodesian Sanctions Regulations." The original of the certificate of origin shall not be returned to the person presenting it, but shall be securely attached to the additional copy required by this subparagraph. It shall be forwarded by the District Director to the Office of Foreign Assets Control, Treasury Department, Washington, D.C. 20220. District Directors may forward such documents weekly, or more often if the volume warrants.

(2) The original of a special certificate of origin must be submitted to a District Director of Customs with respect to a transaction which is the first of a series of transactions allowed under subdivision (v) of paragraph (a) of this section. (For example, merchandise has been entered in a bonded warehouse and a specific certificate of origin is submitted. The certificate relates to all of the merchandise entered. However, the importer desires to withdraw only part of the merchandise in the first transaction). The District Director shall so note on the original of the specific certificate of origin and return it to the importer. In addition, the District Director shall endorse his pertinent records so as to record what merchandise is covered by the specific certificate of origin submitted. The District Director may thereafter allow subsequent authorized transactions on presentation of the certificate of origin. The District Director shall, with respect to each such transaction, demand an additional copy of each withdrawal or other appropriate document. The additional copy shall be promptly forwarded by the District Director to the Director of the Office of Foreign Assets Control, Treasury Department, Washington, D.C. 20220. It shall bear an endorsement reading: "This document has been accepted

pursuant to §500.808(c)(2) of the Foreign Assets Control Regulations. Special certificate of origin No. _____ from (country)." When the final transaction has been effected under the certificate of origin, the original shall be taken up and attached to the entry. It shall then be forwarded as in paragraph (c)(1).

(d) A person presenting an entry, withdrawal, or other appropriate document affected by this section may assert that no specific Foreign Assets Control license or special certificate of origin as defined in §530.522 is required. The District Director of Customs shall then withhold action. He shall advise the person to communicate directly with the Federal Reserve Bank of New York, Foreign Assets Control Division. The person should request the Division to issue appropriate instructions to the District Director.

Authority: 22 U.S.C. 287(c); Public Law 95-12, March 18, 1977, 91 Stat.22; Executive Order 11322; Executive Order 11419; Executive Order 11978.

Effective Date: These amendments take effect on March 18, 1977.

Stanley L. Sommerfield.

Stanley L. Sommerfield
Acting Director

File: March 31, 1977
Published: April 5, 1977

APPENDIX C

STATISTICAL TABLES

Table 1.--High-carbon ferrochromium: U.S. imports for consumption, by principal sources, 1972-76, January-June 1976, and January-June 1977

Source	1972	1973	1974	1975	1976	January-June-- 1976	January-June-- 1977
	Quantity (short tons, chromium content)						
Republic of South Africa	18,377	23,451	24,512	41,101	41,381	17,052	27,069
Rhodesia	6,795	32,167	19,958	51,832	26,561	7,511	24,016
Brazil	2,535	4,160	5,974	8,885	15,459	12,272	3,253
Yugoslavia	3,176	2,149	13,877	8,073	14,193	8,131	10,345
Japan	2,267	298	997	42,102	6,045	4,367	67
Federal Republic of Germany	1,519	263	1,102	1,354	1,075	706	397
All other	9,348	9,429	4,899	4,708	2,594	1,247	2,708
Total	44,017	71,916	71,319	158,055	107,307	51,287	67,854
	Value (1,000 dollars)						
Republic of South Africa	4,715	6,448	8,998	29,219	26,650	10,493	17,296
Rhodesia	1,548	8,042	6,520	33,160	15,131	4,523	14,251
Brazil	651	1,012	2,641	6,651	10,126	8,151	1,962
Yugoslavia	651	802	10,877	9,219	10,021	5,364	7,320
Japan	736	119	1,067	51,380	5,098	3,723	55
Federal Republic of Germany	501	84	576	1,442	1,081	689	400
All other	2,463	2,352	2,454	3,969	1,926	852	1,983
Total	11,266	18,859	33,134	135,041	70,035	33,795	43,266
	Unit value (cents per pound, chromium content) 1/						
Republic of South Africa	13	14	18	36	32	31	32
Rhodesia	11	13	16	32	28	30	30
Brazil	13	12	22	37	33	33	30
Yugoslavia	10	19	39	57	35	33	35
Japan	16	20	54	61	42	43	41
Federal Republic of Germany	16	16	26	53	50	49	50
All other	13	12	25	42	37	34	37
Average	13	13	23	43	33	33	32
	Percent of total quantity 1/						
Republic of South Africa	41.7	32.6	34.4	26.0	38.6	33.2	39.9
Rhodesia	15.4	44.7	28.0	32.8	24.8	14.6	35.4
Brazil	5.8	5.8	8.4	5.6	14.4	23.9	4.8
Yugoslavia	7.2	3.0	19.5	5.1	13.2	15.9	15.2
Japan	5.2	.4	1.4	26.6	5.6	8.5	.1
Federal Republic of Germany	3.5	.4	1.5	.9	1.0	1.4	.6
All other	21.2	13.1	6.9	3.0	2.4	2.4	4.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Calculated from the unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note.--Because of rounding, figures may not add to the totals shown.

Table 2.--Low-carbon ferrochromium: U.S. imports for consumption, by principal sources, 1972-76, January-June 1976, and January-June 1977

Source	1972	1973	1974	1975	1976	January-June--	
						1976	1977
	Quantity (short tons, chromium content)						
Japan	9,598	7,577	4,602	11,816	19,360	7,642	3,441
Republic of South Africa	14,406	8,745	12,429	14,511	6,829	3,523	3,994
Rhodesia	2,181	3,329	3,514	3,714	5,785	5,004	6,691
Federal Republic of Germany	2,163	1,506	3,444	3,205	2,667	1,889	613
France	336	0	0	671	2,459	1,881	298
Sweden	7,125	4,542	2,653	2,169	2,217	841	2,642
All other	10,440	4,525	4,121	3,848	3,643	2,218	1,100
Total	46,249	30,224	30,763	39,933	42,961	22,996	18,782
	Value (1,000 dollars)						
Japan	5,434	4,263	4,162	23,410	23,582	9,512	4,633
Republic of South Africa	5,955	4,385	7,531	11,002	8,168	4,037	4,340
Rhodesia	1,114	1,871	2,258	5,369	8,098	7,099	7,496
Federal Republic of Germany	1,211	1,117	2,875	5,076	3,899	2,775	959
France	177	-	-	1,083	3,335	2,554	383
Sweden	3,958	2,786	2,437	4,039	3,470	1,443	3,914
All other	5,473	2,500	2,864	5,611	4,231	2,643	1,435
Total	23,322	16,922	22,127	55,589	54,784	30,063	23,160
	Unit value (cents per pound, chromium content) 1/						
Japan	28	28	45	99	61	62	67
Republic of South Africa	21	25	30	38	60	57	54
Rhodesia	26	28	32	72	70	71	56
Federal Republic of Germany	28	37	42	79	73	73	78
France	26	-	-	81	68	68	64
Sweden	28	31	46	93	78	86	74
All other	26	28	35	73	58	60	65
Total	25	28	36	70	64	65	62
	Percent of total quantity 1/						
Japan	20.8	25.1	15.0	29.8	45.1	33.2	18.3
Republic of South Africa	31.1	28.9	40.4	36.3	15.9	15.3	21.3
Rhodesia	4.7	11.0	11.4	9.3	13.5	21.8	35.6
Federal Republic of Germany	4.7	5	11.2	8	6.2	8.2	3.3
France	.7	-	-	1.7	5.7	8.2	1.6
Sweden	15.4	15.0	8.6	5.3	5.2	3.7	14.1
All other	22.5	15.0	13.4	9.6	8.4	9.6	5.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Calculated from the unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note.--Because of rounding, figures may not add to the totals shown.

Table 3.--Ferrochromium: U.S. production, by types and by quarters, January 1972-June 1977

(In short tons, chromium content)

Period	High-carbon ferro-chromium	Low-carbon ferro-chromium	Total
1972:			
January-March	25,610	6,738	32,348
April-June	31,649	13,678	45,327
July-September	29,269	12,992	42,261
October-December	26,259	14,349	40,608
Total	112,805	47,766	160,571
1973:			
January-March	38,688	13,617	52,305
April-June	40,164	17,125	57,289
July-September	43,569	12,092	55,661
October-December	42,892	17,608	60,500
Total	158,550	60,917	219,467
1974:			
January-March	34,919	15,721	50,640
April-June	37,262	16,560	53,822
July-September	37,428	13,345	50,773
October-December	37,379	15,096	52 475
Total	144,910	60,706	205,616
1975:			
January-March	34,828	15,320	50,148
April-June	19,783	10,579	30,362
July-September	13,594	9,151	22,745
October-December	9,243	2,475	11,718
Total	78,071	37,875	115,946
1976:			
January-March	24,457	3,121	27,578
April-June	27,697	6,350	34,047
July-September	36,465	6,635	43,100
October-December	18,826	3,580	22,406
Total	107,445	19,686	127,131
1977:			
January-March	22,869	2,167	25,036
April-June	34,905	4,146	39,051

Source: Compiled from official statistics of the U.S. Bureau of Mines.

Note.--Because of rounding, figures may not add to the totals shown.

Table 4.--Ferrochromium: U.S. producers' shipments, by types and by quarters, January 1972-June 1977

(In short tons, chromium content)

Period	High-carbon ferrochromium	Low-carbon ferrochromium	Total
1972:			
January-March	28,899	14,908	43,807
April-June	35,471	15,193	50,664
July-September	26,486	11,672	38,158
October-December	28,649	14,068	42,717
Total	108,207	55,218	163,425
1973:			
January-March	44,669	19,643	64,312
April-June	45,481	20,094	65,575
July-September	44,224	14,417	58,641
October-December	44,781	18,824	63,605
Total	170,573	72,514	243,087
1974:			
January-March	39,980	17,985	57,965
April-June	42,854	15,995	58,849
July-September	38,170	15,461	53,631
October-December	38,797	16,063	54,860
Total	154,415	65,135	219,550
1975:			
January-March	32,811	14,005	46,816
April-June	13,784	9,176	22,960
July-September	16,407	4,550	20,957
October-December	13,774	5,181	18,955
Total	78,412	32,986	111,398
1976:			
January-March	23,301	6,350	29,651
April-June	28,924	6,350	35,274
July-September	31,498	5,076	36,574
October-December	28,341	4,192	32,533
Total	111,531	21,991	133,522
1977:			
January-March	30,852	4,195	35,047
April-June	37,048	4,859	41,907

Source: Estimated from gross weight on the basis of average chromium content of production as reported by the U.S. Bureau of Mines.

Table 5.--Ferrochromium: U.S. producers', consumers', and importers' inventories, by types and by quarters, Jan. 1, 1972-July 1, 1977

(In short tons, chromium content)

Date	High-carbon ferrochromium inventories				Low-carbon ferrochromium inventories			
	Producers'	Consumers'	Importers'	Total	Producers'	Consumers'	Importers'	Total
1972:								
Jan. 1	18,441	6,581	6,343	31,365	17,594	7,342	6,207	13,143
Apr. 1	19,139	5,233	6,483	30,455	12,139	7,782	4,782	24,703
July 1	20,755	5,876	10,603	37,234	13,341	5,120	6,363	24,824
Oct. 1	23,747	6,835	7,138	37,720	15,847	6,975	11,472	34,294
1973:								
Jan. 1	24,627	7,231	11,049	42,907	16,290	6,869	16,590	39,749
Apr. 1	24,977	8,306	6,412	39,695	12,942	7,767	13,329	34,038
July 1	17,884	12,099	5,819	35,802	10,087	9,459	14,483	34,029
Oct. 1	15,903	12,796	7,601	36,300	6,966	11,524	13,906	32,396
1974:								
Jan. 1	13,518	15,642	5,764	34,924	5,809	10,608	14,232	30,649
Apr. 1	11,095	14,454	7,432	32,981	4,677	14,244	9,150	28,071
July 1	5,460	13,743	5,952	25,155	5,297	11,486	9,123	25,906
Oct. 1	6,794	15,190	5,922	27,906	2,962	12,564	5,950	21,476
1975:								
Jan. 1	8,957	16,225	9,972	35,154	2,441	9,995	5,447	17,883
Apr. 1	13,339	28,429	19,167	60,935	4,727	10,590	6,563	21,880
July	22,374	31,473	29,950	83,797	7,569	12,111	10,837	30,517
Oct. 1	30,001	27,262	38,139	95,402	12,137	9,722	11,972	33,831
1976:								
Jan. 1	31,022	32,967	46,049	110,068	9,187	6,845	15,645	31,677
Apr. 1	37,336	30,888	45,588	113,812	5,624	7,846	16,715	30,185
July 1	39,817	31,399	42,505	113,721	6,930	6,357	14,939	28,226
Oct. 1	51,078	32,436	47,909	131,423	8,434	7,677	18,591	34,702
1977:								
Jan. 1	40,964	33,459	43,686	118,109	7,634	5,967	19,431	33,032
Apr. 1	32,907	32,151	40,597	105,655	5,855	5,718	15,640	27,213
July 1	30,721	30,929	52,260	113,910	5,751	3,992	19,946	29,689

Source: Producers' and consumers' inventories, estimated from gross weight based upon average chromium content of production as reported by the U.S. Bureau of Mines; importers' inventories, compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 6.--Ferrochromium: U.S. exports, 1972-76, January-June 1976, and January-June 1977

Item	1972	1973	1974	1975	1976	January-June -- 1976	January-June -- 1977
	Quantity (short tons, chromium content)						
High-carbon ferrochromium	7,511	15,189	4,228	3,467	6,354	1,909	1,119
Low-carbon ferrochromium	231	1,510	983	2,216	510	13	43
Total	7,742	16,699	5,211	5,683	6,864	1,922	1,164
	Value (1,000 dollars)						
High-carbon ferrochromium	3,017	5,906	2,300	3,729	5,144	1,563	1,034
Low-carbon ferrochromium	177	958	971	3,743	955	30	83
Total	3,194	6,864	3,271	7,472	6,099	1,593	1,117
	Unit value (cents per pound, chromium content)						
High-carbon ferrochromium	20	19	27	54	40	41	46
Low-carbon ferrochromium	38	32	49	84	94	15	92
Total	21	21	31	66	44	41	48

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 7.--Average number of persons employed in U.S. establishments in which ferrochr was produced, total and production and related workers, by quarters, January 1972-June 1977

Period	All employees producing--			Production and related workers producing--		
	All products	High-carbon ferrochromium	Low-carbon ferrochromium	All products	High-carbon ferrochromium	Low-carbon ferrochromium
1972:						
Jan.-Mar----	4,445	602	414	3,696	506	341
Apr.-June---	4,636	659	724	3,878	561	614
July-Sept---	4,695	665	557	3,929	574	481
Oct.-Dec----	4,672	607	564	3,911	515	485
Average---	4,612	633	565	3,854	539	480
1973:						
Jan.-Mar----	4,622	749	713	3,865	674	621
Apr.-June---	4,671	788	775	3,919	680	670
July-Sept---	4,854	772	561	4,102	680	499
Oct.-Dec----	4,807	789	847	4,060	693	730
Average---	4,738	774	724	3,986	682	630
1974:						
Jan.-Mar----	4,741	771	680	3,991	675	565
Apr.-June---	4,878	788	766	4,102	686	629
July-Sept---	4,969	731	734	4,191	643	609
Oct.-Dec----	4,933	788	806	4,158	692	667
Average---	4,880	770	746	4,110	674	618
1975:						
Jan.-Mar----	4,854	841	729	4,049	735	599
Apr.-June---	4,545	615	619	3,730	525	499
July-Sept---	3,909	338	474	3,092	281	370
Oct.-Dec----	3,545	357	158	2,743	297	114
Average---	4,213	538	495	3,404	460	396
1976:						
Jan.-Mar----	3,831	564	203	3,021	464	149
Apr.-June---	4,213	585	415	3,396	484	323
July-Sept---	4,331	722	322	3,535	608	258
Oct.-Dec----	3,996	530	220	3,201	454	167
Average---	4,093	600	290	3,288	502	224
1977:						
Jan.-Mar----	3,806	523	140	2,969	414	104
Apr.-June---	3,946	660	197	3,124	526	151

Source: Compiled from data submitted in response to questionnaires of the U.S. Internatio Trade Commission.

Table 8.--Man-hours worked by production and related workers in the manufacture of ferrochromium, by quarters, January 1972-June 1977

(In thousands of man-hours)

Period	Production and related workers producing--		
	All products	High-carbon ferrochromium	Low-carbon ferrochromium
1972:			
January-March	1,813	260	157
April-June	1,846	287	276
July-September	1,553	298	224
October-December	1,968	272	240
Total	7,180	1,117	897
1973:			
January-March	1,927	351	320
April-June	1,902	352	299
July-September	1,988	357	247
October-December	2,022	364	365
Total	7,839	1,424	1,231
1974:			
January-March	2,017	357	276
April-June	1,984	354	291
July-September	2,016	333	281
October-December	2,086	361	317
Total	8,103	1,405	1,165
1975:			
January-March	2,062	383	300
April-June	1,779	261	251
July-September	1,561	139	185
October-December	1,380	147	54
Total	6,782	930	790
1976:			
January-March	1,487	239	68
April-June	1,696	246	163
July-September	1,710	313	132
October-December	1,538	238	74
Total	6,431	1,036	437
1977:			
January-March	1,599	231	55
April-June	1,676	289	80

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 9.--Average hourly and weekly earnings of U.S. production workers engaged in the manufacture of durable goods, primary metals, and blast furnace and basic steel products, annual 1970-76, June 1977, and averages, 1970-76 and 1972-76

Period	Average hourly earnings			Average weekly earnings		
	Durable goods	Primary metals	Basic steel products	Durable goods	Primary metals	Basic steel products
Annual:						
1970	$3.56	$3.94	$4.16	$143.47	$159.18	$166.40
1971	3.80	4.23	4.49	153.52	170.89	179.15
1972	4.05	4.66	5.04	167.27	193.86	207.14
1973	4.32	5.03	5.44	179.28	213.27	227.39
1974	4.68	5.60	6.25	190.48	233.52	258.75
1975	5.14	6.17	6.95	205.09	246.80	273.14
1976	5.55	6.80	7.68	225.33	276.08	307.20
June 1977	6.00	7.43	8.42	249.00	309.83	348.59
Average:						
1970-76	4.44	5.20	5.72	180.63	213.37	231.31
1972-76	4.74	5.65	6.27	193.49	232.70	254.72
Average annual growth:						
1976 from 1970--------percent--	6.5	8.1	9.2	6.7	8.2	9.2
1976 from 1972----------do----	4.6	7.8	8.8	6.1	7.3	8.2
1976 from 1975----------do----	3.9	5.0	5.1	4.8	5.8	6.0

Source: Compiled from official statistics of the U.S. Bureau of Labor Statistics.

Table 10.--Real hourly and weekly earnings of U.S. production workers engaged in the manufacture of durable goods, primary metals, and blast furnace and basic steel products, annual 1970-76, June 1977, 1/ and averages, 1970-76 and 1972-76

(In 1967 dollars)

Period	Real hourly earnings			Real weekly earnings		
	Durable goods	Primary metals	Basic steel products	Durable goods	Primary metals	Basic steel products
Annual:						
1970	$3.56	$3.94	$4.16	$143.47	$159.18	$166.40
1971	3.64	4.05	4.30	147.19	163.84	171.77
1972	3.76	4.32	4.68	155.26	179.94	192.26
1973	3.77	4.40	4.75	156.65	186.35	198.69
1974	3.68	4.40	4.92	150.00	183.88	203.74
1975	3.70	4.45	5.01	147.87	179.38	196.94
1976	3.80	4.64	5.34	153.70	188.32	209.55
June 1977	3.84	4.75	5.39	159.31	198.23	223.03
Average:						
1970-76	3.70	4.31	4.72	150.60	177.27	191.31
1972-76	3.74	4.44	4.92	152.70	183.57	200.25
Average annual growth:						
1976 from 1970--------percent--	0.93	2.36	3.35	0.99	2.43	3.34
1976 from 1972----------do----	.21	1.43	2.30	.20	.91	1.23
1976 from 1975----------do----	1.34	2.11	2.30	1.95	2.50	3.15

1/ Earnings are deflated by the Consumer Price Index after 1970 to show effect of price changes.

Source: Compiled from official statistics of the U.S. Bureau of Labor Statistics.

Table 11.--Low-carbon ferrochromium: Lowest net prices and net prices for the greatest volume of the imported and U.S.-produced products sold, by specified types and by quarters, January 1972-June 1977

(Cents per pound)

Period	68-73 percent chromium; 0.05 percent carbon maximum				No chromium specification; 0.025 percent carbon maximum			
	Lowest net price		Net price for greatest volume sold		Lowest net price		Net price for greatest volume sold	
	Imported	U.S.-produced	Imported	U.S.-produced	Imported	U.S.-produced	Imported	U.S.-produced
1972:								
Jan.-Mar---	34	37	36	37	35	38	37	38
Apr.-June--	31	36	35	36	34	38	36	38
July-Sept--	31	35	34	35	38	38	36	38
Oct.-Dec---	30	31	33	31	31	33	33	32
1973:								
Jan.-Mar---	31	31	33	31	30	33	32	32
Apr.-June--	29	33	34	34	31	34	35	35
July-Sept--	30	35	35	34	35	35	37	35
Oct.-Dec---	31	34	36	34	37	35	38	35
1974:								
Jan.-Mar---	35	35	40	37	37	35	42	35
Apr.-June--	36	46	43	49	47	47	49	47
July-Sept--	70	55	72	73	88	53	80	60
Oct.-Dec---	77	66	90	95	99	62	91	70
1975:								
Jan.-Mar---	117	101	116	119	118	85	103	100
Apr.-June--	113	96	114	100	117	100	99	100
July-Sept--	93	95	103	100	119	100	94	100
Oct.-Dec---	80	92	88	92	111	96	87	100
1976:								
Jan.-Mar---	77	92	82	92	81	92	85	92
Apr.-June--	79	87	89	92	81	92	86	92
July-Sept--	73	85	79	85	82	85	87	85
Oct.-Dec---	74	76	81	71	82	85	83	85
1977:								
Jan.-Mar---	64	82	53	75	82	85	83	85
Apr.-June--	70	79	71	73	75	85	78	85

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 12.--Ferrochromium: U.S. consumption, by types and by quarters, January 1972-June 1977

(In short tons, chromium content)

Period	High-carbon ferro-chromium	Low-carbon ferro-chromium	Total
1972:			
January-March	14,986	13,117	28,103
April-June	32,290	23,537	55,827
July-September	41,247	25,014	66,261
October-December	32,554	20,545	53,099
Total	121,077	82,213	203,290
1973:			
January-March	37,916	23,971	61,887
April-June	41,811	24,213	66,024
July-September	40,830	23,722	64,552
October-December	43,967	26,277	70,244
Total	168,539	102,444	270,983
1974:			
January-March	47,267	29,747	77,014
April-June	47,280	29,556	76,836
July-September	44,471	30,685	75,156
October-December	46,055	27,993	74,048
Total	188,728	123,424	312,152
1975:			
January-March	29,605	18,764	48,369
April-June	25,967	12,378	38,345
July-September	26,373	11,968	38,341
October-December	30,700	11,665	42,365
Total	123,772	50,732	174,504
1976:			
January-March	39,089	13,132	52,221
April-June	42,687	13,293	55,980
July-September	39,678	11,856	51,534
October-December	34,346	11,313	45,659
Total	155,800	49,594	165,394
1977:			
January-March	46,100	12,337	58,437
April-June	56,281	11,161	67,442

Source: Compiled from official statistics of the U.S. Bureau of Mines.

Note.--Because of rounding, figures may not add to the totals shown.

APPENDIX D

PRINCIPAL WORLD FERROCHROMIUM PRODUCERS

Principal world ferrochromium producers, 1976

Country	Company
Australia	Broken Hill Pty. Co., Ltd.
Brazil	Cia. de Ferro-Ligas de Bahia (Ferbasa).
Finland	Outokumpu Oy (Government owned).
France	Ste. Francaise d'Electrometallurgie (Sofrem).
Federal Republic of Germany	Elektrowerk Weisweiler GmbH.
India	Ferro Alloys Corp., Ltd.
	Mysore Iron & Steel, Ltd.
Italy	Acciaierie e Ferriere Lombarde Falck.
	Montedison S.p.A.
Japan	Awamura Metal Industry Co., Ltd.
	Japan Metals & Chemicals Co., Ltd.
	Kanose Denko KK.
	Nippon Denko KK.
	Nippon Tokushu Alloy KK.
	Pacific Metals Co., Ltd.
	Showa Denko KK.
Norway	AS Bjolvefossen.
Philippines	Ferro-Chemicals Inc.
Rhodesia	Rhodesian Alloys (Pty.), Ltd.
	Rio Tinto (Rhodesia), Ltd.
	Union Carbide Rhomet (Pty.), Ltd.
South Africa	Feralloys, Ltd.
	Ferrometals, Ltd. (Amcor).
	Palmiet Chrome Corp. (Pty.), Ltd.
	RMB Alloys (Pty.), Ltd.
	Tubatse Ferrochrome, Ltd.
Spain	Ferroaleaciones Espanolas SA.
Sweden	Airco Alloys Division AB.
	Avesta Jernverks AB.
	AB Ferrolegenngar.
Turkey	Etibank (Government owned).
United States	Airco Alloys Division, Air Reduction Co.
	Chromium Mining & Smelting Corp.
	Globe Metallurgical Division, Interlake, Inc.
	Satralloy Corp.
	Union Carbide Corp.

Source: U.S. Bureau of Mines.

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High-carbon ferrochromium. Report to the President on investigation no. TA-201-28 under section 201 of the Trade act of 1974. Washington, 1977.

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