THE EFFECTS OF LEAD IMPORT QUOTAS ON THE UNITED STATES LEAD INDUSTRY

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CHAPTER I

INTRODUCTION

A very serious problem may arise whenever countries are engaged in international trade. As trading progresses, the price at which a given commodity is sold may not allow enough profit to enable the continuation of production in some of the trading countries; this is due to the fact that some firms have higher operating costs than others. In an attempt to prevent the termination of operations, the higher-cost producers may appeal to their respective governments for protection through restrictions on imports which will lessen competition between domestic and foreign sources of a specific good.

The United States lead industry is involved in a situation of the foregoing nature. The commodity involved is unmanufactured lead; i.e., lead in ore and lead in ingots. In recent years as lead imports increased, it became evident that the price of lead would no longer allow enough profit to enable the continuation of some mining operations in the United States; lead can be produced cheaper in some foreign countries than in the United States. In an attempt to prevent mine closures in the United States, domestic mining interests appealed to the Government for protection from foreign sales of lead in the domestic economy. Governmental aid to the industry was first given during the depression years in the form of a protective tariff which is designed to discourage imports by placing a tax on the imported commodity.

However, protection of domestic lead producers from sales of foreign lead afforded by the tariff was not sufficient to either maintain domestic production at previous levels or encourage its expansion, so a more restrictive device for protection was employed in October, 1958--the import quota. A quota restricts the physical quantity of a good which can be imported. It was intended that the lessening of lead imports would result in a domestic price which would allow domestic mining operations to continue. The purpose of this thesis is to find out whether or not the import quota placed on unmanufactured lead has caused an appreciable change in the economic position of domestic lead producers. Should the findings be positive, the nature of the change will be examined.

This investigation begins with a look at the domestic lead industry and its place in relation to world production. The structure of the domestic industry is discussed with reference to the number of firms, the concentration of production within these firms, the nature of the product, and the various stages of lead production. The uses of lead, its physical characteristics, and various costs of production are also examined.

This survey is followed by an analysis of the economic aspects of the domestic lead industry from 1950 to 1959 with particular attention being given to mine production, production from scrap, costs, domestic prices, imports, stocks, domestic consumption, and the availability of substitutes.

Governmental efforts in behalf of the domestic lead industry which ultimately led to the imposition of quota restrictions are discussed next. Several arguments in opposition to the quota will be cited; some

of these arguments antedate the quota and others follow its imposition. Finally, the effects of the quota on the domestic industry are considered.

CHAPTER II

THE STRUCTURE OF THE UNITED STATES LEAD INDUSTRY

For the purposes of this thesis, the lead industry of the United States will be viewed broadly as constituting a series of processes which begins with activities directed toward the extraction of ore from the earth and which terminate with the output of metal. The general production pattern calls for ores to be mined, milled (concentrated), smelted, and refined. However, the sequence of the production pattern occasionally varies; not all ores are smelted into metal, nor is all metal produced from newly mined ores. For example, some ores are normally diverted after the milling stage to direct processing (without smelting) into pigments and chemicals, and materials other than ores (scrap, dross, metal dust, skimmings, etc.) enter the production sequence at the smelter level where they are reduced to metal.[1]

As used in this thesis, the term "unmanufactured lead" refers to lead-bearing ores, flue dust, mattes of all kinds, lead bullion or base bullion, lead dross, scrap lead, antimonal scrap lead, lead in pigs and bars, reclaimed lead, antimonal lead, type metal, and various alloys and combinations of lead.[2] These items are defined and linked to their sources in Table 2-1.

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[1]U. S. Tariff Commission, Lead and Zinc Industries, Report No. 192 to the Congress on the Investigation Under Section 332 of the Tariff Act of 1930 (Washington, 1954), p. 7.

[2]U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), p. 14.

TABLE 2-1

UNMANUFACTURED LEAD AND ITS SOURCE (STAGE OF PRODUCTION)

UNMANUFACTURED LEAD	STAGE OF PRODUCTION
Lead-bearing Ore:	The material produced from the mine
Lead ore concentrates:	The result of milling lead-bearing ores to remove much of the waste material
Base Bullion:	Unrefined lead from the blast furnace; contains 97-99% lead
Matte:	Material skimmed off the molten base bullion; contains lead, gold, silver, and copper-iron sulfide
Slag:	Material skimmed off the molten base bullion; contains nonmetalic minerals, cadmium, zinc oxide and about 45% lead
Flue dust:	Solid particles containing lead which are forced out the smelter stack
"Soft" lead:	Base bullion that is pure enough for most commercial uses
Dross:	Material skimmed off lead during various refining processes; contains 50-90% lead
Fume:	Vaporized metal from the various firing processes; contains about 50% lead
Pigs and Bars:	Refined lead; contains 99.94% lead
Antimonal lead:	Refined lead; contains 6-8% antimony
Type metal:	Refined lead; contains 2-23% antimony

Sources: Department of the Interior, Bureau of Mines, 1950 Materials Survey: Lead (Washington, 1951), Chapter II.

U. S. Tariff Commission, Lead and Zinc, Report to the President on Escape Clause Investigation No. 65 Under Section 7 of the Trade Agreements Extension Act of 1951 as Amended (Washington, 1958), p. 7.

The United States' supply of lead is derived from domestic ores, scrap metal, and imports of either ore concentrates or metal (See Appendix "A"). The production of lead from domestic ore is referred to as primary production and that from scrap as secondary production.[3] The raw materials for secondary production come mostly from scrapped automobile batteries from which about 80 per cent of the lead content can be recovered. Between the years 1955-1959, primary production accounted for about 25 per cent and imports for about 35 per cent of domestic supply. Secondary production, during the same period of time, accounted for 40 per cent of the total United States' supply. It has exceeded primary production since 1945.[4] The various tonnages of primary production, secondary production, and imports are shown in Figure II-1.

The lead market involves transactions at two separate levels. The first involves the purchase of ores and ore concentrates by the custom smelters. Companies that have no facilities for treating their ores and/or concentrates sell them to companies that include smelting and refining in their operations or are primarily engaged in the smelting and refining business. American Smelting & Refining Company is the most important lead custom smelter in the United States, deriving the bulk of its refined lead output from purchased ores and concentrates.

The second phase of marketing involves the selling of refined lead.

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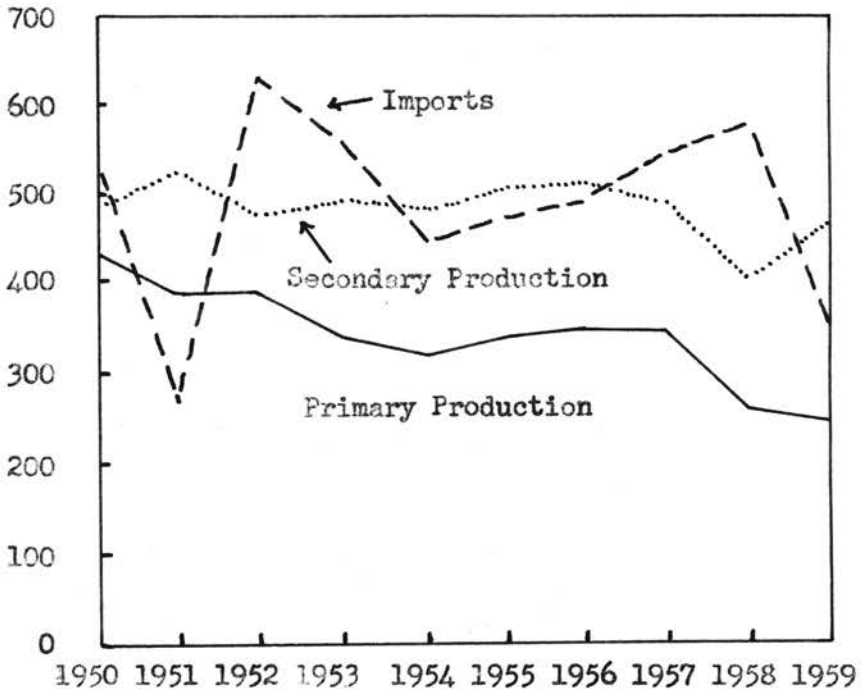
[3]U. S. Tariff Commission, Lead and Zinc, Report to the President on Escape Clause Investigation No. 65 Under Section 7 of the Trade Agreements Extension Act of 1951 as Amended (Washington, 1958), p. 9.

[4]U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), p. 22.

FIGURE II-1

PRIMARY PRODUCTION, SECONDARY PRODUCTION AND IMPORTS 1950-1959 IN 1,000's OF SHORT TONS*



Source: U.S. Bureau of Mines, Minerals Yearbook, 1950-1959(1959 figures shown throughout this thesis are from The U.S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930). and the Engineering and Mining Journal, February, 1960.

*All tonnages expressed throughout this thesis are in terms of short tons; i.e., a ton of 2,000 pounds.

The St. Joseph Lead Company and the American Smelting and Refining Company are the principal sellers of lead in the United States, marketing 60 to 80 per cent of the lead sold in this country.[5]

The two major markets for lead in the United States are New York and St. Louis, and the bulk of domestically produced lead is sold at prices normally based upon quotations in these markets. The differential between New York and St. Louis prices is about 0.2 cents per pound; an amount which approximates the freight charges between the two points.[6]

Before examining the structure of the lead industry it is necessary to point out that the first two processes of production (mining and milling) cannot be dealt with as if they pertained exclusively to lead. Lead and zinc concentrates are frequently found in the same ore, although the proportion of each metal present may differ greatly from district to district and even from mine to mine within the same district. There are some important exceptions to this generalization; for example, lead ores, nearly free of zinc, are mined in southeastern Missouri and in certain districts of Utah. Regardless of which of the two metals may be dominant in the ore, mills which concentrate them normally produce both lead and zinc concentrates.[7]

Because lead and zinc do occur in the same ores, it is practically

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[5]U. S. Department of Commerce, Bureau of the Census, 1958 Census of Mineral Industries, Industry and Product Reports, Lead and Zinc Ores Industry (Washington, 1960), p. S-20.

[6]Ibid., p. S-20.

[7]U. S. Tariff Commission, Lead and Zinc Industries, Report No. 192 to the Congress on the Investigation Under Section 332 of the Tariff Act of 1930 (Washington, 1954), p. 8.

impossible to classify individual mines into two separate groups representing lead mines which belong to the lead industry, and zinc mines which belong in the zinc industry. It is possible, however, on the basis of available information to separate the types of mines which are dominantly the source of lead from those which are dominantly the source of zinc.[8] Therefore, the term "primarily engaged in producing lead ore" will be used when reference is made to the mining and milling of ores that predominantly yield lead.

Whereas the location of mining and milling operations is determined by nature--at sites where ores of commercial grade occur--primary smelters and refiners base their location on many economic factors which include availability of ores, fuel, power, labor, and access to principal markets (See Appendix "D"). Since mining operations are broadly distributed, distances from mines to smelters vary widely. Also, smelters use different fuels and processes in carrying on their operations and some smelters may be better adapted than others for the reduction of certain ores. It may thus be advantageous in certain instances to ship ores to more distant smelters that are adapted for their treatment rather than to send them to less distant smelters that are not so well adapted. Plants that process lead scrap are usually located in, or near, the heavily industrialized and populated areas of the country where supplies of scrap are abundant (See Appendix "F").[9]

Two major divisions appear in the United States lead industry. One division consists of activities directed toward the exploration

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[8]Ibid., p. 9.

[9]Ibid., p. 8.

and development of ore bodies and the mining and milling of the ore. The other division consists of smelting and refining the smelted metal. Corporate structure usually follows these main divisions; however, the larger concerns are vertically integrated and operate mines as well as smelters and refineries (See Appendix "D").[10]

The number of mines at which crude ores are produced is relatively large. The number of mills (located near mines) that concentrate the ore is smaller, and the number of primary smelters and refineries is smaller still. A relatively few companies control the principal mines, the associated ore-milling facilities, the smelters and refineries, and the import agencies through which lead metal and ore move into the United States from major foreign sources.[11]

In 1958 there were 281 mines engaged primarily in producing recoverable lead and zinc. Fifty-four of these mines were producing lead only as a by-product from ores valued chiefly for their content of zinc. Total employment in the remaining 227 mines was 6,827; however, only 25 mines employed more than 20 workers.[12]

Lead ore is mined in significant quantities in twenty states; however, the principal mining areas are concentrated within just a few of these states. Table 2-2 shows the states that had a 1954-1958 mine output of recoverable lead larger than 10,000 tons. Twenty-three of

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[10]Ibid., p. 19.

[11]U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), p. 68.

[12]U. S. Department of Commerce, Bureau of the Census, 1958 Census of Mineral Industries, Industry and Product Reports, Lead and Zinc Ores Industry (Washington, 1960), p. 3.

the twenty-five largest producing mines are located within these eight states. Missouri alone accounts for approximately 42 per cent of the total domestic primary production. Of the nine principal mines in Missouri in 1958, seven were included in the top eighteen producing mines. Six of these seven mines are operated by the St. Joseph Lead Company (See Appendix "D").

TABLE 2-2

STATES WITH A 1954-58 AVERAGE MINE PRODUCTION OF LEAD LARGER THAN 10,000 TONS

	1954	1955	1956	1957	1958	Average
Missouri	125,250	125,412	123,783	126,345	113,123	122,782
Idaho	69,302	64,163	64,321	71,637	53,603	64,605
Utah	44,977	50,452	49,555	44,471	40,355	45,961
Colorado	17,823	15,805	19,856	21,003	14,112	16,719
Montana	14,820	17,028	18,642	13,300	8,434	14,444
Arizona	8,385	9,817	11,999	12,441	11,890	10,906
Washington	9,938	10,340	11,057	12,234	9,020	10,737
Oklahoma	14,204	14,126	12,350	7,183	3,692	10,331

Source: U. S. Bureau of Mines, Minerals Yearbook, 1958, pp. 640-642.

The ores produced by lead and zinc mines also contain silver, copper, gold, and occasionally other metals, such as manganese. The grade of ore mines, i.e., the per cent of recoverable metals in the ore, is a key determinant of the income received from the ore mined.[13] From the 14,898,000 tons of domestic crude lead-zinc ore mined in 1958, the following relative amounts of metal were recovered: 1.7 per cent lead;

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[13]U. S. Tariff Commission, Lead and Zinc Industries, Report No. 192 to the Congress on the Investigation Under Section 332 of the Tariff Act of 1930 (Washington, 1954), p. 210.

2.5 per cent zinc; 0.1 per cent copper; 0.80 fine ounces of silver per ton and 0.006 fine ounces of gold per ton.[14]

Other than the grade of ore and the selling price of the concentrates, mining and milling expenses determine the profit of the mill. Expenses per ton of ore mined depend upon differences in physical conditions encountered in mining, the extent of mechanization, and the relative importance of successful exploration and development work. The most important single operating expense in mining and milling is labor cost. The cost of supplies and material, equal to approximately half of the labor component, largely consists of the cost of blasting-powder, steel, timber, and related items. The cost of purchased electricity is the next most important expense in the mining and milling of lead. Lastly, and least in relative importance, is the cost of transporting the concentrates to a smelter.[15]

In addition to these costs of ore production, there is the cost of maintaining the mine when it is not being worked. The closing of a mine generally results in floodings and cave-ins. If these situations are not remedied immediately after they occur, the ore in the mine can only be recovered through very expensive operations.[16]

The price of the ore or concentrates as they are sold to the smelter is about two-thirds of the market value of the recoverable metal

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[14]U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), Table 29.

[15]U. S. Tariff Commission, Lead and Zinc Industries, Report No. 192 to the Congress on the Investigation Under Section 332 of the Tariff Act of 1930 (Washington, 1954), pp. 222-224.

[16]U. S. Congress, Senate, Committee on Finance, Import Tax on Lead and Zinc, Hearings, 85th Congress, 1st session, on S. 2376 (Washington, 1957), pp. 132-133.

contained therein. The milling and mining companies which must sell their ore to the smelter of another firm largely absorb the effects of market price fluctuations. The total amount paid for the ores and concentrates by the smelter is based on the metal content multiplied by the current market price less deductions to cover losses in smelting; costs of smelting, refining, and marketing; the cost of transporting the ores from the mines or mill to the smelter; the cost of transporting lead bullion from the smelter to the refinery; and finally, the smelter's profit.[17] It follows that the smelters derive their revenue primarily from the profits of processing the ores and concentrates. Movements in the market price of unmanufactured lead are generally offset by the prices the smelter pays for concentrates. Therefore, the net revenue received by the mine fluctuates to a greater extent with changes in market prices than the profit received by the smelters.[18]

In primary production the smelters and refineries are much more concentrated as to the number of companies than are the mines. This segment of the industry consists of five lead smelters, six smelter-refinery combinations, and two refineries in the United States (See Appendix "D").[19] They produce the final unmanufactured metal. American Smelting and Refining Company owns three smelters, three smelter-refineries and one refinery. This firm accounts for approximately 55 per cent of domestic primary production. The two next largest firms

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[17]U. S. Tariff Commission, Lead and Zinc, Report to the President on Escape Clause Investigation No. 65 Under Section 7 of the Trade Agreements Extension Act of 1951 as Amended (Washington, 1958), p. 44.

[18]Ibid., p. 45.

[19]U. S. Department of the Interior, Bureau of Mines, Minerals Yearbook (Washington, 1957), p. 701.

supply 38 per cent of the refined metal, and the remaining two firms supply 7 per cent of production. Refinery production is located chiefly in Nebraska with 24 per cent of the capacity and Missouri and Illinois with 20 per cent each.[20]

In addition to the primary plants, there are about 259 secondary lead smelters and about 58 foundries and manufacturers that melt and re-use their own lead scrap. Some secondary lead is recovered in processing copper-base scrap at secondary copper smelters and various nonferrous ingot producers. For a partial list of major secondary smelting firms with plant locations, see Appendix "F."[21]

Unmanufactured lead is imported into the United States mostly in the form of lead pigs and bars; however, imports of lead in ores, flue dust, and mattes ore are also important (See Appendix "A"). These imports fill the gap between domestic production and the amount needed for domestic consumption. Since 1939 domestic production has been insufficient for domestic consumption.[22] Table 2-3 shows the leading countries which export lead to the United States.

Adjustment to market fluctuations is slow because of the time-consuming production pattern of the industry. New supplies cannot be provided quickly to meet an increase in demand, and mine production cannot be reduced promptly because the cost of curtailing production might be

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[20]U. S. Congress, Senate, Committee on Interior and Insular Affairs, Long Range Minerals Program, Hearings, 85th Congress, 1st session, on The Long-Range Minerals Program (Washington, 1957), Part 1, p. 70a.

[21]U. S. Department of the Interior, Bureau of Mines, Minerals Yearbook (Washington, 1957), p. 701.

[22]U. S. Tariff Commission, Lead and Zinc, Report to the President on Escape Clause Investigation No. 65 Under Section 7 of the Trade Agreements Extension Act of 1951 as Amended (Washington, 1958), p. 66.

TABLE 2-3

LEADING COUNTRIES EXPORTING LEAD TO THE UNITED STATES
IN 1958 IN SHORT TONS

Country	Lead in Ore, Flue Dust and Mattes	Pigs and Bars	Reclaimed Scrap
Canada	22,264	50,926	1,908
Bolivia	14,715		
Peru	70,782	42,473	
Union of South Africa	49,215		
Australia	25,849	80,515	2,229
Mexico		122,864	1,939
Spain		14,237	
Yugoslavia		36,789	
Others	18,743	20,648	494
Total	201,628	368,452	6,570

Source: Bureau of Mines, Minerals Yearbook, 1958, p. 655.

greater than the cost of continuing production at the prevailing low price. However, if the price remains at levels lower than that which is needed to give the mine a profit, there will be no choice but to cut back output and some mines will have to close.[23]

The uses to which lead is put are largely determined by its characteristics. Its characteristics make lead one of the most versatile metals:

> Lead possesses a rare combination of valuable properties. Its high specific gravity makes it valuable wherever momentum /the force of moving objects/ is required, as in projectiles, etc. Lead oxides are valuable pigments. It is soft, ductile, malleable, and, above all, it is cheap.
>
> Its resistance to acids adapts it to use in storage batteries. Its resistance to weather and to the action of the sea makes it suitable for cable covering. Its resistance to the action of the chemicals in water accounts to a great extent for its use in construction work. Its

[23] U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), p. 35.

capacity to harden when alloyed with antimony and other elements renders it suitable as a bearing and type metal.[24]

This versatility of lead makes it useful in a great number of products (See Appendix "I"); however, only the largest uses will be discussed here. The largest single use of lead is in storage batteries, which involves both antimonal lead and lead oxide. In 1959 the use of lead in batteries was approximately 34 per cent of total lead consumption in the United States. The second largest use of lead was in the production of tetraethyl lead; this amounted to about 15 per cent of the total United States consumption.[25] Next in relative importance come red lead and litharge which are used in the manufacture of pigments. Litharge is produced by roasting pig lead in a reverberatory furnace in the presence of air which furnishes the oxygen for the conversion to lead monoxide. It is used in ceramics, chrome pigments, oil refining, insecticides, varnish, rubber and floor coverings. Red lead is made by heating litharge in a reverberatory furnace at 900° to 950°F.[26]

The use of lead is firmly established in some manufacturing processes; however, in many instances, good substitutes are available. Plastic and aluminum are good substitutes for lead cable covering in the manufacture of aerial, low-voltage power, and telephone cable. Lead for such uses in 1959 was less than half of what it was in 1956 (See Appendix "I"). White lead in pigments has been replaced to some extent by titanium

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[24]Erich W. Zimmerman, World Resources and Industries (2nd ed., New York, 1951), p. 735.

[25]U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), Table 9.

[26]U. S. Department of the Interior, Bureau of Mines, 1950 Materials Survey: Lead (Washington, 1959), Chapter I, pp. 19-21.

dioxide which is less expensive. The use of white lead in pigments has decreased steadily since 1954. Lead in building construction is being replaced by cast iron, steel, copper, brass, aluminum and plastics, particularly lead pipes, sheet traps, and bends.[27] In this area the use of lead has also declined every year since 1954.

In addition to replacement by substitute metals, lead consumption has been lessened by changes in technology and manufacturing processes. Reduction in the thickness of bearings used in freight-car journal assemblies may have partially accounted for the downward trend (1954-59) of lead in babbit bearings (See Appendix "E"). The use of lead sheet in the production of chemicals has been reduced because of new chemical manufacturing processes which require less anti-corrosion materials.[28] Improvements in the manufacture and design of tin cans and automobile radiators have decreased the use of lead solders in these products. There is less tetraethyl fluid needed in the production of gasoline on account of the improvements in gasoline refining techniques and the production of higher octane fuel.[29]

In some cases technology has not only lessened the use of lead, but it has completely obviated its use. Microwave long-distance communication systems have eliminated the use of cable. New manufacturing

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[27]U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), p. 143.

[28]U. S. Tariff Commission, Lead and Zinc Industries, Report No. 192 to the Congress on the Investigation Under Section 332 of the Tariff Act of 1930 (Washington, 1954), p. 144.

[29]U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), pp. 143-144.

processes have eliminated the use of litharge (lead monoxide) in gasoline as a deodorant. Also, new methods have eliminated the use of type metal in some areas of printing.[30]

The consumption of lead is closely linked with sales of manufactured goods (See Appendix "E"). The number of motor vehicles in use and the number of factory sales determine, in a large part, the use of lead in storage batteries. Lead covered cable may only be used where corrosive conditions prevail, and the amount of lead used in ammunition depends upon hunting and target shooting (excluding wars). The amount of caulking lead used (between joints of cast iron pipe) depends upon the growth of building construction and the expansion of water supply and sewage-disposal systems.[31]

The lead industry has problems other than those involving the consumption of refined metal. It is estimated that domestic production would fall by about 15 per cent in the absence of government activity. Also, depletion of richer ore bodies and increasing mining costs present an economic problem. The industry must find ways to reduce the cost of producing unmanufactured lead, and the quality of the metal and alloys must be improved.[32]

Finally, the mine production of lead in the United States has not kept pace with the world production. Table 2-4 shows that the ratio of United States mine production to world mine production has been cut in half since 1950.

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[30]Ibid., p. 143.

[31]Ibid., pp. 144-147.

[32]U. S. Congress, Senate, Committee on Interior and Insular Affairs, Long Range Minerals Program, Hearings, 85th Congress, 1st session, on The Long-Range Minerals Program (Washington, 1957), Part 1, p. 71a.

TABLE 2-4

WORLD MINE PRODUCTION AND UNITED STATES
MINE PRODUCTION OF LEAD 1950-1958

Year	World in 1000's of Short Tons	United States, Short Tons	Per Cent of United States To World
1950	1,850	430,827	23.3
1951	1,890	388,164	20.5
1952	2,030	390,162	19.2
1953	2,090	342,644	16.4
1954	2,270	325,419	14.6
1955	2,420	338,025	14.0
1956	2,480	352,826	14.4
1957	2,610	338,216	12.9
1958	2,520	267,377	10.6

Source: U. S. Bureau of Mines, Minerals Yearbook, 1950-1958.

To sum up, lead is a very useful metal; but its domestic production is threatened by mine depletion, high production costs, substitute products, technological obsolescence, and foreign competition. The impact of these forces on the economic aspects of the industry will be considered in the following chapter.

CHAPTER III

ECONOMIC ASPECTS OF THE UNITED STATES LEAD INDUSTRY

This chapter will examine the major movements in domestic lead production, prices, and consumption from 1950 to 1959.

Production

The trend of domestic lead production from 1950 to 1959 points downward as indicated in Figure III-1. Domestic production consists of primary production from ores mined in the United States and secondary production from scrap lead. Of these two, the decline in primary production is the more severe (See Appendix "C").

The decline of domestic lead production as shown by Figure III-1 does not indicate which segment of the industry is injured the most. The domestic primary lead smelters and refineries enjoy some protection against the repercussion of a declining mine output. Domestic smelters need not confine their operations to domestic ores and by-products alone. Imports of lead ore concentrates and matte have increased considerably in the last ten years to displace the supply of domestic ores, as shown in Table 3-1.[1]

The smelters are affected by declining domestic mine production

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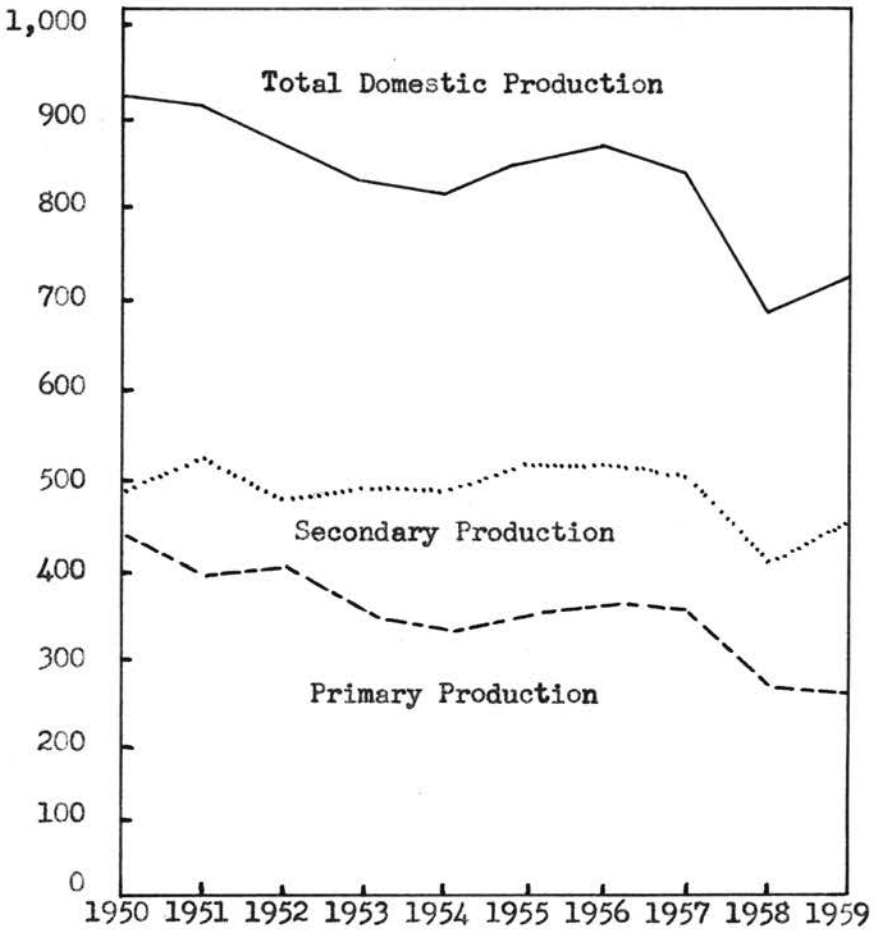
[1] U. S. Congress, Senate, Committee on Finance, Import Tax on Lead and Zinc, Hearings, 85th Congress, 1st session, on S. 2376 (Washington, 1957), p. 83.

Figure III-1

Domestic Lead Production
1950-1959 in 1,000's of Short Tons



Source: U. S. Bureau of Mines, Minerals Yearbook, 1950-1959.

but they have been able to maintain the differential between what is received for the sale of base bullion and what is paid for ore concentrates. The mine owner is forced to shut down when the market no longer covers his mining costs.[2]

TABLE 3-1

IMPORTS OF LEAD IN ORES AND MATTE, DOMESTIC MINE PRODUCTION AND THE RATIO OF LEAD IN IMPORTED ORES AND MATTE TO DOMESTIC MINE PRODUCTION 1950-1959 IN SHORT TONS

Year	Imports of Lead in Ores and Matte	Domestic Mine Production	Ratio* %
1950	76,520	430,827	17.5
1951	67,471	338,164	20.0
1952	104,621	390,162	26.0
1953	160,929	342,644	47.0
1954	161,261	325,419	49.5
1955	177,479	338,025	52.5
1956	196,425	352,826	55.7
1957	198,479	338,216	59.0
1958	201,628	267,377	75.3
1959	126,000	253,260	50.0

Source: U. S. Bureau of Mines, Minerals Yearbook, 1950-1959.
*Imports of Lead in Ores and Matte divided by Domestic Mine Production.

Declining production is affecting the mining and milling segment of domestic primary production more adversely than the smelting and refining segment. This is evidenced by the closing of many mines since 1950. Table 3-2 shows the distribution of the adverse effects of decreasing domestic lead production on the number of mines primarily engaged in producing lead ore.

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[2]Ibid.

TABLE 3-2

NUMBER OF MINES PRIMARILY ENGAGED IN PRODUCING LEAD ORE, BY STATES, 1950 AND 1958

State	1950	1958
Alaska	1	3
Arizona	91	19
California	22	9
Colorado	66	25
Idaho	41	19
Montana	67	20
Nevada	64	19
New Mexico	31	3
Oregon	1	1
Utah	35	24
Washington	4	2
Kansas Missouri Oklahoma	[18]	[17]
Illinois	17	19
Kentucky	7	0
New York	3	1
Virginia	2	2
Wisconsin	11	2
Total	481	227

Source: U. S. Bureau of Mines, Minerals Yearbook, 1950-1959.

Why is domestic mine production decreasing? The continuation of mining operations depends upon the ability of the miner to obtain enough revenue from the sale of his ore concentrates to the smelter to cover all costs involved in mining and milling. Some examples of cost increases from a 1947-1949 average to 1956 are as follows: labor, 69 per cent; blasting powder, 48 per cent; steel, 80 per cent; and timber, 57 per cent. The size of these cost increases can be accounted for in part by the need for extracting less profitable ore bodies

requiring more resource inputs per unit of metal produced.[3] No new ore bodies have been discovered in recent years, so more capital and labor must be expended on working the old ore bodies.[4] In addition, smelting costs have increased; this tends to decrease the revenue received by the mine from the sale of its ore.

Domestic primary production seems to fluctuate with the price of refined lead to some extent. A slight direct relationship exists between price in one year and primary production in the following year. Some lag is to be expected since one of the characteristics of the industry is the length of time it takes to increase mine output to be sold at higher prices or to decrease mine output at lower prices.[5] The relationship between the domestic lead price and primary production is shown in Table 3-3.

One factor influencing primary production was the presence of labor difficulties. In 1951, some of the mines and mills in the Western States were on strike from August 23 to September 6. This partly accounts for the failure of domestic primary production to increase in 1952 as much as the domestic price increased in 1951 (See Table 3-3). Smelters and refineries did not feel the full effects of the mine strikes until May, 1952. In spite of its length, production statistics do not clearly show its impact (See Appendix "C"). A five-month strike tied

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[3]U. S. Congress, Senate, Committee on Finance, Import Tax on Lead and Zinc, Hearings, 85th Congress, 1st session, on S. 2376 (Washington, 1957), p. 184.

[4]Ibid., p. 260.

[5]U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), p. 35.

up fifteen operations in Idaho and one in Montana in 1955. In 1959, prolonged strikes at several plants of the largest domestic smelting company and other lead operations also contributed to declining primary production.[6] However, the effect of labor difficulties upon primary production is relatively small in comparison to the effects of the domestic lead price.

TABLE 3-3

NEW YORK LEAD PRICE AND PRIMARY PRODUCTION 1950-1959

Year	Price ¢ per lb.	Production, 1,000's of Short Tons
1949	15.36	
1950	13.29	431
1951	17.50	388
1952	16.46	390
1953	13.48	343
1954	14.54	325
1955	15.13	338
1956	16.01	353
1957	14.65	338
1958	12.10	267
1959	12.21	253

Source: Price: Engineering & Mining Journal, 1951-1960.
Production: U. S. Bureau of Mines, Minerals Yearbook, 1950-1959.

Secondary production has demonstrated a tendency to adjust to market prices much faster than primary production as Table 3-4 indicates. The possibility of speedy adjustment gives the producers of secondary lead a distinct advantage. If the demand for lead decreases, the secondary lead producers can readily cut production and avoid excessive

[6]U. S. Department of the Interior, Bureau of Mines, Minerals Yearbook (Washington, 1951, 1956, and 1959).

inventories. The ability to adjust more readily to demand fluctuations helps secondary producers and places the brunt of the impact of production changes on the miner.

TABLE 3-4

NEW YORK LEAD PRICE AND DOMESTIC SECONDARY PRODUCTION 1950-1959

Year	Price ¢ per lb.	Production, 1,000's of Short Tons
1950	13.29	482
1951	17.50	518
1952	16.46	471
1953	13.48	486
1954	14.54	480
1955	15.13	502
1956	16.01	506
1957	14.65	489
1958	12.10	401
1959	12.21	456

Source: Price: Engineering & Mining Journal, 1951-1960.
Production: U. S. Bureau of Mines, Minerals Yearbook, 1950-1959.

However, secondary production did not decline with prices in 1953 (See Table 3-4). This was largely due to the abnormal production of storage batteries in 1951 and 1952 which created a large supply of scrap lead in 1953 since batteries last about two years and about 80 per cent of all scrap lead comes from batteries. As the price for scrap lead adjusted downward to the increased supply, the price of lead was further depressed. Thus, secondary producers of lead could still make a profit even at the lower 1953 price of refined lead.[7] The absence

[7]U. S. Department of the Interior, Bureau of Mines, Minerals Yearbook (Washington, 1950), p. 684.

of an abnormal supply of scrap lead in 1959 may indicate that secondary smelters can make a profit even at a low price of 12.2 cents per pound.

Price

Let us examine the trend in lead prices as shown in Figure III-2 and the major causes for price movements within the period under study (1950-1959).

The trend of the domestic price of lead is downward. A comparison of the lead price with the all metals wholesale price index shows that the price of lead has failed to keep pace with the price patterns of metals as a group.

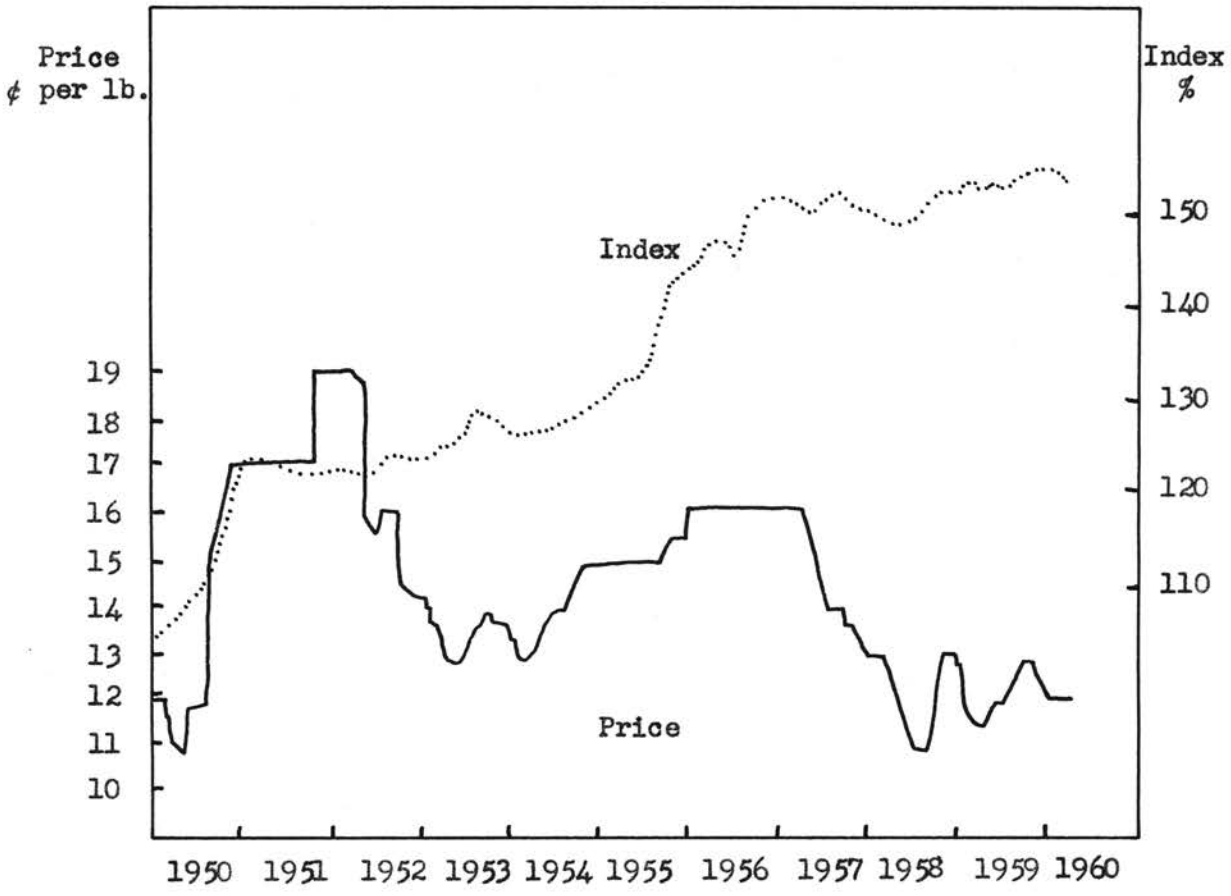
The question arises why curtailment of domestic output fails to raise the domestic price. Figure III-3 shows that even though domestic production has fallen, the total supply of lead available to domestic manufacturers generally remains in excess of domestic consumption needs.

In addition to domestic production, United States manufacturers have access to a portion of the world production through imports. Table 3-5 shows the increase in total imports over the last ten years and the ratio of total imports to domestic production. The decline in imports in 1959 is due to the import quota which is discussed in Chapter Four. Total imports consist of base bullion, the lead content of lead-bearing ores, and refined lead. Imports of lead-bearing ores alone have been shown above (See Table 3-2).

Now let us examine the major influences upon the domestic lead price. Table 3-6 shows a comparison of imports, domestic lead prices, and world lead prices (prices of the London Metal Exchange).

Figure III-2

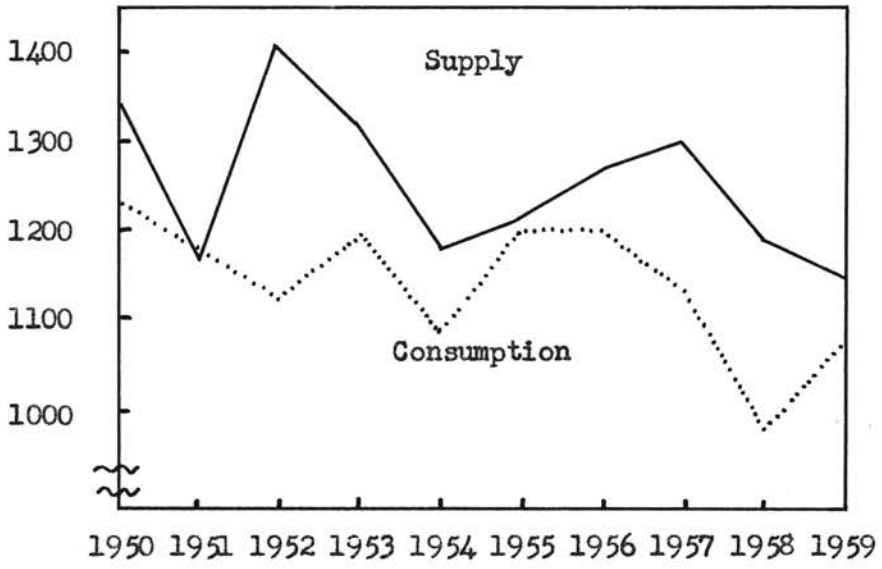
New York Lead Price and the Wholesale
Price Index of Metals 1950-1959
(1947-49 = 100)



Source: Price Index: Federal Reserve Chart Book on Financial and Business Statistics, May, 1960.
Price: Engineering & Mining Journal, 1951-1960.

Figure III-3

Domestic Lead Consumption and the Total Supply of Lead Available to Domestic Manufacturers From All Sources 1950-1959 in 1,000's of Short Tons



Source: U. S. Bureau of Mines, Minerals Yearbook, 1950-1959.

TABLE 3-5

TOTAL IMPORTS, DOMESTIC PRODUCTION AND THE
RATIO OF IMPORTS TO DOMESTIC PRODUCTION 1950-1959
IN 1,000's OF SHORT TONS

Year	Total Imports	Domestic Production	Ratio* %
1950	542	913	59.5
1951	258	906	28.5
1952	628	861	73.0
1953	552	829	66.6
1954	443	806	55.0
1955	462	840	55.0
1956	479	859	55.7
1957	532	827	64.4
1958	577	669	86.4
1959	348	710	49.0

Source: U. S. Bureau of Mines, Minerals Yearbook, 1950-1959.
*Total Imports divided by Domestic Production.

A comparison of total lead imports with the New York lead price does not reveal a clear pattern of relationship between them. During this period (1950-1959) many outside factors influenced both the domestic price level and imports.

The world price of lead shown in Table 3-6 is an annual average price of lead at the London Metal Exchange converted to cents per pound; this world price does not include costs of transportation, insurance and payment of United States tariff duties. At the end of 1959 the cost of transportation and insurance plus import duties amounted to about 1.9 cents per pound; however, this figure is subject to change as the tariff rate is changed. The selling of lead by brokers in the market where the price is highest tends to restore the differential between the New York and the London price to reflect the cost of transportation, insurance, and United States tariff duties.

TABLE 3-6

LEAD IMPORTS, DOMESTIC PRICE, AND THE WORLD PRICE 1950-1959

Year	Imports 1,000's of Short Tons	Domestic Price ¢ per lb.	World Price ¢ per lb.
1950	541.8	13.29	13.31
1951	257.9	17.50	20.27
1952	628.0	16.46	17.03
1953	552.3	13.48	11.43
1954	443.2	14.05	12.05
1955	462.2	15.13	13.23
1956	479.8	16.10	14.51
1957	532.0	14.68	12.02
1958	577.1	12.10	9.14
1959	348.0	12.21	8.85

Source: Imports and World Price: U. S. Bureau of Mines, Minerals Yearbook, 1950-1959.
Domestic Price: Engineering & Mining Journal, 1951-1960.

In 1950 the London price was higher than the New York bid price; therefore, lead sales took place at London rather than New York bid prices. At the outset of the Korean War in June, 1951, manufacturers' hoarding lead all over the world increased the demand for lead and the London price increased to 20 cents per pound. The Office of Price Stabilization imposed a domestic ceiling price of 17 cents per pound on lead sold in the United States in January, 1951. This further increased the price disparity between the two markets and prevented a return to a normal price differential reflecting costs of transportation, insurance, and United States tariff duties.[8]

In an attempt to alleviate the domestic lead shortage, caused by this interference with the market mechanism, the Office of Price

[8]R. L. Ziegfeld, "Lead," Engineering and Mining Journal, February, 1952, p. 82.

Stabilization raised the ceiling price to 19 cents in October, 1951. However, this did very little to attract imports; the world price had increased to 22.5 cents. In 1953 manufacturers were overstocked due to hoarding in 1951 and 1952. As fear of continued controls vanished, users depleted their inventories, and demand declined; the price fell in both markets; and an equilibrating price differential was regained.[9] The abnormal price differential in 1958 and 1959 was due to the import quota; Chapter Four discusses this restriction in detail.

The role of expectations and common knowledge also play a part in the fluctuations of the market prices. There are others besides primary metal producers who are interested in lead prices. Speculators and junk dealers will tend to withhold lead supplies if they expect a rise in market prices. Conversely, they tend to flood the market if a decrease in price is expected. Also, prevailing market expectations tend to be the same because information is available almost simultaneously to the entire trade. Therefore, when the existing view of the future is pessimistic, a relatively large number of buyers delay purchases as long as possible; when the existing view is favorable, buyers tend to increase their stocks for use at a later date.[10]

The market in which domestic producers sell their lead is the world market, and the price at which domestic producers sell their lead is the world price, except for the occasional disparities between the New York and London price noted above. The world market of unmanufactured

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[9]Ibid.

[10]S. D. Strauss, "Marketing of Nonferrous Metals and Ores," Economics of the Mineral Industries, Seeley W. Mudd series, American Institute of Mining, Metallurgical and Petroleum Engineers, Inc. (New York, 1959), p. 281.

lead is practically a textbook case of perfect competition. There is a large number of producers of lead, none of which can influence its price. The various types of unmanufactured lead possess the same physical characteristics and chemical composition, they are a homogeneous product, thus, there is no product differentiation by producers. Quality is determined by universal specification and traded as such on the world's exchanges. The product offered for sale will be purchased at the current market price. Knowledge of this price is universal among the consumers of unmamufactured lead.

Unmanufactured lead is a basic raw material which is used in the manufacture of final goods. Increases in the price of unmanufactured lead puts the manufacturers using lead as a raw material in a less favorable position to compete for sales of the finished product. Therefore, increases in the price of lead compel manufacturers to look for substitutes for lead.

Nevertheless, the United States Government attempted to raise the domestic price of lead during 1950-1959 through the operations of three agencies: The General Services Administration, The Commodity Credit Corporation, and the United States Tariff Commission. The General Services Administration purchased lead from domestic producers during 1950-1958 except in 1951. A shortage prevailed in the domestic economy during 1951 so the Government sold lead to domestic manufacturers to help alleviate the situation. Lead purchased from or sold in the domestic market by the General Services Administration is indicated in Table 3-7.[11]

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[11]R. L. Ziegfeld, "Lead," Engineering & Mining Journal, February, 1957, p. 84.

TABLE 3-7

PURCHASES OF LEAD FOR THE NATIONAL STOCKPILE
BY THE GENERAL SERVICES ADMINISTRATION
1950-1958 IN SHORT TONS

Year	Purchases (Sales)	Per Cent of Primary Production
1950	103,000	31.0
1951	(17,000)	28.0
1952	82,200	21.0
1953	60,000	17.5
1954	64,200	19.7
1955	77,400	23.0
1956	64,000	18.4
1957	58,000	17.5
1958	32,000	12.0

Source: U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), Table 15.

There is little doubt that these tonnages of lead taken from the domestic market did help to alleviate the problem of an increased supply depressing the domestic lead price. These purchases help in explaining why domestic price continued to increase during 1953-1956 even though imports increased simultaneously (See Table 3-6).[12]

In 1956, the Government started a barter program which provided for lead to be purchased from foreign nations in exchange for United States surplus agricultural products. The Commodity Credit Corporation was the purchasing agent. The additional metal was added to a supplemental stockpile which was in addition to the National stockpile. The following amounts were purchased under this program: 1956, 29,899 tons; 1957, 100,075 tons; and 1958, 50,000 tons. These tonnages are included in total imports. Even though these amounts were a minor factor when

[12]Ibid.

taken from the world supply, the program did lessen the amount of lead available to manufacturers.[13]

Import taxes on unmanufactured lead prevailed during most of the period under study; however, in attempting to aid the domestic market by changing tariff rates, The Tariff Commission seems to have only made the situation worse. Table 3-8 shows the major tariff changes during 1950-1959 and their effects upon the domestic lead price.

TABLE 3-8

MAJOR TARIFF CHANGES AND THEIR EFFECTS UPON THE DOMESTIC LEAD PRICE 1950-1959

Date	Tariff on the Metal Content of Ores and Concentrates ¢ per lb.	Tariff on Refined Lead ¢ per lb.	Effects on Price
1950	3/4	1 1/16	Imports were increasing and price was decreasing.
1951, Jan.	1.5	2 1/8	This made a prevalent shortage more acute; the price increased sharply.
1951, June	3/4	1 1/16	Had little effect on price because imports did not increase.
1952, Feb.	0	0	Imports were already increasing; this further encouraged imports and the price fell sharply.
1952, June	3/4	1 1/16	Imports decreased and price increased for a month.

Source: K. W. Green, "Decade of Lead Prices - A Need for Production Control," Engineering & Mining Journal, December, p. 79.

[13] U. S. Tariff Commission, Lead and Zinc, Report to the President on Escape Clause Investigation No. 65 Under Section 7 of the Trade Agreements Extension Act of 1951 As Amended (Washington, 1958), p. 26.

Consumption

Let us now turn to an examination of domestic lead consumption. The demand for unmanufactured lead is a derived demand. Lead is used in the manufacture of producer and consumer goods; as the consumption of these goods increases or decreases, more or less lead is demanded for use in their production (See Appendix "E"). This variation is evidenced by the comparison of lead consumption and the Federal Reserve index of industrial production in Figure III-4.

Two important observations can be made concerning the comparison in Figure III-4. First, domestic consumption decreased during 1950-1952 even though the index of industrial production increased. Second, the domestic consumption of lead is gradually falling away from the index of industrial production.

The abnormal consumption of lead during 1950 due to the Korean War resulted in less consumption during 1951 and 1952 (See Appendix "H"). As more effort was put to the manufacture of war materiel, less was put to the manufacture of some consumer goods which influence the consumption of lead. The amount of lead used in storage batteries and in solder for automobile radiators decreased because fewer automobiles were produced.[14] Building construction also declined which lessened the use of lead in that area.[15] In general, most of the important uses of lead declined during 1950-1952 except that used in the manufacture of tetraethyl lead (See Appendix "I").

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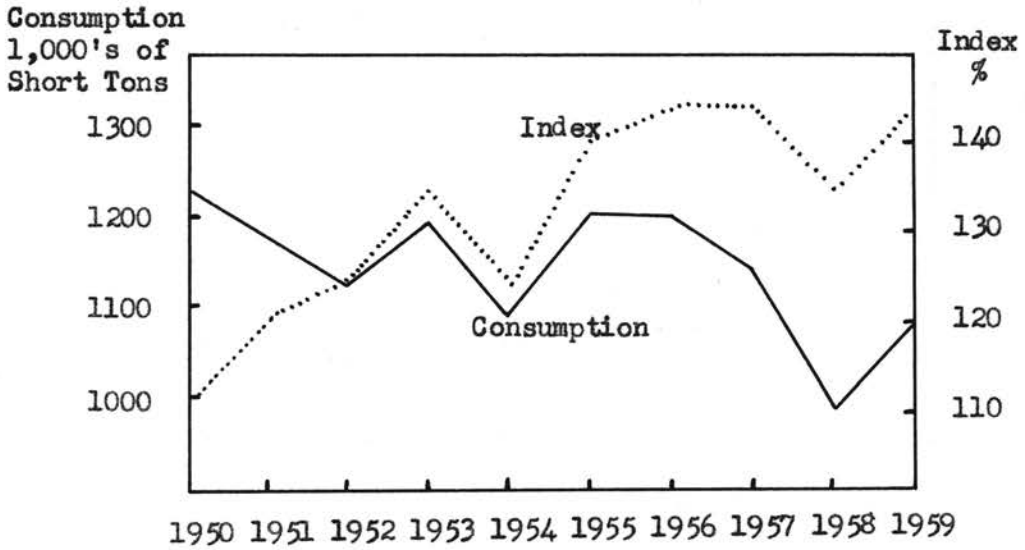
[14]Board of Governors of the Federal Reserve System, Federal Reserve Bulletin (Washington, January, 1953), p. 3.

[15]Ibid., June, 1953, p. 652.

Figure III-4

United States Lead Consumption and the Federal Reserve Index of Industrial Production 1950-1959



Source: Consumption: U. S. Bureau of Mines, Minerals Yearbook, 1950-1959.
Index of Industrial Production: Federal Reserve Bulletin, June, 1951-1960.

Domestic consumption of lead has not kept pace with increased industrial activity because manufacturers have found many good substitutes for lead in many of its uses. Table 3-9 shows some good substitutes for lead. For further information concerning the major influences upon the consumption of lead, see Appendix "E."

TABLE 3-9

SUBSTITUTES FOR LEAD IN VARIOUS USES
1950-1959

Use of Lead	Substitute	Effect
Cable covering: aerial cables, low voltage power cables and telephone cables	Plastics and aluminum	Less use of lead
Red lead as a rust prohibiting primer	Zinc chromate	" " " "
White lead as a pigment	Titanium dioxide (cheaper)	" " " "
Litharge as a pigment: Ceramic glazes Lead arsenate	Lithium chemicals Chemical poisons	" " " "
Babbit bearings	Steel roller bearings	" " " "
Building construction: pipes, lead sheet, traps and bends	Cast iron, steel, brass copper, aluminum, and plastics	" " " "
Storage batteries	Nickel and Cadmium	None as yet
Sheet lead in chemical plants	Glass, ceramics, stainless steel and reinforced plastics	Less use of lead
Type metal	Magnesium, plastics, and rubber	" " " "
Lead foil	Aluminum foil	Almost complete replacement

Source: U. S. Tariff Commission, Lead and Zinc Industries, Report No. 192 to the Congress on the Investigation Under Section 332 of the Tariff Act of 1930 (Washington, 1954), p. 143.

In conclusion, the price at which domestic producers sold lead during 1950-1959 was the world price or a variation thereof. As the world price declined, the revenue received by the mine owner from

the sale of his ores declined. Many mines closed because this decreased revenue would no longer enable the continuation of mining operations. As these mines shut down, domestic primary production fell.

CHAPTER IV

THE IMPORT QUOTA AND ITS EFFECTS UPON THE DOMESTIC LEAD INDUSTRY

In this chapter we shall discuss governmental actions intended to assist domestic lead producers which eventually caused the introduction of import quotas. The nature and the effects of the quota system upon the domestic lead industry will be shown. The effects of the quota will be discussed in regard to imports, domestic price, production, consumption, and stocks.

Prior to October, 1958, the domestic lead industry received aid from four major Governmental agencies: The United States Tariff Commission, The Commodity Credit Corporation, The General Services Administration, and The Defense Minerals Exploration Administration. The first three of these agencies are discussed in the preceding chapter. The Defense Minerals Exploration Administration was set up in 1951 for the purpose of encouraging the exploration and development of sources of strategic minerals for defense purposes.[1] The Government paid fifty per cent of the cost involved in approved exploration projects. If discoveries resulted, the Government would be repaid

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[1]U. S. Department of the Interior, Bureau of Mines, Minerals Yearbook (Washington, 1952), p. 591.

through a royalty on production. The value of Government participation in exploration projects since 1951 is shown in Table 4-1.[2]

Primary production and the price of lead fell sharply early in 1957 despite Government attempts to maintain them at higher levels (See Appendices "B" and "C"). Thus, it became evident that the stockpiling program and the tariff on lead had become relatively ineffective in causing the domestic lead price to increase through diminishing the supply of lead available to domestic manufacturers.

TABLE 4-1

DEFENSE MINERALS EXPLORATION ADMINISTRATION PARTICIPATION IN LEAD AND ZINC EXPLORATION CONTRACTS 1951-1959

Year	Amount in $ Thousands
1951	2,983
1952	2,565
1953	2,068
1954	1,338
1955	767
1956	1,287
1957	1,622
1958	682
1959	122

Source: U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), p. 64.

Stockpiling only postponed the day of reckoning until the stockpile was complete or the program was halted. In 1958, the stockpiling program ceased. Domestic producers had adjusted their production to meet the stockpile requirements. When the stockpiling program stopped,

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[2]U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), p. 63.

this supply of lead had to be sold in the domestic market. As the demand of manufacturers adjusted to this supply, the price dropped. This price fall was accentuated by manufacturers' postponing orders for lead because they expected the price decline.[3]

The tariff duties on lead were more effective in producing revenue than in protecting the domestic primary lead producers from foreign competition. When the price of lead at the London Metal Exchange fell far enough below the domestic price, it was cheaper to import lead in spite of the tariff. On the other hand, the London price exceeded the domestic price in 1951, causing a diversion of foreign sales from the domestic market so that a shortage developed in the United States.[4]

Domestic primary lead producers took action to obtain other methods of protection from foreign competition. In 1957, the Emergency Lead - Zinc Committee, a non-governmental group of domestic producers organized in the same year, appealed to the Tariff Commission for aid under the escape clause provision of the 1953 Trade Agreements Extension Act. Hearings were held during November, but no report was made to the President in 1957.[5]

In April, 1958, the Tariff Commission reported to the President that increased imports were causing serious injury to the domestic lead industry. However, the Commission split in its recommendations. Three of the members wanted the maximum tariff increase as provided by

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[3]K. W. Green, "Decade of Lead Prices—A Need for Production Control," Engineering & Mining Journal, December, 1958, p. 82.

[4]R. L. Ziegfeld, "Lead," Engineering & Mining Journal, February, 1952, p. 82.

[5]Ibid., December, 1958, p. 83.

the escape clause--2.55 cents per pound on lead in pigs and bars, and 1.8 cents per pound on the lead content of lead-bearing ores--and also import quotas which would limit the physical volume of imports. The other three members only wanted a return to the 1930 tariff rates--2 1/8 cents per pound on lead in pigs and bars, and 1.5 cents per pound on the lead content of lead-bearing ores.[6]

The mere suggestion of the use of quotas immediately brought on a wave of protest. The Committee for a National Trade Policy, a private association that backs an elimination of restrictions to international trade, opposed import quotas on lead with the following arguments:

> It is an essentially unsound policy to attempt through artificial means to keep high-cost lead and zinc mines in production when low-cost metals for domestic producers are available abroad.
>
> Any increase in import barriers will not help American marginal mines but will greatly increase the profits of successful low-cost American producers.[7]

Some protests to the use of quotas appeared as editorials. The following argument is particularly enlightening:

> A nation with our vast resources and industrial capabilities can surely find a better way out than to make other countries, which must sell in the U. S., pay the price. Peru is a friendly country and dependent on commodity exports such as lead and zinc. Canada, Mexico, Bolivia and Australia will be hard hit.
>
> In a general sense, it seems extraordinary that a nation such as the U. S., which must trade with other countries and must depend more and more, as the years pass, upon imports of raw materials, should take measures to cripple trade and reduce commodity imports in order to protect a very small segment of its economy and a few thousand workers.[8]

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[6]U. S. Tariff Commission, Lead and Zinc, Report to the President on Escape Clause Investigation No. 65 Under the Provisions of Section 7 of the Trade Agreements Extension Act of 1951 as Amended (Washington, 1958), p. 3.

[7]The New York Times, April 25, 1958, p. 39.

[8]Ibid., Lead and Zinc Quotas, September 21, 1958, Sec. IV, p. 8.

Some of the United States producers of lead also have interests in foreign countries. Quotas threatened to cut off their source of lead-bearing ore for smelting and refining in the United States. Mr. Robert P. Koenig, president of Cerro de Pasco Mining Company which has most of its interests in Peru, made the following statement in opposition to quotas:

> To attempt to resolve this issue on the basis of a finding that lead-zinc imports are unduly competitive, and that the way out is to choke off competition through insulating ourselves behind increased trade barriers in the form of restricted tariffs and quotas is unthinkable to me.[9]

By September, 1958, the President had not taken any action on the Tariff Commission's recommendations. This action had been deferred pending Congressional consideration of a proposed Minerals Stabilization Plan. In general, this plan provided for a stabilization price of lead to be set by the Government, and the difference between this price and the market price for lead would be paid by the Government. There might have been little need for import quotas if this plan became a law.[10]

The Minerals Stabilization Plan was defeated in the House of Representatives August 21, 1958, by a 182-159 vote. On September 22, 1958, the President issued a proclamation which imposed quota restrictions on unmanufactured lead. The total tonnage that could enter the United States was established at 80 per cent of the average import rate during 1935-1940 (approximately 1/3 less than 1957 imports). Allocations were made on a quarterly basis and major exporting countries received individual quota allowances. The quotas became effective

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[9]Ibid., April 25, 1958, p. 39.

[10]U. S. Department of the Interior, Bureau of Mines, Minerals Yearbook (Washington, 1958), p. 655.

October 1, 1958 (See Appendix "G").[11] Table 4-2 shows the quota restriction placed on unmanufactured lead.

TABLE 4-2

QUOTA RESTRICTIONS ON UNMANUFACTURED LEAD
PER QUARTER BY COUNTRY IN SHORT TONS

Country	Lead Content of Lead-bearing Ore	Base Bullion & Refined Lead
Peru	8,080	6,440
Union of South Africa	7,440	
Canada	6,720	7,960
Australia	5,040	11,840
Bolivia	2,520	
Mexico		18,440
Yugoslavia		7,880
All Others (Total)	3,280	3,040
Total Per Quarter	33,080	55,600
Total Per Year	132,320	222,400
All Imports Per Year	354,720	

Source: Proclamation No. 3257, Modifications of Trade Agreement Concessions and Imposition of Quotas on Unmanufactured Lead and Zinc, September 22, 1958.

Quota restrictions on lead had never been imposed before, and the President gave very little explicit reason as to why they should be used now. In identical letters to the chairmen of the Senate Finance and House Ways and Means Committee, the President said:

I recognize that the imposition of quotas is an unusual step, but it is better suited than a tariff increase to the unique circumstances of the case, and more likely to lead to enduring solutions beneficial to the entire lead and zinc industry.[12]

Domestic industry had their interests directed toward the Minerals Stabilization Plan. When it was defeated in Congress, there was very

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[11] Ibid.

[12] The New York Times, September 23, 1958, p. 17.

little the representatives of the domestic industry could say in regard to quotas. However, it seems that the dissatisfaction with the quota which was expressed by domestic interests was due to the fact that the domestic industry wanted more protection. Senator Gordon Allot (Col. R.), who had fought so hard for the Minerals Stabilization Plan, said there was no permanent cure solely in ". . . the juggling of tariffs and quotas." He insisted that Congress must pass legislation ". . . which states at what level our mining industry shall be maintained as a matter of national well being."[13]

Let us now examine the effects of the lead quota restrictions upon the domestic lead industry. Nineteen fifty-nine is the only full year in which quotas were effective. Total imports in 1959 were 348,000 tons as compared with 532,000 tons in 1957 and 577,110 tons in 1958. Table 4-3 shows a breakdown of imports by quarters and the decline in imports after the imposition of the quota. It is interesting to note the sharp increase in imports in the last quarter of 1957; this was the same quarter in which the Tariff Commission made its report to the President suggesting that import quotas be used. The buyers of foreign lead expected some restrictions on lead, so imports were increased. These increases in imports were then used to show the need for more protection to domestic miners.

However, the quota only affected unmanufactured lead which was covered in the 1930 Tariff Act. In 1959, manufacturers in the United States began to import manufactured lead products which were not subject to the quota. It is estimated that imports of lead oxide, pipe and

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[13]Ibid., September 24, 1958, p. 39.

sheet increased 20,000 tons in 1959 over the 1958 figure. This was not enough to have any price depressing effects. Nevertheless, the domestic industry has already appealed to Washington to close this loophole.[14]

TABLE 4-3

TOTAL IMPORTS OF LEAD 1957-1959
BY QUARTERS IN 1,000's OF SHORT TONS

Year and Quarter	Imports
1957:	
January-March	120.0
April-June	98.8
July-September	101.9
October-December	191.6
1958:	
January-March	157.9
April-June	161.5
July-September	125.8
October-December	116.0
1959:	
January-March	104.7
April-June	88.9
July-September	89.4
October-December	87.2

Source: U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), p. 48.

The quota restriction placed on lead in ores, flue dust, and matte made it particularly difficult for some domestic smelters, who depend on imported ores, to continue operations. Artificial reduction of raw

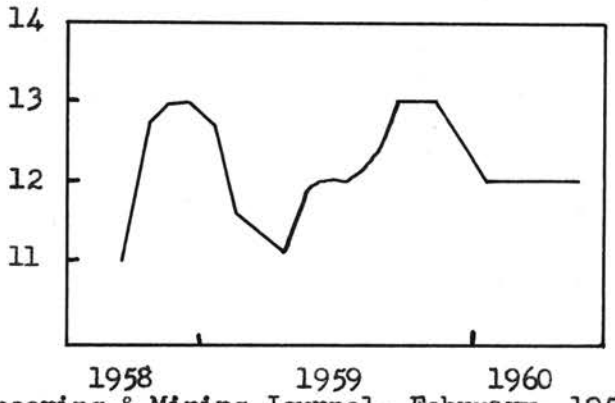
[14]R. L. Ziegfeld, "Lead," Engineering & Mining Journal, February, 1959, p. 102.

material supplies reduced the smelter output of the industry and one lead-zinc smelter in Arkansas has already shut down.[15]

The decline in imports lessened the supply of lead in the domestic economy; however, this decrease did not have an appreciable effect on the domestic price. From an annual total supply of 1,244,915 tons in 1958, the tonnage fell only to 1,155,015 in 1959. Nevertheless, the domestic price registered an upward change after the quota imposition. Figure IV-1 shows the monthly movements of the New York lead price from September, 1958, to May, 1960.

Figure IV-1

Monthly New York Lead Prices September, 1958-May, 1960
(Cents per Pound)



Source: Engineering & Mining Journal, February, 1959-1960.

The domestic price increased from 10.872 cents in September, 1958, to 13 cents in December, 1958. This was mostly due to the psychological effect of the quota. Domestic manufacturers expected the price to increase after the quota had become effective, so they increased purchases for their inventories in September and October in order to avoid

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[15]U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), p. 158.

higher prices later. Increased lead consumption also contributed to this price increase.[16]

The New York lead price fell from December, 1958, until April, 1959. Manufacturers began to use lead from their inventories, which slowed down purchases of newly refined lead. This was largely due to manufacturers' expecting large imports of manufactured lead products which are not subject to the quota.[17]

The next upswing in the domestic price of lead from April to October (11.19-13.0 cents) was related to labor difficulties in many lead smelters and refineries. The strike lasted from August 20 to late in December; however, the price rise began several months earlier. Consumers expected the strike, and the supply difficulties which might arise during a strike, so they increased purchases of lead for their inventories. As soon as the strike ended, the price of lead fell to 12 cents and remained there for the first five months of 1960.[18]

Even though many other factors were present, the imposition of lead import quotas may have accounted for the initial mild increases in the domestic lead price. These price increases seriously handicapped domestic fabricators of manufactured lead products for export. Fabricators in foreign countries could purchase their raw material at the world price, which was considerably lower than the domestic price; this enabled them to undersell the domestic manufacturers.[19]

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[16]The New York Times, October 3, 1958, p. 41.

[17]U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), p. 55.

[18]Ibid.

[19]The New York Times, September 1, 1959, p. 35.

The basic purpose of the quota was to give aid in maintaining domestic mine production of lead. Let us now examine the effects of the quota restrictions upon domestic production. Table 4-4 shows a comparison of domestic lead prices and domestic mine production in 1958 and 1959.

TABLE 4-4

DOMESTIC LEAD PRICE AND MINE PRODUCTION
1958 AND 1959 BY QUARTERS

Year and Quarter	Price ¢ per lb.	Lead Production 1,000's Short Tons
1958:		
January-March	13.0	68.4
April-June	11.6	73.4
July-September	10.9	60.3
October-December	12.9	65.3
1959:		
January-March	11.9	66.0
April-June	11.7	62.9
July-September	12.4	62.1
October-December	12.8	62.1

Source: U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), p. 48.

Despite the reduced imports, domestic mine production decreased. No doubt, much of this production decrease was due to strikes; however, a more fundamental issue underlies this argument. Had there not been labor strikes, would this mild price increase have induced an increase in domestic mine production? This question cannot be answered with an absolute "yes" or "no," but an effort to answer it will go far in demonstrating the worthiness of a plan to maintain domestic mine production through the use of quota restrictions.

The average 1959 domestic lead price was 12.212 cents and the price

was 12 cents for the first five months of 1960. This was an increase from 1958; however, this increase was only a matter of going from "worse" to a "little less worse." The Emergency Lead-Zinc Committee assembled cost of production data on 231,000 tons of the 1956 mine production of 352,826 tons. It was found that even at the annual average price of 16.013 cents, 57,000 tons of the 231,000 tons under study were mined at a loss.[20] Charles E. Schwab, chairman of the Emergency Lead-Zinc Committee, pointed out in May, 1958, that domestic mine production could not be maintained at 14.750 cents. Also, Mr. Schwab said a price of this nature would "not provide for the margin required for an adequate exploration and development program."[21]

The consumption of lead continued to move with the index of industrial production. Consumption of lead in most of its uses increased (See Appendix "H"); however, the use of lead in cable covering, which had been in the top four uses of lead, declined substantially. Battery consumption increased nearly 60,000 tons and the number of replacement batteries sold hit an all-time high.[22]

The import quota affected consumers' and producers' stocks. The supply of lead had been reduced; as a result, the abnormally large inventories carried at the beginning of 1959, particularly by domestic smelters, underwent a major reduction. If the quota remains in effect,

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[20]U. S. Congress, House of Representatives, Committee on Interior and Insular Affairs, Subcommittee on Mines and Mining, Domestic Minerals Act of 1958, Hearings, 85th Congress, 2nd session, on H. R. 13280 (Washington, 1959), p. 110

[21]The New York Times, May 3, 1958, p. 23.

[22]R. L. Ziegfeld, "Lead," Engineering & Mining Journal, February, 1959, p. 103.

the limited supply of lead available to United States manufacturers will force depletion of inventories and purchases of newly refined lead.[23]

In summary, the imposition of import quotas did not maintain domestic mine production during 1959. This was largely due to two reasons. First, stocks of domestic manufacturers had not been depleted to the extent that large purchases of newly refined lead were required; this tended to slow down the increase in domestic price. Second, even if labor strikes had been absent, the domestic price did not increase sufficiently to warrant production increases in present mining operations and the reopening of old mines.

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[23]Ibid.

CHAPTER V

SUMMARY AND CONCLUSIONS

We have now completed an examination of the domestic lead industry in regard to its structure, various trends during 1950 through 1959, and the effects of lead import quotas on the domestic lead industry. At the outset it was pointed out that the mining segment consists of a relatively large number of firms which must sell their ore concentrates to the smelters of other firms. The profit the mine owner makes depends on the revenue he receives from the sale of his ores to the smelter and the various costs of mining and milling the ore. The revenue received from the sale of ore concentrates is based on the lead content of the ore and the current market price of refined lead. The grade of ore in the United States is gradually decreasing as the richer ore bodies are depleted, and the domestic market price of lead tends to change frequently. If the price of refined lead decreases, then the smelter pays the miner less for his ore concentrates. Thus, the smelter is relatively immune from the effects of price declines and the most adverse effects fall upon the mine.

The market price of lead is subject to wide fluctuations, like all raw materials, due to the time it takes for supply to adjust to demand. Price fluctuations are further enhanced through the psychological impact of information known simultaneously to the entire trade. Expectations tend to be the same, and these periodic increases or decreases in demand result in a fluctuating price. The relatively low price of lead is one

of the most important reasons for its use. Price fluctuations may result in the substitution of other raw materials for lead.

The trend of domestic price and production points downward. As price continued to decline internationally, the revenue received by many mine owners from the sale of their ore concentrates no longer enabled the continuation of mining operations. The brunt of the declining price was placed upon the mines; this is evidenced by the closing of many mines since 1950.

Changes in tariff rates, stockpiling programs, and exploration aid were unable to maintain the domestic industry. The most important reason for the failure of these attempts is due to the fact that the domestic lead industry is a part of the world market which practically operates in perfect competition. Thus, the price of lead is determined by world supply and demand, and domestic producers cannot influence this price. However, the world price of lead does not enable the domestic miner to receive a return from the sale of his ore concentrates which will justify the continuation of operations.

The demand for goods containing lead determines the consumption of unmanufactured lead. A comparison of lead consumption with the index of industrial production indicates that goods containing lead have not kept pace with the production of other goods. This is explained by the various technological innovations which have partially obviated the use of lead. In some cases, increases in the price of lead have caused manufacturers to substitute less costly raw materials for lead in order to compete successfully with other manufacturers in the sale of their finished products.

Import quotas, which limit the physical quantity of lead imports,

were another attempt to maintain the domestic industry. However, the restriction of imports by the quota had very little effect on the domestic price of lead, and production continued to decline. Even though the differential between the New York price and the London price increased (the London price continued to fall after the imposition of the quota), the domestic price was still well below what is needed for the domestic miner to make a profit. If quotas become more restrictive and remain in effect, the supply of lead available to domestic manufacturers will be decreased and there will be a tendency for the domestic price to increase, but higher prices of lead will drive manufacturers to the use of less costly raw materials.

If stockpiling programs, tariff duties, exploration aid and quota restrictions will not maintain the domestic lead industry, how can it be maintained? If the Government of the United States deems it necessary that the domestic lead industry should be maintained, then subsidy payments must be given to the domestic lead producers. This system avoids harm to international relations and will not induce manufacturers to substitute other raw materials for lead because of a price increase. But the misallocation of resources implicit in the attempts to support a naturally competitive raw material market weighs heavily in the balance against such artificial changes of a given market situation.

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APPENDICES

APPENDIX "A"

SALIENT STATISTICS OF THE UNITED STATES LEAD INDUSTRY
1950-1959
IN SHORT TONS

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Primary Production	430,827	388,164	390,162	342,644	325,419	338,025	352,826	338,216	267,377	253,260
Secondary Production	482,275	518,110	471,294	486,737	480,925	502,051	506,755	489,229	401,787	456,755
Imports:										
Lead in Ores	76,520	67,471	104,621	160,929	161,261	177,479	196,425	198,479	201,628	126,000
Lead in Base Bullion	3,488	2,281	389	869	41	---	31	84	460	---
Refined Lead	461,827	188,175	523,059	390,510	281,941	284,729	283,392	333,492	375,022	222,000
Exports	2,735	1,281	1,762	803	596	403	4,628	4,339	1,359	3,000
Consumption	1,237,981	1,184,793	1,130,795	1,201,604	1,094,871	1,212,644	1,209,717	1,138,115	986,387	1,083,100
N. Y. Price*	13.296	17.500	16.467	13.489	14.054	15.138	16.013	14.658	12.109	12.212

Source: All except price, U. S. Bureau of Mines, Minerals Yearbook, 1950-1959.
Price, Engineering and Mining Journal, February., 1951-1960.

*Price in cents per pound.

APPENDIX "B"

MONTHLY AVERAGE PRICES OF LEAD
1950-1960 (NEW YORK)
CENTS PER POUND

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
January	12.000	17.000	19.000	14.192	13.260	15.000	16.151	16.000	13.000	12.670	12.000
February	12.000	17.000	19.000	13.500	12.818	15.000	16.000	16.000	13.000	11.560	12.000
March	10.936	17.000	19.000	13.404	12.935	15.000	16.000	16.000	13.000	11.410	12.000
April	10.630	17.000	18.923	12.683	13.904	15.000	16.000	16.000	12.000	11.190	12.000
May	11.721	17.000	15.731	12.750	14.000	15.000	16.000	15.385	11.712	11.900	12.000
June	11.808	17.000	15.257	13.413	14.106	15.000	16.000	14.320	11.224	12.000	
July	11.660	17.000	16.000	13.683	14.000	15.000	16.000	14.000	11.000	12.000	
August	12.926	17.000	16.000	14.000	14.058	15.000	16.000	14.000	10.856	12.290	
September	15.800	17.000	16.000	13.740	14.598	15.000	16.000	14.000	10.872	13.000	
October	16.040	19.000	14.404	13.500	14.965	15.100	16.000	13.692	12.642	13.000	
November	17.000	19.000	14.159	13.500	15.000	15.500	16.000	13.500	13.000	13.000	
December	17.000	19.000	14.125	13.500	15.000	15.558	16.000	13.000	13.000	12.523	
Year	13.296	17.500	16.467	13.489	14.054	15.138	16.013	14.658	12.109	12.212	

Source: Engineering & Mining Journal, February, Annual, 1950-1960.

APPENDIX "C"

MONTHLY MINE PRODUCTION OF RECOVERABLE LEAD
IN THE UNITED STATES 1950-1959
IN SHORT TONS

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
January	35,684	35,102	34,551	31,073	25,289	27,936	26,813	30,218	26,123	23,536
February	34,716	32,864	34,601	29,861	28,002	27,600	28,221	29,061	23,827	21,382
March	38,960	36,474	33,637	31,780	29,908	31,535	30,855	30,962	18,440	20,970
April	36,432	32,972	34,724	31,490	27,259	28,916	29,549	31,700	25,896	21,241
May	37,906	33,537	34,087	29,507	25,793	29,136	29,892	30,104	24,528	20,174
June	37,439	32,148	32,202	28,797	26,658	28,625	29,480	27,366	22,961	21,407
July	32,037	30,040	30,090	26,837	25,762	26,026	28,242	27,306	21,142	19,569
August	35,020	29,487	30,454	26,531	27,480	27,390	30,727	27,806	19,592	21,850
September	35,087	27,494	30,633	26,934	25,370	27,390	27,781	25,006	19,570	20,536
October	35,730	33,058	33,853	27,225	26,135	28,649	31,503	28,663	21,200	21,315
November	35,419	32,060	30,152	25,154	28,314	27,379	29,277	24,042	21,382	20,924
December	36,397	32,928	31,178	27,455	29,449	27,443	30,486	25,982	22,716	19,856
Total	430,827	388,164	390,162	342,644	325,419	338,025	352,826	338,216	267,377	253,260

Source: U. S. Bureau of Mines, Minerals Yearbook, 1950-1959.

APPENDIX "D"

THE CONCENTRATION OF THE UNITED STATES PRIMARY LEAD INDUSTRY;
25 LARGEST MINES, PRIMARY SMELTERS, SMELTER-REFINERIES, AND REFINERIES

Firm	Mine	Rank	State	Smelters	Smelter-Refineries
St. Joseph Lead Co.	Federal	1	Missouri		Herculaneum, Mo.
	Leadwood	4	Missouri		
	Indian Creek	5	Missouri		
	Desloge	14	Missouri		
	Bonne Terre	6	Missouri		
	La Motte	18	Missouri		
Bunker Hill Co.	Bunker Hill	3	Idaho		Bunker Hill, Bradley, Idaho
	Star	8	Idaho		
U. S. Smelting, Refining and Mining Co.	U. S. and Lark	2	Utah	Midvale, Utah	
Anaconda Co.	Butte Mines	12	Montana		
Pend Oreille Mines & Metals	Pend Oreille	11	Washington		
Idarado Mining Co.	Treasury-etc.	9	Colorado		
Shattuck-Denn Mining Co.	Iron King	7	Arizona		
American Smelting and Refining Co.	Page	10	Idaho	Ark Valley, Leadville, Colo. East Helena, Mont.	Omaha, Neb.* Selby, Calif. Federal, Alton, Ill. Perth Amboy,
United Park City Mines Co.	United Park City	13	Utah	El Paso, Texas	Barber, N. J.
Lucky Friday Silver-Lead Mines Inc.	Lucky Friday	15	Idaho		
National Lead Co.	Madison	16	Missouri		
New Jersey Zinc Co.	Eagle	17	Colorado		
	Austinville	22	Virginia		
New Park Mining Co.	Mayflower	19	Utah		
American Zinc-Lead Smelting Co.	Grandview	20	Washington		
Eureka Corp. Ltd.	Richmond-Eureka	21	Nevada		
Sunshine Mining Co.	Sunshine	23	Idaho		
Sidney Mining Co.	Sidney	24	Idaho		

APPENDIX "D," Continued

THE CONCENTRATION OF THE UNITED STATES PRIMARY LEAD INDUSTRY:
25 LARGEST MINES, PRIMARY SMELTERS, SMELTER-REFINERIES, AND REFINERIES

Firm	Mine	Rank	State	Smelters	Smelter-Refineries
Medford and Hullinger	San Xavier	25	Arizona		
Eagle-Pitcher Co.					Galena, Kansas
International Smelting and Refining Co.				Toole, Utah	
U. S. S. Lead Refinery					East Chicago, Ind.*

Source: U. S. Bureau of Mines, Minerals Yearbook, 1957 and 1958.

*A refinery only; not a smelter-refinery combination.

APPENDIX "E"

MAJOR INFLUENCES ON THE CONSUMPTION OF LEAD

Use of Lead	Influencing Factor	Effect
Storage batteries	No. of motor vehicles in use. Longer-lasting batteries.	direct relation less use of lead
Tetraethyl lead	Improvements in gasoline refining techniques. Production of higher octane fuel.	
Cable covering	Microwave long-distance communication systems. Prevailing corrosive condition.	 expected increase
Litharge - as a gasoline deodorant	New manufacturing process which obviates the use of lead.	less use of lead
Bearings	Reduction in the thickness of bearings used in freight car journals.	
Caulking Lead - used between joints of cast iron pipe	Growth of building construction and expansion of water supply and sewage-disposal systems.	increase in the use of lead
Solder: tin cans and automobile radiators	Improvements in manufacture and design.	less use of lead
Lead-glass compounds	T. V. picture tubes.	expected increase
Lead-asbestos pads	Absorb vibration.	
Lead powder	Sound attenuation.	
Lead sheet	Radiation shielding new chemical manufacturing process requires less corrosion protection.	expected increase less use of lead
Ammunition	Wars, hunting, and target shooting.	direct relation

APPENDIX "E," Continued

MAJOR INFLUENCES ON THE CONSUMPTION OF LEAD

Use of Lead	Influencing	Effect
Type metal	New printing methods: photo-offset and Varitype	less use of lead

Source: U. S. Tariff Commission, Lead and Zinc Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), pp. 142-147.
U. S. Tariff Commission, Lead and Zinc Industries Report No. 192 to the Congress on the Investigation Under Section 332 of the Tariff Act of 1930 (Washington, 1954), pp. 144-146.

APPENDIX "F"

A PARTIAL LIST OF MAJOR SECONDARY SMELTING FIRMS AND PLANT LOCATIONS

American Smelting and Refining Co.	Los Angeles, San Francisco, and Selby, Cal.; Whiting, Ind.: Omaha, Neb.: Newark and Perth Amboy, N. J.; Houston, Texas
National Lead Co.	Los Angeles, Cal.: Denver, Colo.; Atlanta, Ga.; Chicago and Granite City, Ill.; Indianapolis, Ind; Topeka, Kan.; Baltimore, Md.; Boston and Fitchburg, Mass.; St. Louis Park, Minn.; St. Louis, Mo.; Omaha, Neb.; Perth Amboy, N. J.; Albany and Depew, N. Y.; Cincinnati and Cleveland, Ohio; Portland, Ore.; Philadelphia and Pittsburgh, Pa.; Dallas and Houston, Texas; Milwaukee, Wis.
Bers and Co., Inc.	Philadelphia, Pa.
The Bunker Hill Co.	Seattle, Wash.
Continental Smelting and Refining Co.	McCook, Ill.
Detroit Lead Corp.	Detroit, Mich.
Eastern Smelting and Refining Co.	Los Angeles, Cal.
Electric Storage Battery Co.	Philadelphia, Pa.
Goldsmith Bros.	Chicago, Ill.
Gopher Smelting and Refining Co.	St. Paul, Minn.
Inland Metals Refining Co.	Chicago, Ill.
Imperial Type Metals Co.	Chicago, Ill.; Philadelphia, Pa.
National Metal and Smelting Co.	Fort Worth, Tex.
North American Smelting Co.	Wilmington, Del.
Pennsylvania Smelting and Refining Co.	Philadelphia, Pa.
Price Battery Corp.	Hamburg, Pa.
Revere Smelting and Refining Co.	Newark, N. J.
Schuylkill Products Co.	Baton Rouge, La.
Southern Lead Co.	Dallas, Tex.
U. S. S. Lead Refinery, Inc.	East Chicago, Ind.
Western Lead Products Co.	Los Angeles, Cal.

Source: U. S. Bureau of Mines, Minerals Yearbook, 1957, p. 701.

APPENDIX "G"

PROCLAMATION NO. 3257
TRADE AGREEMENT CONCESSIONS AND IMPOSITION
OF QUOTAS ON UNMANUFACTURED LEAD AND ZINC,
September 22, 1958.
SECTION 7(a), ITEMS 391 and 392

391 "Lead-bearing ores, flue dust, and mattes of all kinds. . . 3/4c per lb. on lead content.

Whenever, in any three-month period beginning October 1 in 1958, and January 1, April 1, July 1, and October 1, in any subsequent year

(1) The dutiable lead content (as shown on the entry in accordance with the applicable customs regulations) of lead-bearing ores, flue dust, and mattes the product of a country specified below, entered, or withdrawn from warehouse, for consumption, and (2) the dutiable lead content of lead-bearing ores, flue dust, or mattes the product of such country with respect to which duty was collected under section 312 of the Tariff Act of 1930 upon withdrawal for consumption from customs bonded warehouse of "metal producible" within the meaning of the said section 312,
are determined by the Secretary of the Treasury of the United States to have reached the aggregate quantity specified below for such country, no lead-bearing ores, flue dust, or mattes the product of such country may be entered, or withdrawn from warehouse, for consumption during the remainder of such period; and no article may be withdrawn for consumption from any customs bonded warehouse during the remainder of such period if by reason of such withdrawal duty would become collectible under section 312 of the Tariff Act of 1930 in cancellation of a bond charge covering any lead-bearing ore, flue dust, or matte the product of such country:

Peru	8,080 short tons
Union of South Africa	7,440 short tons
Canada	6,720 short tons
Australia	5,040 short tons
Bolivia	2,520 short tons
All other foreign countries (total) . . .	3,280 short tons

The foregoing quantitative restrictions shall not apply to any ore, flue dust, or matte the lead content of which is not subject to duty or which contains less than two per centum of lead (whether or not the lead content thereof is subject to duty); to any article imported by or for the account of the Government of the United States; or to any imported article which is under contract for delivery in the United States for the account of a corporation wholly owned by the Government of the United States."

392 "Lead bullion, or base bullion, lead in pigs and bars, lead dross, reclaimed lead, scrap lead, antimonal lead, antimonal scrap lead, type metal, Babbitt metal, solder, all alloys or combinations of lead not specially provided for . . . 1 1/16c per lb. on lead content.

Whenever, in any three-month period beginning October 1, in 1958, and January 1, April 1, July 1, and October 1, in any subsequent year, the dutiable lead content of the articles described above in this item (except Babbit metal and solder) the product of a country specified below, entered, or withdrawn from warehouse, for consumption, is determined by the Secretary of the Treasury of the United States to have reached the aggregate quantity specified below for such country, no such articles the product of such country may be entered, or withdrawn from warehouse, for consumption during the remainder of such period:

Mexico	18,440 short tons
Australia	11,840 short tons
Canada	7,960 short tons
Yugoslavia	7,880 short tons
Peru	6,440 short tons
All other foreign countries (total)	3,040 short tons

The foregoing quantitative restrictions shall not apply to any article described in this item which is not subject to duty; to any such article imported by or for the account of the Government of the United States; or to any imported article which is under contract for delivery in the United States for the account of a corporation wholly owned by the Government of the United States."

APPENDIX "H"

MONTHLY CONSUMPTION OF LEAD IN THE UNITED STATES
1950-1959
IN SHORT TONS

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
January	83,671	126,022	97,503	96,377	90,815	93,301	110,562	102,952	82,385	88,400
February	78,491	101,603	92,527	92,121	83,345	86,290	100,201	95,788	72,096	84,200
March	88,939	120,826	88,664	103,336	93,323	99,677	97,755	98,822	77,723	85,100
April	84,673	118,372	83,719	104,816	93,844	96,700	97,836	96,189	79,969	91,300
May	100,620	102,524	82,714	101,282	91,804	101,029	104,418	96,443	76,214	96,200
June	103,443	94,458	87,679	108,534	96,027	103,451	100,571	92,100	81,131	95,800
July	95,686	81,427	85,568	99,496	81,945	84,394	88,325	85,569	80,635	89,600
August	127,317	97,622	105,629	109,943	96,763	107,158	107,711	103,442	84,456	90,000
September	121,782	78,999	107,728	105,565	95,348	112,091	96,576	95,790	90,222	93,900
October	126,599	88,527	108,841	104,716	91,002	115,289	112,179	105,337	92,611	98,400
November	116,304	88,106	96,509	89,944	90,433	108,649	102,408	86,385	84,367	84,500
December	110,456	86,307	93,614	85,474	90,222	104,615	91,175	79,298	84,578	85,700
Total	1,237,981	1,184,793	1,130,795	1,201,604	1,094,871	1,212,644	1,209,717	1,138,115	986,387	1,083,100

Source: U. S. Bureau of Mines, Mineral Yearbook, 1950-1959.

APPENDIX "I"

LEAD CONSUMPTION 1950-1959 BY PRODUCT
IN SHORT TONS

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Metal Products:										
Ammunition	38,438	40,242	36,182	45,147	40,206	46,816	44,438	42,509	40,215	45,331
Bearing Metals	38,241	35,410	36,545	38,591	27,166	34,567	28,321	26,997	18,980	22,559
Brass and Bronze	21,461	29,858	25,807	26,203	20,147	24,043	27,063	24,491	20,379	23,745
Cable Covering	131,989	131,863	142,571	146,565	127,539	121,165	134,339	108,225	74,981	61,833
Calking Lead	53,450	46,544	45,150	48,236	49,854	59,406	64,970	65,634	70,807	76,257
Casting Metals	19,295	22,497	18,017	12,906	10,969	15,141	12,932	12,672	8,674	7,766
Collapsible Tubes	13,386	13,657	10,095	11,583	10,736	11,136	10,945	10,316	8,432	8,611
Foil	3,941	2,881	2,124	4,410	4,448	5,185	4,593	4,839	4,586	3,709
Pipes, Traps, Bends	41,361	33,095	29,465	28,693	26,832	29,757	28,028	24,739	23,044	22,827
Sheet Lead	30,778	31,210	28,697	30,476	26,014	30,466	30,249	27,474	25,104	27,153
Solder	94,606	82,465	72,664	78,743	71,122	88,749	75,290	70,684	59,693	65,760
Terne Metal	3,805	2,051	1,812	3,200	1,286	2,382	1,709	1,642	1,227	1,518
Type Metal	24,776	28,236	27,413	26,729	25,665	26,507	26,709	28,726	26,740	26,246
TOTAL	515,527	500,009	476,542	501,483	442,384	495,320	489,586	448,948	382,822	393,315
Storage Batteries:										
Antimonal Lead	212,464	119,838	187,506	191,753	174,447	195,787	191,568	185,617	159,795	182,394
Lead Oxides	185,945	175,546	163,424	175,822	162,825	184,246	174,203	175,398	152,830	178,720
TOTAL	398,409	357,384	350,930	367,575	337,272	380,033	370,771	361,015	312,725	361,114

APPENDIX "I," Continued

LEAD CONSUMPTION 1950-1959 BY PRODUCT
IN SHORT TONS

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Pigments:										
White Lead	36,181	25,578	22,943	17,775	17,704	18,549	16,951	15,701	13,584	11,078
Read Lead & Litharge	101,974	88,031	76,742	88,649	76,472	87,503	79,149	78,323	64,892	81,935
Pigment Colors	13,464	12,796	12,839	12,859	14,062	15,000	13,866	12,449	11,853	13,827
Other	14,768	13,099	9,775	10,307	8,171	10,383	10,354	8,888	5,567	4,372
TOTAL	166,387	139,504	122,299	129,540	116,409	131,435	120,370	115,361	95,901	111,212
Chemicals:										
Tetraethyl Lead	113,846	128,407	146,723	162,443	160,436	165,133	191,990	177,001	159,412	160,020
Misc. Chem.	11,680	6,949	3,996	6,976	6,748	5,492	3,146	3,556	3,233	3,847
TOTAL	125,526	135,356	150,719	169,419	167,184	170,625	195,136	180,557	162,645	163,867
Misc. Uses:										
Annealing	6,456	6,656	5,084	5,280	4,653	6,059	5,899	5,317	5,114	4,265
Galvanizing	2,426	2,173	2,002	2,029	2,732	2,313	1,658	1,354	1,226	979
Lead Plating	1,521	1,444	1,037	987	872	848	916	670	438	158
Weights & Ballast	6,870	7,913	7,660	8,244	7,393	7,673	7,250	7,526	7,577	6,978
TOTAL	17,273	18,186	15,783	16,540	15,650	16,893	15,723	14,867	14,355	12,380
Unclassified Uses	14,859	16,354	14,522	16,998	15,972	18,338	18,131	17,367	17,939	17,189
GRAND TOTAL	1,237,981	1,184,793	1,130,795	1,201,604	1,094,871	1,212,644	1,209,717	1,138,115	986,387	1,083,100

Source: U. S. Bureau of Mines, Minerals Yearbook, 1950-1959.

APPENDIX "J"

LEAD INDUSTRIES ASSOCIATION
60 East 42nd Street
New York 17, N. Y.

April 29, 1960

Mr. William T. Terrell
Graduate Assistant
Oklahoma State University
Dept. of Economics - College of Business
Stillwater, Oklahoma

Dear Mr. Terrell:

In reply to your letter of April 1, I am sorry that I am not able to give you any of the information you requested.

Most of the statistical data available to us in on the consumer end of lead rather than on its production.

I would recommend your writing to the U. S. Bureau of Mines in Washington, D. C., for a copy of their Basic Materials Survey on Lead that was made several years ago. I believe that this contains some of the information you are after.

Sincerely yours,

David M. Borcina

DMB:HMM

On and after May 2 we will be located at 292 Madison Avenue, New York 17, N. Y.

VITA

WILLIAM THEODORE TERRELL

Candidate for the Degree of

Master of Science

Thesis: THE EFFECTS OF LEAD IMPORT QUOTAS ON THE UNITED STATES LEAD INDUSTRY

Major: Economics

Biographical:

Born: March 10, 1936, at Navasota, Texas

Undergraduate Study: Oklahoma State University, 1954-1958

Graduate Study: Oklahoma State University, 1959-1960

Date of Final Examination: May, 1961