

CATALOGUE No.

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ANNUAL



MANUFACTURERS OF INDUSTRIAL CHEMICALS

1960

Formerly included in the Acids, Alkalies and Salts Industry

This report includes statistics formerly published separately as 46-202 Acids, Alkalies and Salts Industry and 46-202 Compressed Gases Industry (Both discontinued). Statistics on synthetic rubber are transferred to this report from 46-216 Miscellaneous Chemical Products Industry. Certain statistics have also been transferred from 46-206 Fertilizers Industry (Discontinued), and 46-210 Paints, Varnishes and Lacquers Industry. See introductory text for details.

ANNUAL CENSUS OF MANUFACTURES

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SYMBOLS

The interpretation of the symbols used in the tables throughout this publication is as follows:

- .. figures not available.
- ... figures not appropriate or not applicable.
- nil or zero.
- P preliminary figures.
- * revised figures.

EXPLANATORY NOTES

This report is one in a series of about 140 publications which present the results of the 1960 Census of Manufactures. Most reports in this series refer to specific industries, but there are summary reports for Canada and the provinces and for major industry groups. Adoption of the revised Standard Industrial Classification for 1960 compilations has necessitated changes in titles of many reports in this annual series. The content of many industries has also been affected (see following note on Industrial Classification).

Industry statistics given in these reports refer to number of establishments, employees, salaries and wages, cost of materials, supplies, fuel and electricity, gross value of shipments, inventories and value added by manufacturing. Details of materials used and products shipped are also given. Descriptions of the principal industry statistics, with special reference to 1960 are as follows:

Period Covered

Firms are asked to submit figures for the calendar year, if at all possible, and most reports are on this basis. Financial year reports for periods differing from the calendar year are accepted in instances where the firms find it impossible to supply calendar year data from accounting records. However the data on employees, salaries and wages are requested on a calendar year basis in all cases.

Establishment

Data for the annual census is collected on an establishment basis. A firm with more than one plant is required to file a report for each plant. In most cases an establishment is a complete factory; sometimes, however, a plant is divided into two or more establishments when it carries out operations classifiable to different industries and when separate accounting records are available. Usually the statistics for an establishment relate only to the manufacturing activities. Other activities such as construction at the plant by its own employees, wholesale or retail activities carried on at the plant location, etc., are not included. Plants engaged solely in repair work (except in the case of furniture, shipbuilding, boat building, aircraft and railway rolling stock industries) are not included but plants occupied in assembling parts into complete units are included.

Employees

Administrative and office employees include all executives and supervisory officials such as presidents, vice-presidents, secretaries, treasurers, etc., together with managers, professional and technical employees, superintendents and factory supervisors above the working foremen level, and clerical employees. Working owners and partners are also included in this category.

Production and related workers include all other factory workmen whether paid on a monthly, weekly, hourly or piece-work basis. Working foremen doing work similar to that of the employees they supervise are included, as are maintenance, ware-

housing and delivery staffs. Employees on new construction work, in retail or wholesale operations, on outside piece work etc. are not included.

Production workers are reported by months, an average for the year being obtained by summing the monthly figures and dividing by twelve. This procedure is followed even though the plant did not operate in all months. Figures on employment refer to calendar years whether or not some establishments reported other data on a financial year basis.

Salaries and Wages

Salaries and wages refer to gross earnings of the employees described above, including salaries, wages, commissions, bonuses, the value of room and board where provided, deductions for income tax and social services such as sickness and unemployment insurance, pensions, etc., as well as any other allowances forming part of the employees' wages. Payments for overtime are included.

Salaries refer to amounts paid to administrative and office employees. Withdrawals by working owners or partners for normal living expenses for self and family are included but not their withdrawals for income tax. Wages refer to the amounts paid to production and related workers as defined above. Data on earnings refer to the calendar year whether or not some establishments reported other data on a financial year basis.

Cost of Fuel and Electricity

Figures for fuel refer to amounts actually used, (including fuel used in cars and trucks), not to purchases unless the quantities are the same. Values refer to the laid-down cost at the works, including freight, duty, etc.

Materials and Supplies Used

Figures represent quantities and laid-down cost values, at the works, of materials and supplies actually used during the year whether purchased from others or received as transfers from other plants of the reporting company. Amounts paid to other manufacturers for work done on materials owned by the reporting company are included. Returnable containers or any other items charged to capital account are not included. Fuels are not included. Goods bought from others or received as transfers from other plants or reporting companies for resale without further processing are not included. Maintenance and repair supplies not chargeable to capital account are included.

Factory Shipments

Factory shipments refer to shipments of goods made from own materials either in the reporting plant or by other manufacturers on the basis of a charge to the reporting plant for work done. All products and by-products shipped from the establishment are included whether for domestic use, export, or for government departments. Transfer shipments to sales outlets, distributing warehouses or to other manufacturing units of the reporting firm are included. Goods bought or received as transfers

and resold without further processing are not included. Values are computed on f.o.b. plant or plant warehouse basis, and do not include sales tax or excise duties. Values of containers not returnable are included. Amounts received in payment for work done on materials owned by others are included.

In a few industries such as shipbuilding, aircraft, etc., where work on principal products extend over a relatively long period, the value of production is recorded rather than the value of shipments. For those industries production is computed from the value of deliveries of complete units during the year plus the value of work done during the year on unfinished units less the value of work done in previous years on finished units delivered in the year under review.

Inventories

Values represent the book values of manufacturing inventories owned and held at the reporting plant. Figures include inventories held in warehouses or selling outlets which have been included with plant operations for purposes of reporting shipments.

Value added by Manufacturing

Figures are computed from value of shipments plus or minus changes in inventories of finished goods and goods in process less cost of materials, fuel and electricity. This figure is sometimes referred to as net production.¹

Standard Industrial Classification

The revised Standard Industrial Classification which has been introduced with the 1960 Census of Manufactures provides for a breakdown of the universe into 140 industries arranged in 20 major groups compared with 135 industries in 17 major groups in the old classification which was used in the compilations for the years 1949 to 1959 inclusive. It incorporates changes considered desirable on the basis of experience in using the earlier classification as well as those which take account of changes in the structure of Canadian industries associated with the rapid developments of the past decade. Full details are contained in the Standard Industrial Classification Manual, Catalogue No. 12-501, which is available from either the Queen's Printer or the Dominion Bureau of Statistics. Reporting establishments are classified or allotted to specific industries on the basis of the value of principal products made or shipped.

Many industries remain unchanged in the new classification but in many instances there have been substantial changes in content because of the shifting of establishments from one industry to another or in re-grouping of establishments. Where

¹ To arrive at the National Accounts concept of "gross domestic product at factor cost", it would be necessary to subtract also the cost of office supplies used, advertising, insurance and other goods and services obtained from other businesses. Data on these inputs are not collected on the annual Census of Manufactures. Value added figures for "The primary industries and construction" are published in D.B.S. publication 61-202, *Survey of Production*.

changes have occurred the principal statistics for 1957, 1958 and 1959 have been re-compiled to provide data on a basis comparable with those for 1960.

Short Forms

Between 1949 and 1957, in an effort to ease the reporting burden for smaller firms, a short form was used asking for the total value of shipments only or, in a few cases where losses of detail were significant, for quantities and values of principal products. For purposes of publication, missing data were estimated on the basis of appropriate ratios. In general the cut-off point for these short forms was set at \$50,000 value of shipments. About 40% of the total number of establishments reported on the short form and accounted for less than 3 per cent of the total value of shipments.

In 1958, in order to establish a new base year, the small firms were asked to report all items of principal statistics together with some detail on materials and products.

For the 1959 Census, the short form was used again, but further steps were taken to ease the respondents' burden. First, the general limit for short forms was raised to \$100,000 value of shipments. In addition, a new intermediate form was developed. This form is a shortened version of the long form in that most of the general questions were pared down and the detailed lists of materials and products were limited to the more important items. The general limits for firms in this category were set at between \$100,000-\$500,000 value of shipments, but in the case of both the short and intermediate forms there were lower cut-offs for a number of industries in which the smaller firms accounted for a larger share of total shipments. On the other hand, limits were raised where this could be done without a significant loss of coverage. On most of the short forms for 1959, in addition to total value of shipments, data on principal products were requested. In a few industries, where loss of employment and earnings data were considered too large because of higher cut-offs, a question on total payroll was placed on the short form. This practice was followed again in 1960.

The intermediate and long forms provide complete data for the compilation of all elements of principal industry statistics and the details of materials and products. The one-page short form, although containing data on principal products and total value of shipments, does not request information on other elements of principal statistics such as value of inventories, materials, fuel and electricity and, in most cases, employment and salaries and wages, nor does it contain detailed data on volume and value of materials used. For purposes of compiling aggregates of principal statistics by industry and by geographic location, the missing data for each establishment were estimated for 1959 by using, in general, ratios based on the change in the value of shipments between 1958 and 1959. The proportion of the estimated data was generally less than 5 per cent of the total in each category of principal statistics.

MANUFACTURERS OF INDUSTRIAL CHEMICALS

1960

Data presented in this report under the heading of Manufacturers of Industrial Chemicals reflect implementation of the revised Standard Industrial Classification (SIC) which is being used by the Dominion Bureau of Statistics in its compilation of 1960 industry statistics—see item "Standard Industrial Classification" in the Explanatory Notes section of this report. For statistical purposes the industry titled Manufacturers of Industrial Chemicals in the revised Standard Industrial Classification covers the operations of establishments primarily engaged in manufacturing basic industrial inorganic chemicals such as acids, alkalis, salts, compressed gases and other inorganic compounds or in manufacturing industrial organic chemicals by chemical processes. This industry includes establishments primarily engaged in manufacturing dry colours, pigments, white lead, lead oxides, iron oxides and titanium oxide and in manufacturing dyes. Included also are establishments primarily engaged in manufacturing synthetic rubber and those primarily engaged in manufacturing compressed organic gases. Establishments primarily engaged in manufacturing coke are classified in the Iron and Steel Mills Industry or in the Other Petroleum and Coal Products Industries; petroleum refineries are classified in the Petroleum Refineries Industry; establishments primarily engaged in manufacturing plastics materials are classified in the Manufacturers of Plastics and Synthetic Resins Industry; establishments primarily engaged in manufacturing superphosphates and mixed fertilizers are classified in the Manufacturers of Mixed Fertilizers Industry.

In many instances, adoption of the new Standard Industrial Classification effected a radical shifting of manufacturing establishments as between industry groupings. Significant elements in the shift in the case of the industry reviewed in this report were the transfer to this industry of establishments producing synthetic rubber previously included in the Miscellaneous Chemical Products Industry and the transfer of establishments manufacturing ammonium nitrate, ammonium phosphate, ammonium sulphate and ammonium nitrate phosphate previously included in the Fertilizers Industry. Another significant element was the grouping in this report of statistics which were previously published in a separate report under the heading of The Compressed Gases Industry. Another and minor

element was the transfer of some of the establishments manufacturing dry colours previously included in the Paints, Varnishes and Lacquers Industry. The effect of these transfers is reflected in the revised series of statistics presented in Table 1.

There were 131 establishments classified as Manufacturers of Industrial Chemicals in 1960. There was 1 establishment in Newfoundland, 3 in Nova Scotia, 1 in New Brunswick, 36 in Quebec, 55 in Ontario, 3 in Manitoba, 4 in Saskatchewan, 11 in Alberta, 16 in British Columbia and 1 in Northwest Territories. Employees numbered 16,371; salaries and wages totalled \$86,442,647; fuel and electricity cost \$41,541,704; materials used in manufacturing processes cost \$177,272,303; and factory shipments were valued at \$449,982,770.

Separate figures for the production of chemicals in this industry are not published as many of the individual items were made by only one or two firms. However, figures for the several items which are available for publication such as ammonium sulphate, pigments and colours, synthetic rubber, acetylene and oxygen, sulphuric acid, and chlorine and caustic soda are shown in Tables 4 to 7 and 9 to 13.

The total value of shipments of chemicals from all industries in 1960 was \$505.4 millions compared with \$477.7 millions in 1959. A special compilation which gives a good summary of total shipments from all industries is presented in Table 8.

Note: Due to lack of inventory data, figures for value added by manufacture prior to 1954 were obtained by subtracting the cost of materials used, including fuel and electricity, from the total value of factory shipments. In 1954 and 1955 the "Value added" adjustment incorporated the increase or decrease to shipments values resulting from changes in the value of inventories over the period. For these two years, the adjustments that were made used only the change in finished product inventory owned by manufacturers. Beginning with 1956 the calculation of the "Value added" figure was further adjusted to take into account the "Goods in process" as well as the finished goods held at plant or plant warehouse.

**TABLE 1. Principal Statistics: Manufacturers of Industrial Chemicals,
by Provinces, 1957-1960**

Basis: Standard Industrial Classification revised 1950

Year and province	Estab- lish- ments	Em- ployees	Salaries and wages	Cost of fuel and electricity at plant	Cost at plant of materials used	Value added by manufacture ¹	Selling value of factory shipments
	number			dollars			
1957							
Newfoundland	1	} 122	451,525	70,187	393,756		1,937,272
Nova Scotia	4						
New Brunswick	1						
Quebec	40	4,756	22,033,932	7,838,710	40,734,959		91,953,308
Ontario	50	9,227	43,727,635	19,856,903	91,567,415		209,399,248
Manitoba	3	86	301,390	21,836	214,856		1,411,077
Saskatchewan	3	70	252,749	23,390	976,521		1,600,529
Alberta	11	1,167	5,128,883	2,041,601	8,100,572		21,605,341
British Columbia	12	} 1,336	5,950,771	1,218,457	12,599,477		31,584,656
Northwest Territories	1						
Canada	126	16,764	77,846,885	31,071,084	154,587,556		359,491,431
1958							
Newfoundland	1	} 114	392,301	67,823	255,791		1,585,394
Nova Scotia	3						
New Brunswick	1						
Quebec	41	4,668	22,364,082	8,095,012	45,691,820		111,042,861
Ontario	54	9,138	45,998,170	23,326,120	99,650,742		229,546,886
Manitoba	3	66	275,020	20,492	214,814		1,440,840
Saskatchewan	3	61	257,737	23,572	1,244,675		1,906,701
Alberta	11	1,062	5,231,324	2,183,779	8,058,187		26,187,201
British Columbia	13	} 1,415	6,706,244	1,835,616	14,609,284		35,835,567
Northwest Territories	1						
Canada	131	16,524	81,224,878	35,552,414	169,725,313		407,545,450
1959							
Newfoundland	1	} 114	450,384	65,630	380,772		2,074,328
Nova Scotia	4						
New Brunswick	1						
Quebec	38	4,894	24,614,440	9,014,510	53,002,337		122,172,101
Ontario	56	8,889	46,899,219	25,298,477	104,340,881		246,141,381
Manitoba	3	74	307,503	23,577	287,137		1,599,473
Saskatchewan	3	50	244,272	24,410	1,131,867		1,887,901
Alberta	11	1,094	5,180,945	2,204,083	8,028,120		31,827,786
British Columbia	14	} 1,406	6,725,293	2,036,412	13,795,821		38,811,572
Northwest Territories	1						
Canada	132	16,521	84,422,056	38,667,099	180,966,935		444,514,542
1960							
Newfoundland	1	} 110	426,405	87,165	304,009	1,738,605	2,117,484
Nova Scotia	3						
New Brunswick	1						
Quebec	36	4,330	22,491,414	8,578,620	39,788,065	55,492,282	104,615,829
Ontario	55	9,227	50,195,770	28,032,075	108,247,606	135,264,993	266,889,593
Manitoba	3	77	306,271	22,219	271,060	1,333,075	1,625,079
Saskatchewan	4	58	297,607	33,689	1,054,022	721,811	1,812,404
Alberta	11	1,148	5,782,103	2,504,209	10,174,565	21,175,611	33,103,165
British Columbia	16	} 1,421	6,943,077	2,283,727	17,432,976	23,414,903	39,819,216
Northwest Territories	1						
Canada	131	16,371	86,442,647	41,541,704	177,272,303	239,141,280	449,982,770

¹ See note to text.

² The changeover to the new classification has delayed the recompilation of "value added" figures for these years and same will not be available until the next issue of this report.

Note: Profits or losses cannot be calculated from above figures as data are not available for general expense items, such as interest, rent, depreciation, taxes, insurance, advertising, etc.

TABLE 2. Inventories:¹ Manufacturers of Industrial Chemicals, 1960

	Raw materials and supplies	Goods in process	Finished goods of own manufacture	Total
	dollars			
Opening:				
Newfoundland, Nova Scotia and New Brunswick	73,547	—	11,035	84,582
Quebec	7,537,042	1,231,600	6,545,775	15,314,417
Ontario	17,873,858	5,509,596	12,944,689	36,328,143
Manitoba	27,393	—	13,773	41,166
Saskatchewan	536,244	—	34,367	570,611
Alberta	1,820,813	420,363	2,741,282	4,982,458
British Columbia and Northwest Territories	5,342,670	5,903	4,709,791	10,058,364
Canada	33,211,567	7,167,462	27,000,712	67,379,741
Closing:				
Newfoundland, Nova Scotia and New Brunswick	89,576	—	23,330	112,906
Quebec	9,429,559	1,370,661	5,649,852	16,450,072
Ontario	16,530,504	6,505,735	16,603,631	39,639,870
Manitoba	32,382	—	15,048	47,430
Saskatchewan	365,055	—	31,485	396,540
Alberta	2,314,467	502,510	3,410,355	6,227,332
British Columbia and Northwest Territories	4,861,816	7,806	8,020,278	12,889,900
Canada	33,623,359	8,386,712	33,753,979	75,764,050

¹ Book value of all manufacturing inventories owned and held at plant and plant warehouses.

TABLE 3. Materials Used: Manufacturers of Industrial Chemicals, 1960

Material	Quantity	Cost at plant
		\$
Acetone	lb. 2,584,643	252,580
Acid—Acetic, 99½%	" 581,244	69,872
Fatty—Oleic	" 422,764	73,512
Stearic	" 17,139	3,177
Other fatty acids	" 1,800,900	122,530
Formic, 85%	" 424,848	57,580
Hydrochloric (muriatic), 100%	" 6,488,130	327,440
Hydrofluoric	" 3,011,393	633,045
Nitric, 100%	" 3,412,213	175,895
Phosphoric	" 1,135,415	110,263
Sulphuric—New acid (as 100%)	ton 38,163	1,059,661
Spent acid (as 100%)	" 5,775	37,437
Alcohol—Butyl (including isobutyl and normal)	lb. 1,459,952	208,402
Ethyl	Imp. gal. 379	560
Isopropyl	lb. 2,251,826	165,147
Methyl	Imp. gal. 2,433,588	712,066
Aluminum chloride	lb. 2,458,736	393,104
Aluminum sulphate (alum)	" 1,018,681	29,547
Ammonia (liquor)	lb. NH ₃ 1,329,500	90,841
Ammonia, anhydrous	ton 89,062	4,694,110
Ammonium nitrate	" 1,017	121,802
Barium carbonate	lb. 937,558	48,126
Barium chloride	" 594,328	38,657
Benzol	" 96,675,826	4,499,570
Betanaphthol	" 214,669	57,186
Borax	" 53,328	3,977
Calcium carbonate (whiting and chalk)	" 815,991	11,789
Calcium chloride	" 563,758	22,148
Carbon, activated	" 392,276	117,492
Carbon bisulphide (disulphide)	" 1,876,875	95,054

TABLE 3. Materials Used: Manufacturers of Industrial Chemicals, 1960 - Concluded

Material	Quantity	Cost at plant
		\$
Carbon tetrachloride	lb. 11,419,230	928,160
Chlorine	ton 8,326	546,808
Coal, (except for fuel)—Anthracite	" 72,916	1,050,638
Bituminous	" 109,821	1,573,260
Cobalt acetate	lb. 7,205	6,867
Cobalt sulphate	" 7,146	3,290
Coke, (except for fuel)—Petroleum	ton 838	22,183
Other	" 173,163	3,050,888
Copper sulphate	lb. 400	62
Cresol (including cresylic acid, all forms)	" 161,957	21,165
Diatomaceous earth	ton 12,466	648,312
Electrodes (purchased)	" ..	607,166
Ethanolamine—Mono	lb. 849,095	217,831
Di	" 221,620	62,209
Tri	" 4,235	1,219
Ferrous sulphate (copperas)	" 671,069	18,020
Fluorspar	ton 87,186	2,742,261
Formaldehyde, 100% solids basis	lb. 857,759	94,501
Glycerine	" 904,592	190,552
Glycols—Ethylene	" 130,464	17,272
Diethylene	" 135,577	21,074
Triethylene	" 8,070	4,049
Propylene	" 509,898	73,958
Other grades	" 535,240	91,206
Graphite	" 1,239,385	458,932
Grease	" 481,749	34,368
Iron and steel scrap (borings, etc.)	ton 5,647	184,438
Lead, pig	lb. 21,557,102	2,439,624
Lead sulphate	" 49,600	7,907
Limestone	ton 1,052,918	2,134,260
Lime—Hydrated	" 9,609	86,745
Quick	" 33,956	604,937
Litharge	lb. 1,903,751	251,727
Mercury	" 125,228	286,561
Muriate of potash (potassium chloride)	ton 5,954	223,583
Natural gas (as a material in manufacturing; not for fuel)	M cu.ft. 6,474,194	1,778,533
Oils—Castor	lb. 1,693,379	281,833
Cocoanut	" 3,046,267	408,469
Linseed	Imp. gal. 636,979	103,169
Tall	lb. 346,060	25,597
Other oils	" 6,389,458	272,993
Phenol	" 2,324,535	398,017
Petrochemical feed stocks—L.P.G.'s (Butane, propane, other)	" ..	5,604,547
Other	" ..	22,398,773
Phosphate rock	ton 731,164	9,297,594
Potassium bichromate	lb. 47,653	9,487
Potassium hydroxide (as 100% KOH)	" 585,627	66,241
Phthalic anhydride	" 1,963,163	359,973
Quartz and quartzite	ton 62,367	255,443
Silica sand	" 26,109	230,070
Sodium acetate	lb. 75,169	12,320
Sodium chloride, dry (common salt)	ton 347,956	3,355,000
Sodium chloride, brine (salt content)	" 878,320	1,753,839
Sodium bichromate	lb. 2,549,820	348,668
Sodium hydrosulphide	" 118,090	15,570
Sodium hydroxide (caustic soda) as 100% Na OH)	ton 30,780	2,085,841
Sodium nitrate	lb. 458,450	24,244
Sodium prussiate	" 393,949	54,711
Sodium silicate (water glass) (including metasilicate)	" 845,714	45,270
Sodium sulphide	" 475,272	30,805
Sulphur (brimstone)	ton 197,212	5,548,914
Tallow	lb. 10,793,281	536,564
Titanium dioxide	" 14,285	3,759
Toluene (toluol)	" 905,671	33,521
Tricresyl phosphate	" 47,188	13,483
Urea	" 4,366,404	446,116
Xylene (xylol)	" 143,719	6,470
Zinc chloride	" 358,550	24,120
Zinc oxide	" 364,380	53,400
Steel sheets for making containers	ton 1,641	376,494
All other materials	" ..	78,915,230
Containers and packing materials	" ..	9,158,572
Total .....	...	177,272,303

TABLE 4. Factory Shipments:¹ Imports and Exports of Ammonium Sulphate, 1956 - 60

Year	Shipments	Imports and Exports	
		Imports	Exports
		tons	
1956	339,510	3,144	..
1957	318,634	3,288	..
1958	300,049	5,892	..
1959	307,121	5,941	..
1960	349,677	8,686	..

¹ From all industries.TABLE 5. Factory Shipments:¹ Imports and Exports of Pigments and Dry Colours, 1956 - 60

Year	Shipments ²	Imports and Exports	
		Imports	Exports
		dollars	
1956	21,024,000	20,390,000	773,000
1957	20,014,000	18,218,000	710,000
1958	26,506,000	15,420,000	1,928,000 ^r
1959	27,369,000	17,241,000	2,040,000
1960	25,980,000	15,005,000	1,468,000

¹ From all industries² Includes white lead, red lead and litharge; colours, dry and in oils; acetylene black, satin white, zinc oxide, bronze powder, cobalt oxide, cobalt sulphate, carbon black, copper oxide, aluminum paste, synthetic iron oxide and titanium oxide.

TABLE 6. Factory Shipments of Synthetic Rubber, 1956 - 60

Year	Quantity	Selling value at plant
	pounds	
	\$	
1956	271,803,000	63,325,000
1957	290,351,000	65,988,000
1958	299,185,000	67,351,000
1959 ¹	230,018,000	51,437,000
1960	335,872,000	76,039,000

¹ The totals for 1959 reflect the effects of a strike in this industry from March 18, 1959 to June 23, 1959.TABLE 7. Factory Shipments¹ of Acetylene and Oxygen, 1956 - 60

Year	Acetylene		Oxygen ²	
	Quantity	Selling value at plant	Quantity	Selling value at plant
	cu. ft.	\$	cu. ft.	\$
1956	185,203,392	6,648,339	1,222,729,169	9,657,871
1957	195,838,372	7,303,939	1,323,847,599	10,924,006
1958	180,973,230	6,772,394	1,203,933,175	10,604,155
1959	184,915,535	7,199,610	1,390,233,113	11,424,807
1960	209,480,259	7,849,234	1,836,199,766	12,331,906

¹ Includes only the shipments, chiefly in cylinders, or delivered by pipeline to adjacent consuming plants. Does not include amounts made for own use by some chemical companies.² Excludes tonnage oxygen.

TOTAL PRODUCTION OF CHEMICALS

It is very difficult to get, from official reports, the statistics covering the total production in Canada of heavy and fine chemicals. There are two reasons for this, the first being that data for many of the individual items cannot be shown because they were made by only one or two concerns, and the second being that chemicals are made in a number of different industries. Ethyl alcohol, for example, is a product of the distilled liquors industry; some fine chemicals are made in the phar-

maceutical industry; ammonium sulphate is produced in coke plants; cobalt and nickel salts are made in the non-ferrous metal refineries, and so on. The Bureau has made, therefore, a special compilation shown in Table 8 which gives a good summary of the total shipments as gathered up from all industries. The values cover only the products shipped as there is no adequate record of the intermediates made for the further use of the producers.

TABLE 8. Factory Shipments of Chemicals, 1959 and 1960

	Selling value at plant	
	1959	1960
	dollars	
<i>Acids, including acetic, muriatic, nitric, sulphuric, phosphoric, stearic, etc.</i>	40,192,000	36,041,000
<i>Calcium compounds, including carbide, chloride, phosphide, cyanamide, cyanide acid phosphate, grey acetate, arsenate, chloride of lime, etc.</i>	18,622,000	15,954,000
<i>Sodium compounds, including hydroxide, phosphate, cyanide, silicate, hypochlorite, bisulphite, saltcake, Glauber's salt, chlorate, acid pyrophosphate, soda ash, sal soda, bisulphate, etc., (pharmaceutical salts included elsewhere)</i>	45,551,000	45,969,000
<i>Organic chemicals, including acetic anhydride, butyl acetate, ethyl acetate paraldehyde, glycols, pentasol acetate, vinyl acetate, ethyl alcohol, methyl hydrate, glycerine, phenol, cresol, benzol, etc., (acetic acid and acetylene included elsewhere)</i>	131,142,000	128,548,000
<i>Compressed and liquefied gases, etc., including acetylene, carbon dioxide, oxygen, nitrous oxide, liquid sulphur dioxide, liquid chlorine, anhydrous and aqua ammonia, liquefied petroleum gases, etc.</i>	58,237,000	72,883,000
<i>Fertilizer chemicals, including ammonium sulphate, ammonium nitrate (fertilizer grade), ammonium phosphate, and superphosphate</i>	54,595,000	59,583,000
<i>Synthetic resins, including casein type, vinyls, polystyrene, phenol-formaldehyde, urea-formaldehyde, alkyds, sodium carboxymethylcellulose, etc.</i>	73,827,000	88,178,000
<i>Other chemicals, including white lead, zinc oxide, red lead, litharge, cobalt salts, nickel salts, ferric chloride, lead arsenate, phosphorus, white arsenic, ammonium nitrate, fine chemicals, precious metal salts, etc.</i>	55,592,000	58,631,000
Totals	477,758,000	505,487,000

TABLE 9. Production:¹ Imports, Exports and Apparent Consumption of Sulphuric Acid, 1925 - 60

Year	Production	Imports	Exports	Apparent consumption ²
	short tons of 100% acid			
1925	77,700	52	19,179	58,573
1930	100,020	150	571	99,599
1935	209,083	83	1,027	208,139
1940	301,444	142	2,244	299,342
1945	664,302	149	11,203	653,248
1950	756,110	332	44,417	712,025
1955	950,277	151	29,578	920,850
1957	1,290,000	1,000	29,500	1,261,500
1958	1,586,000	39,345	23,252	1,602,093
1959	1,739,000	18,489	27,863	1,729,626
1960	1,673,000	9,526	43,430	1,639,096

¹ From all industries.² No allowance made for changes in inventories.

TABLE 10. Production:¹ Imports and Exports of Chlorine and Caustic Soda, 1956 - 60

Year	Chlorine	Caustic soda ²
		(100% Na OH)
		tons
(a) Production:		
1956	223,000	256,000
1957	226,000	264,000
1958	268,000	313,000
1959	282,000	341,000
1960	322,000	373,000
(b) Imports:		
1956	34,200	74,200
1957	33,828	53,200
1958	23,102	30,737
1959	26,584	35,972
1960	27,820	41,361
(c) Exports:		
1956	21,500	7
1957	10,500	285
1958	14,491	1,710
1959	16,844	2,799
1960	24,483	3,135

¹ From all industries.

² Imports of caustic soda solution shown in Table 19 represent gross weight which is in terms of 50% Na OH approximately. Figures in Table 10 have been converted to 100% Na OH to agree with the basis used in production and exports.

TABLE 11. Available Data on the Consumption of Sulphuric Acid, by Industries, 1960

Industry	Short tons of 100% acid
Iron and steel mills	48,149
Other iron and steel	12,440
Electrical products	4,945
Vegetable oil mills	96
Sugar refineries	332
Leather tanneries	2,083
Textile dyeing and finishing plants	54
Pulp and paper mills	25,925
Uranium ore processing	373,337
Manufacturers of mixed fertilizers	101,821
Manufacturers of plastics and synthetic resins	20,257
Manufacturers of soaps and cleaning compounds	15,000
Other chemical industries	9,529
Manufacturers of industrial chemicals ¹	833,890
Petroleum refining industry	16,931
Mining ²	49,670
Miscellaneous ³	60,026
Total accounted for	1,574,485

¹ Includes consumption of "own make" or "captive" acid by firms classified to these industries.

² Includes metal mines, non-metal mines, mineral fuels and structural materials.

³ Includes synthetic textiles, explosives and ammunition, other petroleum and coal, sausage and sausage casings.

Note: Figures shown by industry for 1960 are not necessarily comparable with previous years because of the change in the industry concept brought about by the implementation of the new Standard Industrial Classification (SIC). A further result of the new SIC concept is that some industries have disappeared completely.

TABLE 12. Available Data on the Consumption of Chlorine, by Industries, 1960

Industry	Net tons
Iron and steel mills	235
Municipal waterworks (1959 latest available)	2,721
Miscellaneous food industries	4
Fish products industry	65
Mining ¹	5,113
Pulp and paper mills ²	174,636
Textile dyeing and finishing plants	4
Manufacturers of plastics and synthetic resins	291
Manufacturers of soaps and cleaning compounds	4,107
Other chemical industries	76
Manufacturers of industrial chemicals ²	129,004
Distilleries	110
Total accounted for	316,366

¹ Includes non-metal mines, metal mines, mineral fuels and structural materials.

² Includes consumption of "own make" or "captive" chlorine by firms classified to these industries.

Note: Figures shown by industry for 1960 are not necessarily comparable with previous years because of the change in the industry concept brought about by the implementation of the new Standard Industrial Classification (SIC). A further result of the new SIC concept is that some industries have disappeared completely.

TABLE 13. Available Data on the Consumption of Caustic Soda, by Industries, 1960

Industry	Net tons of 100% Na OH
Pulp and paper mills ¹	161,498
Manufacturers of soap and washing compounds	21,010
Manufacturers of industrial chemicals ¹	141,934
Petroleum refining	10,155
Manufacturers of plastics and synthetic resins	14,602
Other chemical industries	5,187
Miscellaneous food industries (includes starch and glucose)	1,250
Mining ²	10,356
Manufacturers of pharmaceuticals and medicines	271
Iron and steel mills	1,315
Textile dyeing and finishing	111
Manufacturers of toilet preparations	136
Other petroleum and coal products industries	92
Sugar refineries	69
Vegetable oil mills	139
Miscellaneous ³	27,579
Total accounted for	395,704

¹ Includes consumption of "own make" or "captive" caustic by firms classified to these industries.

² Includes metal mines, non-metal mines, mineral fuels and structural materials.

³ Includes synthetic textile mills, explosives, plastic fabricators, sausage and sausage casings.

Note: Figures shown by industry for 1960 are not necessarily comparable with previous years because of the change in the industry concept brought about by the implementation of the new Standard Industrial Classification (SIC). A further result of the new SIC concept is that some industries have disappeared completely.

**TABLE 14. Principal Statistics classified according to Type of Ownership:
Manufacturers of Industrial Chemicals, 1957 and 1960**

Type of ownership	Estab- lish- ments	Employees	Salaries and wages	Cost at plant of materials used	Selling value of factory shipments
1957		number		dollars	
Incorporated companies	126	16,764	77,846,885	154,587,556	359,491,431
Totals	126	16,764	77,846,885	154,587,556	359,491,431
1960		number		dollars	
Incorporated companies	131	16,371	86,442,647	177,272,303	449,982,770
Totals	131	16,371	86,442,647	177,272,303	449,982,770

**TABLE 15. Principal Statistics grouped according to Selling Value of Factory Shipments:
Manufacturers of Industrial Chemicals, 1957 and 1960**

Establishments reporting factory shipments valued at	Estab- lish- ments	Employees	Salaries and wages	Cost at plant of materials used	Selling value of factory shipments
1957		number		dollars	
\$ 10,000 to \$ 24,999	1	39	156,510	155,354	383,851
50,000 " 99,999	5				
100,000 " 199,999	13	119	419,502	733,814	1,845,164
200,000 " 499,999	35	637	2,552,227	3,264,654	10,807,221
500,000 " 999,999	26	1,106	4,294,852	7,832,866	20,177,672
1,000,000 " 4,999,999	29	2,728	11,791,581	31,702,787	64,069,906
5,000,000 and over	17	11,355	54,243,792	110,898,081	262,207,617
Head offices	—	780	4,388,421	—	—
Totals	126	16,764	77,846,885	154,587,556	359,491,431
1960		number		dollars	
\$ 25,000 to \$ 49,999	4	19	95,439	123,162	166,028
50,000 " 99,999	5	34	146,349	98,903	373,930
100,000 " 199,999	15	87	362,652	747,645	2,265,695
200,000 " 499,999	28	343	1,617,662	2,425,156	9,563,982
500,000 " 999,999	24	816	3,594,165	5,880,714	17,289,843
1,000,000 " 4,999,999	31	2,548	13,219,117	26,428,278	68,090,621
5,000,000 and over	24	11,824	62,898,842	141,568,445	352,232,627
Head offices	—	700	4,508,421	—	—
Totals	131	16,371	86,442,647	177,272,303	449,982,770

**TABLE 16. Employees and their Earnings: Manufacturers of Industrial Chemicals,
1959 and 1960**

Province	Employees					Earnings		Total earnings
	Administrative		Workmen		Total	Admin- istrative	Workmen	
	Male	Female	Male	Female				
1959		number			dollars			
Newfoundland, Nova Scotia and New Brunswick	45	14	55	—	114	219,587	230,797	450,384
Quebec	1,333	400	3,158	3	4,894	9,634,602	14,979,838	24,614,440
Ontario	2,519	722	5,604	44	8,889	18,264,492	28,634,727	46,899,219
Manitoba	26	13	34	1	74	164,183	143,320	307,503
Saskatchewan	20	6	24	—	50	129,493	114,779	244,272
Alberta	335	76	670	13	1,094	2,128,249	3,052,696	5,180,945
British Columbia and North- west Territories	330	43	1,030	3	1,406	2,007,394	4,717,899	6,725,293
Canada	4,608	1,274	10,575	64	16,521	32,548,000	51,874,056	84,422,056

TABLE 16. Employees and their Earnings: Manufacturers of Industrial Chemicals, 1959 and 1960 - Concluded

Province	Employees					Earnings		Total earnings
	Administrative		Workmen		Total	Admin-istrative	Workmen	
	Male	Female	Male	Female				
	number					dollars		
1960								
Newfoundland, Nova Scotia and New Brunswick	44	15	51	—	110	213,435	212,970	426,405
Quebec	1,106	340	2,879	5	4,330	8,601,674	13,889,740	22,491,414
Ontario	2,549	733	5,906	39	9,227	19,416,482	30,779,288	50,195,770
Manitoba	25	12	39	1	77	151,101	155,170	306,271
Saskatchewan	25	6	27	—	58	134,683	162,924	297,607
Alberta	354	83	702	9	1,148	2,362,562	3,419,541	5,782,103
British Columbia and North-west Territories	352	44	1,022	3	1,421	2,103,892	4,839,185	6,943,077
Canada	4,455	1,233	10,626	57	16,371	32,983,829	53,458,818	86,442,647

TABLE 17. Production Workers, by Month: Manufacturers of Industrial Chemicals, 1960

Month	Male	Female	Total
	number		
January	10,450	54	10,504
February	10,518	55	10,573
March	10,638	61	10,699
April	10,616	58	10,674
May	10,732	56	10,788
June	10,895	56	10,951
July	11,089	55	11,144
August	10,956	56	11,012
September	10,596	55	10,651
October	10,438	53	10,491
November	10,358	52	10,410
December	10,212	55	10,267
Averages	10,626	57	10,683

TABLE 18. Fuel and Electricity Used: Manufacturers of Industrial Chemicals, 1960

Kind	Quantity	Cost at plant
		\$
Bituminous coal:		
(a) From Canadian mines	ton 16,815	190,127
(b) Imported	" 849,879	6,815,973
Anthracite coal	" 905	13,677
Coke	" 13,950	92,125
Gasoline (including gasoline used in cars and trucks).....	Imp. gal. 643,189	202,481
Fuel oil including kerosene or coal oil.....	" 17,942,635	1,670,742
Wood (cords of 128 cubic feet of piled wood).....	cord 46	815
Gas:		
(a) Liquefied petroleum gases	Imp. gal. 41,603	9,235
(b) Other manufactured gas	M cu. ft. 6,672,602	3,598,148
(c) Natural gas	" 15,826,853	3,283,252
Other fuel.....	..	279,482
Electricity purchased.....	kwh. 5,340,153,101	20,773,376
Steam purchased.....	..	4,612,271
Total cost of fuel and electricity.....	...	41,541,704

TABLE 19. Imports of Specified Chemicals, 1959 and 1960

Commodity	1959		1960		
	Quantity	Value	Quantity	Value	
		\$		\$	
Boracic acid in packages of not less than 25 pounds	lb.	4,518,488	247,669	4,663,227	261,826
Hydrofluosilicic acid	"	224,205	15,646	184,595	13,226
Muriatic acid	"	1,659,400	22,558	1,709,829	25,208
Acetyl salicylic acid	"	1,031,398	546,198	949,983	509,275
Nitric acid	"	214,076	18,473	252,658	20,602
Phosphoric acid	"	87,528	8,199	76,567	7,712
Sulphuric acid	"	36,978,102	321,260	19,052,852	144,744
Lactic acid	"	534,957	133,467	576,535	155,007
Oleic acid or red oil	"	361,249	63,278	328,449	55,971
Stearic acid	"	1,338,233	172,272	1,517,867	191,919
Nicotinic acid	"	53,402	91,740	70,748	97,806
Salicylic acid	"	21,250	9,080	19,530	7,668
Acetic acid and pyroligneous acid	gal.	1,144	3,850	993	3,163
Cresylic acid	lb.	688,816	65,790	650,749	79,875
Xanthates, and sulpho-thio-phosphoric (ditho-phosphoric) compounds, for concentrating ores, metals or minerals	"	4,726,648	1,209,380	5,186,415	1,369,098
Oxalic acid	"	1,601,235	176,952	1,202,200	160,891
Tannic acid	"	81,514	89,771	38,963	45,990
Tartaric acid, crystals or powder	"	826,219	295,449	951,527	340,226
Acids, other n.o.p.	"	11,907,289	2,530,912	11,195,376	2,531,291
Arsenic acid	"	595,674	20,081	407,465	13,347
Ascorbic acid	"	..	410,822	..	527,316
Formic acid	lb.	1,156,613	114,192	1,141,378	120,275
Chromic acid	"	1,143,156	307,849	1,127,100	306,186
Carbolic acid or phenol	"	6,613,885	1,069,538	4,790,233	748,588
Amyl alcohol	gal.	43,558	58,093	30,916	48,261
Butyl alcohol	lb.	1,542,177	201,924	1,241,123	171,491
Methyl ethyl ketone and isopropyl acetate; diethyl ketone, methyl normal propyl ketone and blends thereof; methyl isobutyl ketone and furfural	"	2,019,490	251,006	2,406,947	291,558
Ethyl or methyl alcohols or mixtures of methyl alcohol	gal.	3,298,401	944,890	58,018	38,545
Isopropyl alcohol	"	22,055	12,226	15,757	10,212
Aniline and coal tar dyes, adapted for dyeing, in bulk or packages of not less than 1 pound weight	lb.	6,450,917	8,348,012	6,860,420	8,624,303
Aniline and coal tar dyes n.o.p.	"	3,282	9,282	29	13,777
Aniline oil, crude, aniline salts, and alizarin	"	82,745	23,698	88,370	27,007
Coal tar base or salt for dyes	"	1,423,042	897,041	1,170,935	742,439
Chemical compounds adapted for dyeing and tanning n.o.p.	cwt.	229,617	1,381,908	79,861	1,201,158
Basic chromic sulphate for tanning (chrometan, chromosal, koreon, tanolin)	"	40,948	415,710	32,387	330,881
Litharge	"	23,133	325,742	12,528	186,557
Red lead, dry, and orange mineral	lb.	674,268	85,066	779,960	106,570
White lead	"	27,990	3,478	408,400	48,176
Antimony oxide	"	511,152	110,730	436,851	96,648
Lamp black	"	246,656	47,018	134,190	26,938
Titanium oxide, and white pigments containing not less than 14% by weight of titanium dioxide	"	61,195,519	8,877,007	53,792,895	7,648,278
Black, carbon	"	39,364,411	2,690,894	27,758,363	2,068,971
Black, bone and ivory	"	225,341	40,079	170,095	23,480
Blanc fixe and satin white	"	2,027,510	78,506	2,410,177	113,492
Brocade and bronze powders	"	41,270	37,441	44,066	38,403
Lithopone	"	1,958,978	138,039	1,786,531	121,667
Oxide of cobalt	"	24,716	39,701	20,227	24,629
Oxide of copper	"	115,070	45,548	167,858	70,846
Oxides, fireproofs, rough stuff, fillers and colours, dry n.o.p.	"	12,205,179	4,283,306	9,815,754	4,037,293
Paris green, dry	"	62,660	14,848	6,000	1,974
Ultramarine blue, dry or in pulp	"	535,332	116,002	412,012	86,291
Zinc white oxide	"	1,447,198	183,993	1,518,137	201,428
Oxide of tin	"	44,115	44,640	39,419	40,261
Ochres, ochrey earths, siennas and umbers	"	1,665,109	78,981	1,229,675	63,479
Stains and oxides for the manufacture of vitreous enamels and pottery glazes; finely divided metals for the manufacture of glassware and of tableware of china, porcelain or semi-porcelain	"	732,998	509,434	529,570	413,660

TABLE 19. Imports of Specified Chemicals, 1959 and 1960 - Continued

Commodity	1959		1960		
	Quantity	Value \$	Quantity	Value \$	
Alum, in bulk, ground or unground, but not calcined	cwt.	20,226	71,568	20,870	69,786
Chloride of aluminum	"	33,374	453,439	24,297	348,982
Sulphate of iron (copperas)	"	33,281	47,144	31,838	41,906
Sulphate of alumina or alum cake	"	147,405	267,884	177,977	323,333
Nitrate of ammonia	lb.	51,358	4,145	60,249	4,971
Sal ammoniac	"	202,264	12,688	198,883	12,432
Sal ammoniac skimmings	"	1,008,684	91,100	729,047	62,936
Ammonia compounds, n.o.p.	"	7,907,847	529,732	6,475,109	650,127
Ammonia, anhydrous	"	11,185,763	422,975	6,799,089	260,254
Antimony salts, viz.: tartaric emetic, chloride and lactate (antimonine)	"	38,838	19,889	37,251	17,846
Copper sulphate	"	2,617,143	288,646	2,235,197	283,326
Tin bichloride, and tin crystals	"	11,015	9,654	10,700	9,025
Zinc chloride	"	331,527	28,670	307,381	28,956
Zinc sulphate	"	2,041,114	85,478	1,771,183	74,981
Bismuth salts	"	10,221	26,268	10,080	26,016
Lead acetate, not ground	"	118,745	18,046	86,089	12,912
Lead arsenate	"	84,448	18,430	65,488	13,782
Lead nitrate, not ground	"	256,420	32,531	165,308	23,205
Bromine and bromides, crude, for the production of bromine ..	"	66,434	24,957	70,301	25,757
Chlorine, liquid, or chlorine gas	"	53,167,462	1,492,006	55,639,454	1,558,276
Iodine, crude	"	111,812	99,880	83,035	76,373
Iodized mineral salts for the feeding of animals	"	..	12,829	..	7,100
Calcium arsenate or arsenate of lime	lb.	87,526	3,347	68,000	3,384
Calcium chloride	cwt.	720,878	1,037,294	463,383	700,257
Chloride of lime	"	27,257	282,446	37,420	366,703
Calcium molybdate, vanadium oxide and tungsten oxide	lb.	75,987	82,653	236,936	332,248
Calcium compounds, n.o.p.	"	9,412,162	912,793	44,786,564	1,086,751
Cream of tartar in crystals	"	379,870	99,958	310,793	86,301
Potash and pearl ash	"	911,050	76,626	944,198	79,878
Potash, bichromate	"	264,027	43,340	258,819	45,465
Potash, caustic	"	8,485,883	428,398	8,818,510	449,690
Potash, chlorate, not further prepared than ground	"	86,532	12,590	79,492	10,102
Potash, red and yellow prussiate	"	16,778	5,884	20,600	7,123
Potash, nitrate or saltpetre	"	1,482,522	104,161	1,482,841	107,975
Potash compounds, n.o.p.	"	9,654,003	1,000,913	12,488,471	1,137,701
Cleaning compounds, sodium base	"	18,670,157	2,568,804	22,427,971	3,237,700
Sodium benzoate	"	39,086	6,688	139,971	31,485
Sodium bromide	"	87,918	28,979	67,353	20,987
Sodium citrate	"	2,540	1,521	1,626	892
Borax, and fused borax known as borax glass	"	20,157,760	616,217	20,030,918	641,630
Salts, glauber	"	1,931,551	39,907	2,302,440	38,350
Sodium arseniate, binarseniate, stannate	"	207,134	40,919	128,613	39,558
Sodium ash or barilla	"	66,579,876	1,034,707	89,099,028	1,289,909
Sodium bicarbonate	"	16,997,111	399,319	16,658,622	398,659
Sodium bichromate	"	6,559,915	760,627	7,729,477	853,772
Sodium bisulphate, or nitre cake	"	4,558,130	91,952	4,253,360	86,386
Sodium bisulphite	"	2,036,373	98,892	2,223,275	104,304
Soda, caustic, n.o.p.	"	6,775,833	357,179	4,839,121	265,284
Soda, caustic, in solution	"	130,337,645	1,746,065	155,766,572	2,014,146
Sodium chlorate	"	4,374,754	191,811	—	—
Sodium cyanide	"	9,260,454	1,234,505	7,840,923	1,051,594
Sodium glutamate	"	639,186	604,284	1,320,310	1,120,222
Sodium hyposulphite	"	752,160	34,519	394,651	18,114
Sodium nitrate	"	1,627,528	71,192	1,624,965	68,165
Sodium peroxide	"	856,334	137,779	513,787	79,902
Sodium phosphate, n.o.p.	"	6,840,239	824,359	7,315,340	885,142
Sodium prussiate	"	588,476	64,186	623,683	69,494
Sal soda	"	39,950	829	1,038,700	21,774
Sodium silicate, in crystals or in water solution	"	9,946,423	435,243	10,319,696	464,608
Sodium sulphate, crude, or salt cake	"	54,314,349	511,162	49,412,349	472,084
Sodium sulphide	"	2,602,099	135,910	2,601,775	139,113
Sodium sulphite	"	15,992,846	364,834	14,530,614	312,238
Sodium compounds, n.o.p.	"	26,070,464	2,435,255	25,937,347	2,857,587
Sodium phosphate, tri-sodium	"	3,074,315	184,716	2,560,991	158,795

TABLE 19. Imports of Specified Chemicals, 1959 and 1960 - Concluded

Commodity	1959		1960	
	Quantity	Value	Quantity	Value
		\$		\$
Sodium fluoride	562,668	66,608	627,470	74,076
Sodium antimonate	122,204	28,608	132,000	32,209
Acid phosphate, not medicinal	1,770,696	163,801	1,679,348	160,825
Hydrogen peroxide solution	794,288	232,283	401,587	89,471
Magnesium carbonate, basic or otherwise, excepting crude rock, n.o.p.	606,859	50,763	787,110	66,422
Magnesium salts or compounds, n.o.p.	4,470,523	336,151	2,603,277	315,942
Magnesium sulphate or epsom salts	5,442,515	70,697	4,867,307	63,998
Mercury salts .....	..	6,137	..	6,915
Phosphorus and compounds, n.o.p.	456,283	54,706	704,543	95,782
Radium and compounds .....	..	383,983	..	302,125
Molybdenum oxide	305,762	241,510	656,062	595,969
Ethyl chloride	20,696,055	1,470,999	19,853,640	1,432,093
Acetone .....	..	10,498	..	24,387
Amyl acetate .....	..	28,912	..	4,907
Carbon bisulphide, n.o.p.	630,550	33,843	2,845,737	146,658
Carbon tetrachloride	127,652	11,864	275,676	21,431
Chloroform	542,343	66,300	617,432	68,650
Cyanide of potassium and cyanogen bromide	178,750	59,386	135,231	45,684
Ethylene glycol and mixtures of ethylene glycol and other glycols in which ethylene glycol predominates, for use in the manufacture of anti-freezing compounds	24,128,448	2,387,420	7,533,774	730,968
Ethylene glycol, for the manufacture of explosives, and ethylene glycol, n.o.p.	9,486,282	1,029,454	8,592,108	1,032,545
Formaldehyde, containing not more than 15% of alcohol	4,413,786	153,785	10,735,003	395,608
Naphthalene, solid	8,192,826	505,140	4,416,841	612,810
Adipic, abietic, maleic and succinic acids, hexamethylene diammonium adipate, hexamethylene diammonium sebacate, caprolactam, hexamethylene diamine, and ethylene glycol for the manufacture of synthetic resin	1,950,145	643,800	4,519,088	1,894,524
Vanillin	8,460	31,396	4,480	16,796
Drugs, dyes and chemicals, n.o.p. ....	..	80,370,140	..	78,400,715
Phthalic anhydride	7,248,469	972,284	7,660,023	1,427,613
Lignosulphonates	-	-	12,968,946	366,216
Materials, not mentioned elsewhere, for the manufacture of synthetic resin, cellulose nitrate or pyroxylin plastic .....	..	13,405,852	..	18,098,246
Butadiene .....	..	1,695,128	..	2,919,821
Fatty alcohols .....	..	1,948,629	..	1,541,526

TABLE 20. Exports of Specified Chemicals, 1959 and 1960

Commodity	1959		1960	
	Quantity	Value	Quantity	Value
		\$		\$
Acid, sulphuric	557,264	481,654	868,590	699,890
Acids, n.o.p.	392,827	3,495,675	484,040	4,504,763
Wood alcohol	1,196	1,442	16,530	16,015
Non-potable spirits, n.o.p.	502,867	533,272	572,727	577,918
Ammonium sulphate .....	..	8,506,770	..	8,572,429
Iron oxides	52,487	400,700	50,468	404,619
Zinc oxide	25,831	339,056	14,450	186,834
Pigments, n.o.p.	62,474	1,020,071	29,215	501,204
White lead, dry or in oil	16,699	280,300	21,778	375,709
Ammonium compounds, n.o.p.	476,588	1,543,562	685,055	2,236,820
Arsenic	11,304	46,460	10,542	37,908
Calcium compounds	1,014,374	4,283,214	716,088	3,345,381
Chlorine, liquid, or chlorine gas	336,889	570,939	489,666	1,015,678
Caustic soda	55,985	32,857	63,693	95,269
Sodium sulphate	47,922	752,116	63,831	1,025,632
Soda and sodium compounds, n.o.p.	73,123	571,755	36,125	415,774
Cobalt oxides and cobalt salts	1,100,734	1,577,503	1,175,206	1,752,526

Directory of Firms: Manufacturers of Industrial Chemicals, 1960

Name	Address
Newfoundland:	
L'Air Liquide & Canadian Liquid Air Co., Ltd.	St. John's
Nova Scotia:	
L'Air Liquide & Canadian Liquid Air Co., Ltd.	Kane & Agricola Sts., Halifax
L'Air Liquide & Canadian Liquid Air Co., Ltd.	Sydney
Liquid Carbonic Canadian Corp., Ltd.	Commercial & Park Sts., Dartmouth
New Brunswick:	
L'Air Liquide & Canadian Liquid Air Co., Ltd.	John St., Moncton
Quebec:	
Abbey Chemical Co.	St. Antoine des Laurentides
Aluminum Company of Canada Ltd.	Arvida
B.A. Shawinigan Limited	11,001 St. Catherine St. E., Montreal East
British Chrome Chemicals (Canada) Ltd.	8024 Dante, Ville St. Michel
Canadian Industries Limited	Shawinigan Falls
Canadian Titanium Pigments Ltd.	Varenes
Carter White Lead Co. of Canada Ltd., The	1295 DeLorimier Ave., Montreal
Durham Industries (Canada) Limited	1435 Island St., Montreal
Electric Reduction Co. of Canada Ltd.	Buckingham
Electric Reduction Co. of Canada Ltd.	Varenes
Imperial Paper & Colour Corp. (Canada) Ltd.	St. John's
L'Air Liquide & Canadian Liquid Air Co., Ltd.	2245 Vimont St., Montreal
L'Air Liquide & Canadian Liquid Air Co., Ltd.	503 Des Sables St., Quebec
L'Air Liquide & Canadian Liquid Air Co., Ltd.	Tracey
Laurentides Chemicals & Sulphur Ltd.	3100 Marlen Ave., Montreal East
Liquid Carbonic Canadian Corp. Ltd.	2102 Cabot St., Montreal
Liquid Carbonic Canadian Corp. Ltd.	8375 Mayrand St., Montreal
Liquid Carbonic Canadian Corp. Ltd.	230 St. Patrick St., Montreal
Liquid Carbonic Canadian Corp. Ltd.	2350 Ave du Colisée, Quebec
Linde Co. Div. of Union Carbide Canada Ltd.	Arvida
Linde Co. Div. of Union Carbide Canada Ltd.	Lauson
Linde Co. Div. of Union Carbide Canada Ltd.	305 Bourgeois St., Montreal
Linde Co. Div. of Union Carbide Canada Ltd.	2550 St. Joseph Blvd. E., Montreal
Linde Co. Div. of Union Carbide Canada Ltd.	Noranda
Linde Co. Div. of Union Carbide Canada Ltd.	Sept Isles
Linde Co. Div. of Union Carbide Canada Ltd.	Shawinigan Falls
McArthur Irwin (1957) Ltd.	7 Bates Rd., Outremont
National Silicates Ltd.	Valleyfield
Nichols Chemicals Co., Ltd., The	Valleyfield
Ogilvie Flour Mills Co., Ltd., The	955 Mill St., Montreal
Ohio Chemical Canada Ltd.	2535 St. James St. W., Montreal
Shawinigan Chemicals Ltd.	Shawinigan Falls
Shawinigan Chemicals Ltd.	Varenes
Shell Oil Co. of Canada Ltd.	10,501 Sherbrooke St. E., Montreal East
Standard Chemical Limited	Beauharnois
Sturge (Canada) Limited	Valleyfield

Directory of Firms: Manufacturers of Industrial Chemicals, 1960 — Continued

Name	Address
Ontario:	
Ault-Wiborg Co. of Canada, Ltd., The	1450 Dupont St., Toronto
British Oxygen Canada Ltd.	355 Horner Ave., Toronto
Brunner Mond Canada Ltd.	Amherstburg
Cabot Carbon of Canada Limited	Sarnia
Canada Packers Limited	525 Front St. E., Toronto
Canadian Felling Zinc Oxide Ltd.	Milton
Canadian Industries Limited	Copper Cliff
Canadian Industries Limited	Cornwall
Canadian Industries Limited	Hamilton
Canadian Industries Limited	Millhau
Church & Dwight Ltd.	Amherstburg
Cornwall Chemicals Limited	Cornwall
Cyanamid of Canada Ltd.	Niagara Falls
Cyanamid of Canada Ltd. (Welland works)	Niagara Falls
Cyanamid of Canada Ltd.	Hamilton
Dominion Colour Corporation Ltd.	199 New Toronto St., New Toronto
Dow Chemical of Canada Ltd.	Sarnia
Dupont Co. of Canada Ltd.	Maitland
Emery Industries (Canada) Ltd.	London
Ethyl Corporation of Canada Ltd.	Corunna
Harchem Limited	715 Kipling Ave. S., Toronto
Howards & Sons (Canada) Ltd.	Cornwall
Imperial Oil Limited	Sarnia
Kemball, Bishop, (Canada) Div. of Pfizer Corporation	Cornwall
L'Air Liquide & Canadian Liquid Air Co., Ltd.	Hamilton
L'Air Liquide & Canadian Liquid Air Co., Ltd.	London
L'Air Liquide & Canadian Liquid Air Co., Ltd.	Port Arthur
L'Air Liquide & Canadian Liquid Air Co., Ltd.	Sudbury
L'Air Liquide & Canadian Liquid Air Co., Ltd.	2-36 Boler St., Toronto
Linde Co. Div. of Union Carbide Canada Ltd.	Fort William
Linde Co. Div. of Union Carbide Canada Ltd.	Hamilton
Linde Co. Div. of Union Carbide Canada Ltd.	London
Linde Co. Div. of Union Carbide Canada Ltd.	Merritton
Linde Co. Div. of Union Carbide Canada Ltd.	Sault Ste. Marie
Linde Co. Div. of Union Carbide Canada Ltd.	833 Davenport Rd., Toronto
Linde Co. Div. of Union Carbide Canada Ltd.	Welland
Liquid Carbonic Canadian Corp., Ltd.	41 Mill St., Toronto
Liquid Carbonic Canadian Corp., Ltd.	565 Tretheway Drive, Toronto
National Oxygen Ltd. Div. of Anthes Imperial Co., Ltd.	Oakville
National Silicates Ltd.	695 Kipling Ave. S., Toronto
Naugatuck Chemicals Div of Dominion Rubber Co., Ltd.	Elmira
Nichols Chemical Co., Ltd., The	Port Arthur
Nichols Chemical Co., Ltd., The	Sulphide
Nichols Chemical Co., Ltd., The	Thorold
Noranda Mines Limited	Cutler
Northern Pigment Co., Ltd.	Townes Rd., Etobicoke
Nuodex Products of Canada Ltd.	34 Industrial St., Leaside
Ohio Chemical Canada Ltd.	180 Duke St., Toronto
Ontario Paper Co., Ltd., The	Thorold



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CHEMICALS AND CHEMICAL PRODUCTS INDUSTRIES

Directory of Firms: Manufacturers of Industrial Chemicals, 1960 — Concluded

Name	Address
Ontario — Concluded:	
People's Gas Supply Co., Ltd., The	2-10 Mill St., Ottawa
Polymer Corporation Limited	Sarnia
Smith, Howard Paper Mills Ltd.	Cornwall
Standard Ultramarine & Colour Co., Ltd.	120 St. Helens Ave., Toronto
Welland Chemicals of Canada Ltd.	Port Colborne
Witco Chemical Co. (Canada) Ltd.	Oakville
Manitoba:	
L'Air Liquide & Canadian Liquid Air Co., Ltd.	1207 Valor Rd., Winnipeg
Linde Co. Div. of Union Carbide Canada Ltd.	Transcona
Liquid Carbonic Canadian Corp. Ltd.	McPhillips St., Winnipeg
Saskatchewan:	
Gunnar Mines Limited	Uranium City
L'Air Liquide & Canadian Liquid Air Co., Ltd.	Winnipeg St. & 84th Ave., Regina
Linde Co. Div. of Union Carbide Canada Ltd.	711 Ave. P. South, Saskatoon
Liquid Carbonic Canadian Corp. Ltd.	Industrial Ave., Regina
Alberta:	
Canadian Chemical Co., Ltd.	P.O. Box 99, Edmonton
Consolidated Mining & Smelting Co. of Canada Ltd.	Calgary
Inland Chemicals Ltd.	Fort Saskatchewan
L'Air Liquide & Canadian Liquid Air Co., Ltd.	202 - 1st St. E., Calgary
L'Air Liquide & Canadian Liquid Air Co., Ltd.	8615 Stadium Rd., Edmonton
Linde Co. Div. of Union Carbide Canada Ltd.	Government Rd., Edmonton
Linde Co. Div. of Union Carbide Canada Ltd.	Lethbridge
Liquid Carbonic Canadian Corp. Ltd.	10533 - 123rd St., Edmonton
N.C.G. Canada Ltd.	142nd St. & 108th Ave., Edmonton
Northwest Nitro-Chemicals Ltd.	Medicine Hat
Western Chemicals Limited	Duvernay
British Columbia:	
Consolidated Mining & Smelting Co. of Canada Ltd.	Kimberley
Consolidated Mining & Smelting Co. of Canada Ltd.	Tadanac
Electric Reduction Co. of Canada Ltd.	100 Bridge St. S., North Vancouver
Hooker Chemicals Ltd.	100 Amherst, North Vancouver
L'Air Liquide & Canadian Liquid Air Co., Ltd.	Cranbrook
L'Air Liquide & Canadian Liquid Air Co., Ltd.	Dawson Creek
L'Air Liquide & Canadian Liquid Air Co., Ltd.	Kitimat
L'Air Liquide & Canadian Liquid Air Co., Ltd.	Nanaimo
L'Air Liquide & Canadian Liquid Air Co., Ltd.	125 - 1st St. E., North Vancouver
L'Air Liquide & Canadian Liquid Air Co., Ltd.	8390 Manitoba St., Vancouver
L'Air Liquide & Canadian Liquid Air Co., Ltd.	60 Dallas Rd., Victoria
Linde Co. Div. of Union Carbide Canada Ltd.	1175 Grant St., Vancouver
Linde Co. Div. of Union Carbide Canada Ltd.	Vernon
Liquid Carbonic Canadian Corp. Ltd.	Prince George
Liquid Carbonic Canadian Corp. Ltd.	8797 Barnard St., Vancouver
Nichols Chemical Co., Ltd.	Barnet
Northwest Territories:	
Eldorado Mining & Refining Ltd.	Port Radium