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THE ACIDS, ALKALIES AND SALTS INDUSTRY

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NOTICE

The annual reports prepared by the Industry and Merchandising Division of the Bureau of Statistics are divided into 3 volumes, as follows: **Volume I** – The Primary Industries, including mining, forestry and fisheries; **Volume II** – Manufacturing; **Volume III** – Merchandising and Services. The volumes are made up of parts, and the parts in turn are subdivided according to the industries or provinces which they comprise.

Volume II consists of the following parts, the first two of which deal with manufacturing as a whole and the balance with the major manufacturing groups.

I – General Review of the Manufacturing Industries
II – The Manufacturing Industries of Canada, (7 sections, as follows:)
- Section A. Summary for Canada
- Section B. Atlantic Provinces
- Section C. Quebec
- Section D. Ontario
- Section E. Prairie Provinces
- Section F. British Columbia
- Section G. The Manufacturing Industries of Canada, Regional Distribution

III – Foods and Beverages
IV – Tobacco and Tobacco Products
V – Rubber Products
VI – Leather Products
VII – Textile Mills
VIII – Knitting Mills
IX – Clothing
X – Wood and Paper Products
XI – Printing Trades
XII – Iron and Steel Products
XIII – Transportation Equipment
XIV – Non-ferrous Metal Products
XV – Electrical Apparatus and Supplies
XVI – Non-metallic Mineral Products
XVII – Products of Petroleum and Coal
XVIII – Chemicals and Allied Products
XIX – Miscellaneous Manufactures

The present report belongs in Part XVIII, Chemicals and Allied Products. It is punched to permit of filing in a ring binder along with others of the group. The reports in this group are:

A – General Review
B – The Acids, Alkalies and Salts Industry
C – The Fertilizers Industry
D – The Fertilizer Trade in Canada
E – The Medicinal and Pharmaceutical Preparations Industry
F – The Paints, Varnishes and Lacquers Industry
G – The Primary Plastics Industry
H – The Soaps, Washing Compounds and Cleaning Preparations Industry
I – The Toilet Preparations Industry
J – The Vegetable Oils Industry
K – The Inks Industry
L – The Adhesives Industry
M – The Polishes and Dressings Industry
N – The Compressed Gases Industry
O – The Coal Tar Distillation Industry
P – The Miscellaneous Chemical Products Industry

Prices of most reports released after January 1, 1959 have been increased. Information on the new prices of particular issues is available on request from the Information Services Division of the Dominion Bureau of Statistics.

THE ACIDS, ALKALIES AND SALTS INDUSTRY 1957

Fifty-four plants in Canada, classified under the Acids, Alkalies and Salts Industry, were engaged chiefly in the production of chemicals in 1957. Factory shipments reported by this group were valued at $215,834,187, an increase of 11.5 per cent over the total for the previous year. Twenty-six of these plants were located in Ontario, 17 in Quebec, 4 in Alberta, 4 in British Columbia and 1 in each of Nova Scotia, Saskatchewan and the Northwest Territories. These concerns gave employment to 9,981 people who were paid $46,965,641 in salaries and wages. Materials used in manufacturing processes cost $95,237,538 and expenditures for fuel and electricity amounted to $20,384,094.

Except for sulphuric acid, caustic soda and chlorine, separate figures for the production of chemicals in this group are not published as many of the individual items were made by only one or two concerns. However, a special compilation which gives a fairly good summary of the total output of chemicals as gathered up from all industries is shown in Table 4. A list of the more important chemicals made by the factories in this group is shown in the directory which appears at the back of this bulletin.

The output of sulphuric acid (100 % acid) increased to 1,290,000 tons in 1957, an increase of about 22.6 per cent over the 1956 total of 1,052,000 tons. Seventeen plants were operated by thirteen companies as follows: The Consolidated Mining and Smelting Company of Canada Limited at Kimberley and Trail, British Columbia; Canadian Industries Limited at Copper Cliff and Hamilton, Ontario; Nickols Chemical Company Limited, at Sulphide, Ontario, Valleyfield, Quebec, and Barnet, British Columbia; Dominion Steel and Coal Corporation Limited, at Sydney, Nova Scotia; Aluminum Company of Canada Ltd. at Arvida, Quebec; Cyanamid of Canada Limited, at Niagara Falls, Ontario; Gunnar Mines at Uranium City, Saskatchewan; Inland Chemicals Canada Limited, at Fort Saskatchewan, Alberta, Eldorado Mining and Refining Ltd., at Port Radium, Northwest Territories; Canadian Titanium Pigments Limited, Varennes, Quebec; Noranda Mines Limited, Cutler, Ontario; Northwest Nitro Chemical Co., Medicine Hat, Alberta and Shawinigan Chemicals Limited, Shawinigan Falls, Quebec.

Production of chlorine totalled 226,000 tons in 1957, while output of caustic soda amounted to 264,000 tons. Ten firms were in production in 1957 operating eleven plants. Canadian Industries Limited, had works at Cornwall, Ontario, and at Shawinigan Falls, Quebec. Other producers included Dow Chemical of Canada, Limited, Sarnia, Ontario; Standard Chemical Company, Limited, Beauharnois, Quebec; Aluminum Company of Canada Limited, Arvida, Quebec; Western Chemical Limited, Duvernay, Alberta; Hooker Chemicals Limited, North Vancouver, British Columbia; the Canadian International Paper Company, Temiskaming, Quebec; the Howard Smith Paper Mills Limited, Cornwall, Ontario; the KVP Company Limited, Espanola, Ontario; and the Marathon Paper Mills of Canada Ltd., Marathon, Ontario. The last four concerns are paper mills which make these chemicals mainly for their own use.

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 of the Acids, Alkalies and Salts Industry, Significant Years 1929-1957 and by Provinces, 1956 and 1957

Year and province	Establishments	Employees	Salaries and wages	Cost of fuel and electricity at plant	Cost at plant of materials used	Value added by manufacture[1]	Gross selling value of products[1]
	number		dollars				
1929	15	2,897	4,338,686	2,921,129	6,301,121	18,799,722	28,021,972
1931	14	1,694	2,426,880	2,167,585	2,407,682	6,377,230	10,952,497
1937	21	3,359	4,893,418	2,810,364	6,008,977	13,590,827	22,410,168
1939	25	3,128	5,032,898	2,548,217	6,021,716	14,486,673	23,056,606
1944	28	7,964	15,752,782	8,980,955	29,540,390	42,801,806	81,323,151
1946	29	5,338	11,158,999	6,431,503	14,650,883	26,219,014	47,301,400
1949	28	5,861	16,504,908	7,355,353	27,392,521	39,663,922	74,411,796
1953	41	8,278	31,174,479	13,264,151	43,083,175	70,952,111	127,299,437
1954	43	8,408	33,425,864	13,358,379	49,400,551	79,376,289	142,001,601
1955	45	8,597	35,547,851	15,033,501	61,686,514	95,023,999	172,255,750
1956							
Nova Scotia	1	3,845	17,266,904	5,946,688	38,094,251	34,566,332	77,202,367
Quebec	15						
Ontario	25	4,701	20,700,570	10,354,888	42,729,113	52,623,051	102,509,807
Saskatchewan	1	537	2,697,098	892,742	4,264,266	9,515,755	13,828,990
Alberta	3						
British Columbia	2						
Northwest Territories	1						
Canada	**48**	**9,083**	**40,664,572**	**17,194,318**	**85,087,630**	**96,705,138**	**193,541,164**
1957							
Nova Scotia	1	4,254	20,127,667	7,523,673	36,283,233	38,275,495	80,522,592
Quebec	17						
Ontario	26	5,023	23,660,540	11,637,265	52,987,617	55,849,725	119,336,880
Saskatchewan	1	499	2,309,208	831,475	4,552,010	7,346,960	11,814,781
Alberta	4						
British Columbia	4	205	868,226	391,681	1,414,678	2,806,075	4,159,934
Northwest Territories	1						
Canada	**54**	**9,981**	**46,965,641**	**20,384,094**	**95,237,538**	**104,278,255**	**215,834,187**

[1] See footnote to Text.

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] 1957

	Raw materials and supplies	Goods in process	Finished goods of own manufacture	Total
	dollars			
Opening:				
Nova Scotia and Quebec	7,992,746	234,014	5,318,701	13,545,461
Ontario	9,066,465	1,546,837	6,077,528	16,690,830
Saskatchewan and Alberta	1,240,209	423,272	774,187	2,437,668
British Columbia and Northwest Territories	425,099	—	236,700	661,799
Canada	**18,724,519**	**2,204,123**	**12,407,116**	**33,335,758**
Closing:				
Nova Scotia and Quebec	8,532,945	1,881,733	5,230,791	15,645,469
Ontario	11,233,945	1,222,067	7,540,025	19,996,037
Saskatchewan and Alberta	1,745,393	497,355	1,615,768	3,858,516
British Columbia and Northwest Territories	1,601,241	45,148	644,052	2,290,441
Canada	**23,113,524**	**3,646,303**	**15,030,636**	**41,790,463**

[1] (a) Book value of all manufacturing inventories owned and held at plant and plant warehouses.

(b) Beginning with 1954 information on the value of year-end inventory holdings at plant and plant warehouses is being collected as part of the annual Census of Industry. These data were formerly collected by a separate survey. The summarized results for the Acids, Alkalies and Salts Industry for the year under review are shown in the above table.

(c) The opening inventory for 1957 does not necessarily agree with the closing inventory for 1956 because of the addition of new plants, the transfer of plants to other industries and plants going out of business, etc. However, the value added figures for the previous year have not been recalculated to allow for the revisions mentioned above.

TABLE 3. Materials Used in the Acids, Alkalies and Salts Industry, 1956 and 1957

Material		1956		1957	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
Acetone	lb.	1,211,841	110,713	1,279,371	124,047
Acetylene	M cu. ft.	46,441	428,145	42,087	400,806
Acid—Acetic, 99½%	lb.	11,380	2,331	26,307	3,232
Fatty—Oleic	"	61,269	11,452	43,146	8,114
Other fatty acids	"	28,217	4,835	38,247	6,870
Hydrochloric (muriatic),	"	5,174,589	104,565	7,716,208	209,277
Nitric	"	2,703,378	138,019	2,938,926	148,969
Phosphoric	"	129,630	12,351	194,080	20,058
Sulphuric, as 100%	"	29,810,349	475,412	23,656,576	341,508
Alcohol, butyl (including isobutyl and normal)	"	700,232	83,225	894,531	111,459
Alcohol, ethyl	Imp. gal.	9,226	11,924	20,257	19,628
Alcohol, isopropyl	lb.	27,535	2,412	1,189,366	92,963
Ammonia liquor	lb. NH_3	1,369,029	96,286	2,214,200	139,240
Ammonia, anhydrous	lb.	18,057,393	918,688	20,696,495	872,184
Barium chloride	"	490,610	31,829	625,811	49,801
Benzol	"	2,818,519	151,914	5,818,082	290,528
Calcium chloride	"	623,180	16,415	662,100	18,778
Carbon, activated	"	391,283	125,736	374,998	107,946
Chlorine, liquid	"	5,005,646	180,208	6,292,781	230,251
Coal, (except for fuel)—Anthracite	ton	8,985	132,756	22,647	357,874
Cobalt acetate	lb.	5,678	6,586	3,950	4,778
Cobalt sulphate	"	3,194	3,961	3,976	3,289
Coke (except for fuel)—Petroleum	ton	3,019	51,344	1,116	26,616
Other	"	227,834	4,210,495	195,339	3,148,138
Copper sulphate	lb.	16,510	2,726	3,060	451
Cresol (including cresylic acid)	"	188,755	24,418	245,150	31,892
Electrodes (purchased)	—	—	884,110	—	625,370
Ethanolamines	lb.	37,822	10,691	52,103	14,131
Fluorspar	ton	76,452	2,190,772	53,198	1,686,951
Formaldehyde	lb.	1,164,953	48,171	1,430,694	63,013
Glycerine	"	461	172	125,315	23,219
Glycols—Ethylene	"	—	—	—	—
Diethylene	"	75,319	13,974	137,426	24,736
Triethylene	"	526	132	866	216
Propylene	"	224,432	36,767	241,098	39,312
Other grades	"	106,871	20,443	287,645	52,975
Graphite	"	754,042	211,617	637,888	199,963
Lead sulphate	"	164,055	31,903	125,100	22,354
Limestone	ton	942,416	1,690,391	1,004,543	1,814,648
Lime, hydrated	"	11,421	95,396	12,618	132,352
Lime, quick	"	21,133	379,341	23,249	383,132
Litharge	lb.	609,743	112,750	524,375	90,720
Mercury	"	153,341	438,227	143,196	388,620
Oils—Castor	"	840,324	125,045	1,069,701	207,110
Cocoanut	"	1,277,234	162,747	1,096,226	141,017
Other oils	"	232,557	16,578	44,574	5,349
Pentasol	"	34,938	5,940	20,400	3,476
Phenol	"	2,327,636[1]	427,583	2,237,442	424,986
Petrochemical feed stocks	—	—	4,701,819	—	5,152,828
Phthalic anhydride	lb.	1,294,623	247,733	1,502,518	253,181
Pyrites	ton	162,078	1,233,155	176,122	1,569,723
Quartz, quartzite and silica sand	"	62,054	375,370	66,115	422,266
Sodium carbonate (soda ash)	lb.	86,614,382	2,131,934	104,493,472	2,288,024
Sodium chloride, dry and brine (salt content)	ton	774,472	3,682,588	800,406	3,571,008
Sodium bichromate	lb.	134,550	17,999	172,411	24,872
Sodium hydroxide (caustic soda)	"	25,782,020	991,220	30,112,056	1,025,353
Sodium nitrate	"	435,720	15,744	614,858	19,872
Sodium sulphide	"	183,111	9,159	238,428	12,135
Sulphur (brimstone)	ton	108,300	4,267,883	189,911	6,847,467
Urea	lb.	604,410	35,439	1,346,810	76,236
Xylene (xylol)	"	273,506	14,556	259,859	13,679
Zinc dross	"	1,567,597	155,777	—	—
Zinc oxide	"	87,056	11,418	135,594	17,127
Zinc spelter	"	16,541,982	2,161,386	17,394,550	1,915,650
Steel sheets for making containers	ton	3,214	545,485	4,581	773,461
Lumber for making containers and for crating	M bd. ft.	124	10,088	109	7,131
All other materials	—	—	46,378,867	—	54,016,479
Containers and packing materials	—	—	3,858,514	—	4,118,699
Total	—	—	**85,087,630**	—	**95,237,538**

[1] Revised

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 pharmaceutical 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 4 which gives a fairly good summary of the total output as gathered up from all industries. The values cover only the products made for sale as there is no adequate record of the intermediates made for the further use of the producers. The output in 1957 was around $383,188,000 compared with $357,688,000 in 1956.

TABLE 4. Total Production of Chemicals, 1956 and 1957

	Selling value at works	
	1956	1957
	$	$
Acids, including acetic, muriatic, nitric, sulphuric, phosphoric, stearic, etc.	24,003,000	28,970,000
Calcium compounds, including carbide, chloride, phosphide, cyanamide, cyanide acid phosphate, grey acetate, arsenate, chloride of lime, etc.	17,967,000	18,588,000
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)	36,425,000	37,385,000
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)	94,226,000	105,865,000
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.	48,269,000	53,651,000
Fertilizer chemicals, including ammonium sulphate, ammonium nitrate (fertilizer grade), ammonium phosphate, and superphosphate	48,552,000	45,848,000
Synthetic resins, including casein type, vinyls, polystyrene, phenol-formaldehyde, urea-formaldehyde, alkyds, sodium carboxymethylcellulose, etc.	50,530,000	54,930,000
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.	37,716,000	37,951,000
Total	**357,688,000**	**383,188,000**

TABLE 5. Production, Imports, Exports and Apparent Consumption of Sulphuric Acid, 1925-1957

Year	Production	Imports	Exports	Apparent consumption[1]
	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
1956	1,052,000	2,100	23,700	1,030,400
1957	1,290,000	1,000	29,500	1,261,500

[1] No allowance made for changes in inventories.

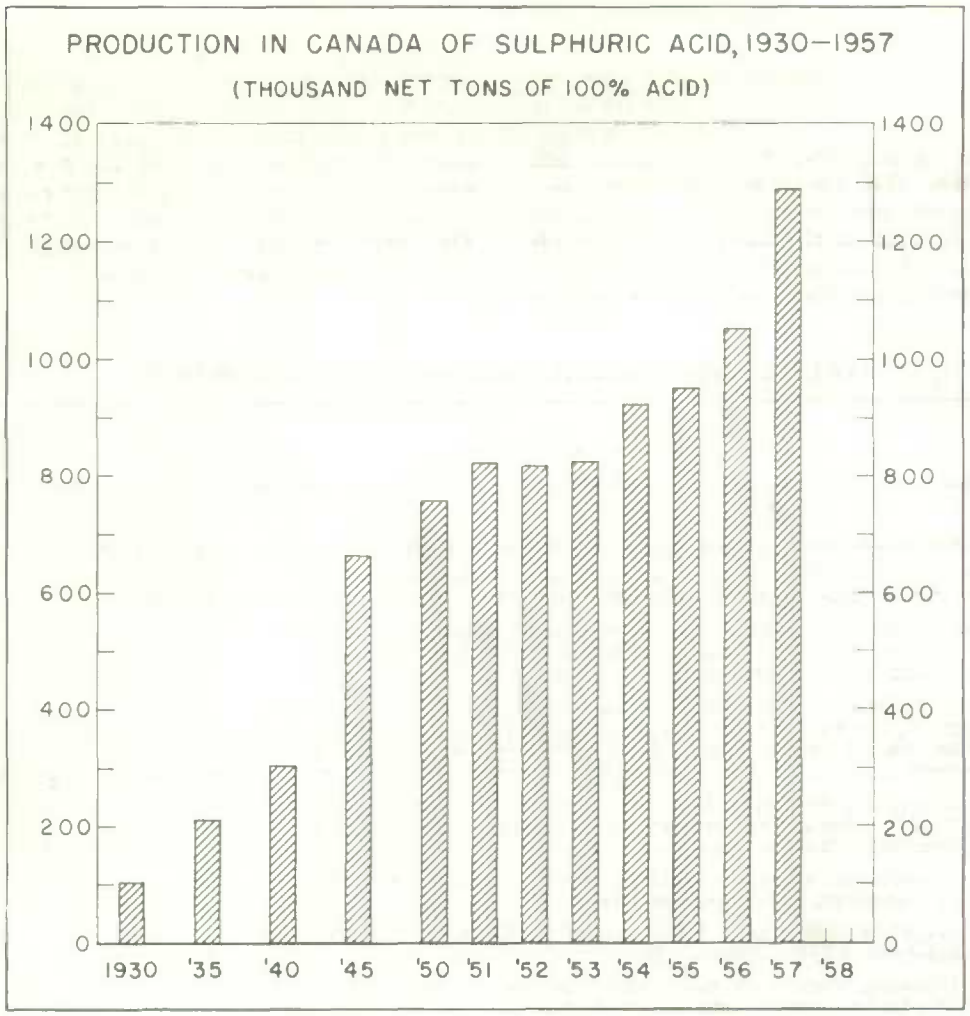

TABLE 6. Production, Imports and Exports of Chlorine and Caustic Soda, 1953- 1957

Year	Chlorine	Caustic soda[1] (100% Na OH)
	tons	
(a) Production:		
1953	169, 000	192, 000
1954	167, 000	199, 000
1955	193, 000	226, 000
1956	223, 000	256, 000
1957	226, 000	264, 000
(b) Imports:		
1953	20, 400	43, 700
1954	32, 100	65, 900
1955	38, 000	73, 300
1956	34, 200	74, 200
1957	33, 828	53, 200
(c) Exports:		
1953	17, 900	2, 600
1954	2, 900	200
1955	10, 400	100
1956	21, 500	7
1957	10, 500	285

[1] Imports of caustic soda solution shown in Table 14 represent gross weight which is in terms of 50% Na OH approximately. Figures in Table 6 have been converted to 100% Na OH to agree with the basis used in production and exports.

TABLE 7. Consumption of Sulphuric Acid, by Industries, 1955-1957

Industry	1955	1956	1957
	short tons of 100% acid		
Fertilizers	577, 100	563, 400	668, 900
Heavy chemicals	139, 700[1]	188, 700[1]	177, 900[1]
Non-ferrous metal smelting and refining	24, 500[2]	25, 600[2]	29, 300[2]
Coke and gas	37, 900	35, 600	28, 000
Petroleum refining	6, 500	11, 000	11, 100
Leather tanning	2, 300	2, 300	2, 100
Iron and steel	35, 300	39, 000	31, 900
Electrical apparatus	8, 100	6, 800	8, 400
Plastics	15, 000	17, 000	16, 600
Soaps	11, 300	12, 200	13, 700
Adhesives	200	400	900
Sugar refining	300	300	300
Pulp and paper	8, 700	9, 000	12, 400
Vegetable oils	100	100	100
Miscellaneous[3]	70, 800	83, 400	85, 500
Total accounted for	**937, 800**	**994, 800**	**1, 087, 100**

[1] Includes consumption of "own make" or "captive" acid by uranium ore processing firms.
[2] Estimated.
[3] Includes explosives, textiles, miscellaneous chemicals and sausage and sausage casings groups.

TABLE 8. Available Data on Consumption of Chlorine, by Industries, 1955-1957

Industry	1955	1956	1957
	tons		
Pulp and paper	128, 600[1]	133, 500[1]	134, 400[1]
Heavy chemicals	70, 000[1]	79, 300[1]	93, 700[1]
Soaps	4, 000	4, 000	4, 100
Municipal waterworks	1, 600	1, 600[2]	2, 100
Mining	3, 000[2]	3, 000[2]	3, 000[2]
Starch and glucose	60	30	2
Dyeing and finishing of textiles	10	10	10
Miscellaneous chemicals	500	400	460
Fertilizers	35	50	50
Synthetic textiles	30	30	30
Primary plastics	200	300	260
Medicinal and pharmaceutical preparations	100	200	200[2]
Total accounted for	**208, 135**	**222, 420**	**238, 312**

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

TABLE 9. Available Data on Consumption of Caustic Soda, by Industries, 1955-1957

Industry	1955	1956	1957
	tons		
Pulp and paper	122, 900[1]	132, 500[1]	120, 000[1]
Soaps, washing compounds and cleaning preparations	21, 200	20, 800	21, 700
Heavy chemicals	67, 900[1]	74, 000[1]	75, 400[1]
Petroleum refining	8, 700	9, 300	9, 600
Primary plastics	9, 400	10, 900	10, 600
Miscellaneous foods	1, 400	1, 400	1, 400

See footnote at end of table.

TABLE 9. Available Data on Consumption of Caustic Soda, by Industry, 1955 - 1957 – Concluded

Industry	1955	1956	1957
	tons		
Mining	1,400[2]	1,400[2]	1,400[2]
Coke and gas	1,500	1,000	1,000
Medicinals and pharmaceuticals	1,100	1,200	700
Non-ferrous metal refining	[3]	[3]	[3]
Starch and glucose	[4]	[4]	[4]
Dyeing and finishing of textiles	100	200	100
Toilet preparations	300	300	200
Compressed gases	200	300	300
Fertilizers	200	300	300
Sugar refining	50	60	90
Vegetable oils	50	50	50
Adhesives	80	70	90
Miscellaneous[5]	37,200	36,020	34,240
Total accounted for	**273,680**	**290,000**	**277,170**

[1] Includes consumption of "own make" or "captive" caustic by firms classified to these industries.
[2] Estimated.
[3] Included with "mining".
[4] Included with miscellaneous foods.
[5] Includes synthetic textiles, miscellaneous chemicals and sausage and sausage casings groups.

TABLE 10. Principal Statistics of the Acids, Alkalies and Salts Industry in Canada, Grouped According to Size of Establishment, 1956 and 1957

Establishments reporting factory shipments valued at	Establishments	Employees	Salaries and wages	Cost at plant of materials used	Selling value of factory shipments
	number		dollars		
1956					
$50,000 to $99,999	1	28	64,072	122,187	390,188
$100,000 to $199,999	2				
$200,000 to $499,999	6	93	366,237	1,335,434	1,967,444
$500,000 to $999,999	7	255	985,466	3,292,450	5,169,035
$1,000,000 to $4,999,999	21	1,866	7,691,316	24,650,969	51,979,127
$5,000,000 and over	11	6,061	27,007,109	55,686,590	134,035,370
Head offices	–	780	4,550,372	–	–
Total	**48**	**9,083**	**40,664,572**	**85,087,630**	**193,541,164**
1957					
$100,000 to $199,999	1	187	826,138	1,760,537	3,257,001
$200,000 to $499,999	9				
$500,000 to $999,999	9	299	1,322,003	4,915,135	7,452,651
$1,000,000 to $4,999,999	21	1,807	7,985,385	23,367,184	48,705,248
$5,000,000 and over	14	6,948	32,643,694	65,194,682	156,419,287
Head offices	–	740	4,188,421	–	–
Total	**54**	**9,981**	**46,965,641**	**95,237,538**	**215,834,187**

TABLE 11. Employees and Earnings, by Provinces, 1956 and 1957

Province	Number of employees					Earnings		Total earnings
	Administrative		Workmen		Total	Administrative	Workmen	
	Male	Female	Male	Female				
						dollars		
1956								
Quebec	893	327	2,598	17	3,835	6,491,945	10,727,178	17,219,123
Ontario	1,222	334	3,103	42	4,701	7,922,137	12,778,433	20,700,570
Other provinces	142	33	363	9	547	866,451	1,878,428	2,744,879
Canada	**2,257**	**694**	**6,064**	**68**	**9,083**	**15,280,533**	**25,384,039**	**40,664,572**
1957								
Quebec	1,073	337	2,830	4	4,244	7,570,518	12,497,017	20,067,535
Ontario	1,332	353	3,294	44	5,023	9,077,010	14,583,530	23,660,540
Other provinces	181	48	472	13	714	1,028,492	2,209,074	3,237,566
Canada	**2,586**	**738**	**6,596**	**61**	**9,981**	**17,676,020**	**29,289,621**	**46,965,641**

TABLE 12. Production Workers, by Months, 1956 and 1957

Month	1956			1957		
	Male	Female	Total	Male	Female	Total
	number					
January	5,827	68	5,895	6,184	55	6,239
February	5,823	69	5,892	6,270	59	6,329
March	5,873	68	5,941	6,387	63	6,450
April	6,000	73	6,073	6,542	66	6,608
May	6,045	71	6,116	6,670	64	6,734
June	6,194	68	6,262	6,396	65	6,461
July	6,247	71	6,318	6,501	61	6,562
August	6,225	65	6,290	6,482	57	6,539
September	6,241	66	6,307	6,998	58	7,056
October	6,175	66	6,241	6,950	59	7,009
November	6,127	66	6,193	6,958	58	7,016
December	5,989	68	6,055	6,804	62	6,866
Average	**6,064**	**68**	**6,132**	**6,596**	**61**	**6,657**

TABLE 13. Capital and Repair Expenditures in the Acids, Alkalies and Salts Industry, 1953 - 1957

Year	Capital expenditures		Sub-total	Repair and maintenance expenditures		Sub-total	Total capital and repair expenditures
	Construction	Machinery and equipment		Construction	Machinery and equipment		
	thousands of dollars						
1953	22,272	56,536	78,808	1,451	11,077	12,528	91,336
1954	2,350	6,258	8,608	2,525	12,334	14,859	23,467
1955	6,090	14,619	20,709	1,949	12,922	14,871	35,580
1956	21,190	41,067	62,257	2,440	14,540	16,980	79,237
1957	39,457	45,913	85,370	4,007	16,346	20,353	105,723

Note: Figures for the current year are preliminary.

TABLE 14. Imports of Acids and Certain Inorganic Chemicals, 1956 and 1957

Commodity		1956		1957	
		Quantity	Value	Quantity	Value
			$		$
Acids					
Inorganic acids:					
Acid, boracic, in packages of not less than 25 pounds ..	lb.	3,724,142	249,994	3,180,706	210,278
Acid, hydroflusilicic	"	192,654	18,067	180,989	14,208
Acid, muriatic	"	1,575,323	23,241	4,637,780	58,312
Acid, nitric	"	204,497	16,042	319,563	17,684
Acid, phosphoric	"	487,394	41,732	294,415	18,478
Acid, sulphuric	"	4,110,404	55,303	2,092,577	34,867
Acid, arsenic	"	408,840	14,490	519,361	18,262
Acid, chromic	"	1,035,109	280,979	1,151,528	307,767
Organic acids:					
Acid, salicylic and acetylsalicylic	"	858,455	439,332	907,460	473,944
Acid, lactic	"	570,842	133,929	507,956	117,765
Acid, nicotinic	"	78,653	158,927	45,076	99,265
Acid, oleic, or red oil	"	150,549	30,863	133,666	26,209
Acid, acetic and pyroligneous	gal.	6,746	37,035	556	386
Acid, cresylic	lb.	441,226	53,832	429,385	64,577
Xanthates and sulpho-thiophosphoric (dithiophosphoric compounds, for concentrating ores, metals or minerals)	"	6,775,411	1,639,308	6,658,078	1,699,699
Acid, oxalic	"	765,930	96,758	922,043	111,000
Acid, stearic	"	849,391	134,384	905,931	136,517
Acid, tannic	"	56,303	47,545	43,949	51,529
Tartaric acid crystals or powder	"	758,458	248,970	727,071	240,469
Acid, ascorbic	"	—	303,416	—	273,828
Acid, formic	"	1,082,634	112,619	1,760,079	175,576
Acid, carbolic or phenol	"	6,897,695	1,181,332	4,355,140	755,065
Acids, other, n.o.p.	"	9,565,700	2,187,458	9,750,864	2,167,482
Total acids	—	—	**7,505,556**	—	**7,073,167**
Inorganic Chemicals, N.O.P.					
Alum, in bulk, ground or unground, but not calcined	cwt.	19,159	76,757	21,471	77,597
Chloralum or chloride of aluminum	"	28,771	400,109	29,043	393,187
Sulphate of iron (copperas)	"	17,054	29,770	19,188	30,322
Sulphate of alumina or alum cake	"	257,944	461,318	300,950	581,280
Ammonia, nitrate of	lb.	1,389,877	93,806	208,084	15,643
Sal ammoniac	"	579,006	38,431	547,559	36,852
Sal ammoniac skimmings	"	806,283	70,711	1,363,517	81,598
Ammonia, anhydrous	"	35,541,962	1,410,023	54,129,103	1,990,038
Ammonia compounds, n.o.p.	"	6,776,493	339,941	9,249,799	401,838
Antimony, arsenic, copper, tin and zinc compounds:					
Antimony salts, viz, tartar emetic, chloride and lactate (antimonine)	"	20,121	12,486	25,235	16,629
Arsenious oxide and arsenic sulphide	"	16,320	1,691	1,559	420
Copper, sub-acetate of, or verdigris, dry, and precipitate of	"	1,000	604	100	64
Copper, sulphate of	"	2,062,982	323,126	2,035,687	263,268
Tin, bichloride of, and tin crystals	"	9,055	8,798	13,363	13,518
Zinc, chloride of	"	514,438	52,784	323,365	34,499
Zinc, sulphate of	"	2,378,029	117,403	3,063,070	139,128
Bismuth and lead compounds:					
Bismuth salts	—	—	21,468	—	24,739
Lead, acetate of, not ground	lb.	179,801	32,180	121,075	20,491
Lead, arsenate of	"	133,671	26,161	73,056	15,421
Lead, nitrate of, not ground	"	282,269	45,864	234,616	35,940
Compounds of tetraethyl lead	"	36,508,092	13,348,923	6,593,798	2,373,402
Bromine, chlorine and iodine compounds:					
Bromine	"	26,462	10,514	19,065	13,207
Chlorine, liquid, or chlorine gas	"	68,394,579	1,950,075	67,656,950	1,917,361
Iodine, crude	"	102,225	140,285	93,122	100,322
Iodized mineral salts, for use in the feeding of animals	—	—	8,808	—	5,256

TABLE 14. Imports of Acids and Certain Inorganic Chemicals, 1956 and 1957 – Concluded

Commodity		1956		1957	
		Quantity	Value	Quantity	Value
			$		$
Calcium compounds:					
Calcium arsenate	lb.	12,000	888	–	4,952
Calcium chloride	cwt.	599,256	353,407	908,258	1,336,776
Chloride of lime	"	33,163	221,476	26,318	212,437
Calcium molybdate, vanadium oxide and tungsten oxide, for the manufacture of steel	lb.	322,295	367,194	285,576	468,115
Calcium compounds, n.o.p.	"	6,702,175	727,634	6,430,054	715,527
Potash and potassium compounds, n.o.p.:					
Cream of tartar in crystals	lb.	319,202	84,411	275,676	70,785
Potash and pearl ash	"	517,825	44,331	587,654	49,679
Potash, bicarbonate of	"	17,106	2,145	19,820	2,550
Potash, bichromate of, crude	"	341,140	54,855	313,727	51,702
Potash, caustic	"	5,883,625	331,520	7,301,665	349,807
Potash, chlorate of, not further prepared than ground	"	125,341	16,970	142,703	19,273
Potash, red and yellow, prussiate of	"	34,070	10,131	26,575	9,353
Potash, nitrate of, or salpetre	"	1,091,110	61,171	1,045,566	57,105
Potash, compounds, n.o.p.	"	4,193,870	588,521	6,059,444	760,792
Soda and sodium compounds, n.o.p.:					
Borax, in packages of not less than 25 pounds, and fused borax known as borax-glass	"	20,715,754	624,204	20,568,611	607,613
Glauber's salt	"	5,536,020	91,330	3,023,404	50,527
Soda, arseniate, binarseniate and stannate of	"	72,320	34,391	156,402	43,885
Soda ash or barilla	"	269,632,885	4,002,140	182,943,617	2,927,367
Soda, bicarbonate of	"	16,272,850	356,840	15,063,953	343,001
Soda, bichromate of	"	6,013,329	713,456	6,187,491	727,462
Soda, bisulphate of, or nitre cake	"	2,928,732	66,251	3,655,715	83,725
Soda, bisulphite of	"	806,331	38,840	793,365	36,983
Soda, caustic, in packages	"	31,835,528	1,151,811	15,919,017	623,826
Soda, caustic, in solution	"	233,100,737	3,081,160	181,045,701	2,354,856
Soda, chlorate of	"	489,120	40,331	920	244
Sodium cyanide	"	8,501,082	1,113,252	8,285,047	1,065,606
Sodiumg lutamate	"	354,446	410,540	461,784	505,027
Soda, hyposulphite of	"	985,872	47,963	1,063,622	54,385
Soda, nitrite of	"	1,281,048	50,628	1,162,137	51,235
Soda, peroxide of	"	1,062,973	156,300	870,894	130,658
Soda,phosphate, di-sodium	"	82,760	6,363	208,825	16,258
Soda phosphate, tri-sodium	"	939,660	47,516	798,167	41,305
Soda phosphate, n.o.p.	"	4,728,575	493,279	6,477,561	645,732
Soda, prussiate of	"	643,801	68,668	683,896	73,279
Soda, sal	"	192,030	3,849	70,850	1,349
Soda, silicate of, in crystals or in water solution	"	6,038,413	246,674	7,233,020	321,251
Soda, sulphate of, crude, or salt cake	"	60,637,894	558,656	56,175,683	511,457
Soda, sulphide of	"	3,897,063	190,965	3,329,386	163,712
Soda, sulphite of	"	6,692,760	155,427	9,609,005	237,844
Soda, benzoate of	"	2,300	702	40,483	13,209
Soda, bromide of	"	55,579	21,144	51,933	16,799
Soda, citrate of	"	65,196	19,108	5,388	1,947
Soda, fluoride of	"	803,441	94,479	640,227	78,258
Soda, antimonate of	"	278,360	75,446	234,100	60,219
Sodium compounds, n.o.p.	"	19,744,447	1,803,833	23,330,555	1,996,020
Other inorganic chemicals:					
Acid phosphate, not medicinal	"	2,069,695	194,499	1,891,121	178,977
Hydrogen peroxides, solution of	"	2,140,942	447,786	2,813,199	598,058
Magnesium carbonate, basic or otherwise, excepting crude rock; and magnesium carbonate, for use in the compounding or manufacture of rubber products	"	957,746	70,520	676,112	48,852
Magnesium salts or compounds, n.o.p.	"	14,511,238	438,746	8,693,221	351,332
Magnesium sulphate, or Epsom salts	"	5,228,085	69,517	5,116,234	71,295
Mercury salts	–	–	1,819	–	24,225
Phosphorus and compounds thereof, n.o.p.	lb.	229,607	36,596	238,044	39,927
Radium	–	–	301,597	–	1,334,011
Molybdenum oxide	lb.	955,308	705,400	477,304	401,928
Barium peroxide	"	–	–	–	–
Total inorganic chemicals, n.o.p.	–	–	**40,418,716**	–	**29,524,517**

TABLE 15. Exports of Acids and Inorganic Chemicals, 1956 and 1957

Commodity		1956		1957	
		Quantity	Value	Quantity	Value
			$		$
Acid, sulphuric	cwt.	473,201	446,360	590,979	547,679
Acids, n.o.p.	"	407,513	1,734,301	503,494	3,564,936
Total acids	—	—	**2,180,661**	—	**4,112,615**
Ammonium sulphate	cwt.	—	12,072,905	—	9,300,315
Ammonium compounds, n.o.p.	"	1,596	9,483	7,551	24,765
Arsenic	"	11,681	50,482	32,298	119,616
Calcium compounds	"	501,075	2,025,369	1,641,513	7,203,438
Lye	—	—	1,775	—	1,164
Baking powder	cwt.	15	227	6	96
Soda and sodium compounds, n.o.p.	"	1,213,471	5,891,569	13,731	173,802
Cobalt oxide and cobalt salts	lb.	1,289,145	2,315,141	620,042	1,102,902
Chlorine, liquid, or chlorine gas	cwt.	429,536	1,234,485	209,876	623,934
Caustic soda	"	141	828	5,697	18,846
Total other chemicals	—	—	**23,602,264**	—	**22,681,493**

TABLE 16. Fuel and Electricity Used in the Acids, Alkalies and Salts Industry, 1956 and 1957

Kind		1956		1957	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
Bituminous coal:					
Canadian	ton	30,500	357,119	22,333	269,987
Imported	"	298,079	2,777,678	300,544	3,045,047
Anthracite coal	"	3,787	61,078	54	1,563
Coke	"	357	7,565	410	9,228
Gasoline	Imp. gal.	343,691	119,914	337,752	116,320
Kerosene	"	5,659	1,257	4,227	974
Fuel oil	"	9,366,571	1,006,354	15,714,278	1,817,451
Gas:					
Liquefied petroleum gases	"	36,815	10,384	155,598	34,503
Other manufactured gas	M cu. ft.	380,373	202,026	837,934	463,001
Natural	"	7,039,740	868,187	6,674,008	826,174
Other fuel	—	—	394,954	—	562,687
Electricity purchased	kwh.	2,688,415,436	11,387,802	2,942,623,950	13,237,159
Total	—	—	**17,194,318**	—	**20,384,094**
Electricity generated for own use	kwh.	116,694,076	—	149,681,194	—

List of Firms in the Acids, Alkalies and Salts Industry, 1957

Name and location of plant	Principal chemicals made for sale
Nova Scotia:	
Dominion Steel & Coal Corp. Ltd. ..... Sydney	Sulphuric acid.
Quebec:	
Aluminum Company of Canada, Ltd. ..... Arvida	Sulphuricacid: aluminum sulphate (alum); aluminum fluoride; refined fluorspar; liquid chlorine; recovered cryolite; sodium hydroxide (caustic soda);

List of Firms in the Acids, Alkalies and Salts Industry, 1957 – Continued

Name and location of plant	Principal chemicals made for sale
Quebec – Concluded:	
B.A. – Shawinigan Limited ..... Montreal East	Acetone; phenol, isopropyl alcohol.
Canadian Industries Limited ..... Shawinigan Falls	Perchlorethylene; trichlorethylene; chlorine (liquid); anhydrous hydrogen chloride; sodium hydroxide (caustic soda); hydrogen peroxide (liquid); chloroform, hydrogen gas; calcium hypochlorite.
Canadian Titanium Pigments Ltd. Varennes	Sulphuric acid, titanium oxide pigment.
Carbide Chemicals Company, Div. of Union Carbide Canada Ltd. Montreal East	Ethylene glycol, diethylene glycol, anti-freeze; polyethylene resin (compounded only), ethanolamines.
Durham Industries (Canada) Limited ..... Montreal	Zinc oxide.
Electric Reduction Co. Limited of Canada Buckingham	Phosphoric acid; acid calcium phosphate; phosphorus (amorphous and yellow); potassium chlorate; sodium acid phyrophosphate; sodium chlorate; phosphates of sodium (mono-di-tri-tetra); weed-killing mixtures; ferrophosphorus; phosphorus sesquisulphide; rock wool; sodium tripolyphosphate; sodium metaphosphate.
Electric Reduction Co. Limited of Canada Varennes	Yellow phosphorus, ferrophosphorus.
Industrial Grain Products Ltd. ..... Montreal	Sodium (mono) lutamate.
National Silicates Ltd. ..... Valleyfield.	Sodium silicate
The Nichols Chemical Co. Ltd. ..... Valleyfield	Sulphuric acid; aluminum sulphate; pyrites cinder; hydrofluoric acid.
Shawinigan Chemicals Ltd. ..... Shawinigan Falls	Monochloroacetic acid; acetaldehyde; acetic anhydride; acetylene black; acetyle gas; acetic acid; butyl acetate; butyl alcohol; calcium carbide; dibutyl phthalate; ethyl acetate; pentasol acetate; vinyl acetate; vinyl acetate resins; cerium; paraldehyde; polyvinyl alcohol; butyraldehyde; formvar resin; sulphuric acid.
Shell Oil Company of Canada, Limited ..... Montreal East	Acetone; isopropyl alcohol.
Standard Chemical Limited ..... Beauharnois	Chlorine (liquid); sodium hydroxide (caustic soda); javelle concentrate.
St. Maurice Chemicals Limited ..... Varennes	Formaldehyde; pentaerythritol.
Sturge (Canada) Limited ..... Valleyfield	Citric acid.
Zinc Oxide Co. Of Canada, Ltd. ..... Montreal	Zinc oxide.
Ontario:	
Brunner Mond Canada, Ltd. ..... Amherstburg	Calcium chloride; sodium carbonate (soda ash).
Cabot Carbon of Canada, Limited ..... Sarnia	Carbon black.
Canadian Felling Zinc Oxide Ltd. ..... Milton	Zinc oxide.
Canadian Industries Limited ..... Hamilton	Hydrochloric (c.p.) acid; sulphuric acid; ammonium chloride; sodium sulphite (anhydrous); sodium metabisulphite; sodium thiosulphite; zinc chloride (50% solution); soldering and galvanizing fluxes.
Canadian Industries Limited ..... Cornwall	Hydrochloric (muriatic) acid; chlorine (liquid); sodium hydroxide (caustic soda); sodium hypochlorite; hydrogen gas.
Canadian Industries Limited ..... Copper Cliff	Sulphuric acid; liquid sulphur dioxide.
Church & Dwight Ltd. ..... Amherstburg	Sodium carbonate (sal soda).
Cornwall Chemicals Limited ..... Cornwall	Carbon bisulphide; sodium hydrosulphide, carbon tetrachloride.
Cyanamid of Canada Ltd. ..... Niagara Falls	Calcium cyanamide; sodium cyanide; lime, unhydrated; calcium carbide; amino triazole.

List of Firms in the Acids, Alkalies and Salts Industry, 1957 – Continued

Name and location of plant	Principal chemicals made for sale
Ontario – Concluded:	
Cyanamid of Canada Ltd. (Welland Works) Niagara Falls	Ammonia (anhydrous); dicyandiamide; guanidine nitrate; sulphuric acid; urea-formaldehyde adhesives; nitric acid; picrite; thiourea; aminotriazole; zanthates; sulfas, ammonium nitrate.
Dow Chemical of Canada Ltd. ..... Sarnia	Ethylene glycol; diethylene glycol; triethylene glycol; ethylene dichloride; chlorine (liquid); sodium hydroxide (caustic soda); carbon tetrachloride; trichlorethylene; perchlorethylene; hydrochloric (muriatic) acid; ammonia, anhydrous, 100%; ethylene oxide; sodium carbonate; ethanolamines.
Dupont Co. of Canada Ltd. ..... Maitland	Adipic acid; hexamethylenediamine.
Dupont Co. of Canada Ltd. ..... Maitland	Anhydrous hydrogen chloride; chlorofluoromethanes (Freons); hydrochloric acid.
Ethyl Corporation of Canada Ltd. ..... Corunna	Tetraethyl lead.
W.C. Hardesty Co. of Canada Ltd. ..... New Toronto	Hydrogenated stearic acid; vegetable fatty acids; animal fatty acids; glycerine; oleic acid; castor fatty acids; pressed stearic acid.
Howards & Sons (Canada) Ltd. ..... Cornwall	Di-cyclohexanol phthalate; di-methylcyclohexanol phthalate; methylcyclohexanol; cyclohexanol; sextol.
Imperial Oil Limited ..... Sarnia	Liquefied petroleum gas; alkylate.
Kemball, Bishop, & Co. (Canada) Ltd..... Cornwall	Citric acid; sodium citrate.
Naugatuck Chemicals ..... Division of Dominion Rubber Co. Ltd. Elmira	Aniline; rubber accelerators and specialties; 2, 4-D; sodium sulphamethazine; nitrobenzol; ammonia, anhydrous, 100%; synthetic resin (alkyd polyester type); weed killer; hydrochloric acid; aniline oil; nonyl phenol; special pest control products.
National Silicates Ltd. ..... New Toronto	Sodium silicate; sodium metasilicate.
The Nichols Chemical Co. Ltd. ..... Sulphide	Hydrochloric (muriatic) acid; nitric acid; sulphuric acid; ammonia (aqua); pyrites cinder; aluminum chloride.
The Nichols Chemical Co. Ltd..... Thorold	Aluminum sulphate (alum).
Noranda Mines Limited ..... Port Robinson	Sulphur dioxide; iron sinter.
Noranda Mines Limited ..... Cutler	Sulphuric acid; sintered iron ore.
Nuodex Products of Canada, Ltd. ..... Leaside	Lead naphthenate; cobalt naphthenate; manganese naphthenate; zinc naphthenate; copper naphthenate; calcium naphthenate; iron naphthenate; zinc octoate; cobalt octoate; calcium octoate; naphthenic acid.
Petro-Chemsol Chemicals Ltd. ..... Petrolia	Benzene.
Saskatchewan:	
Gunnar Mines Limited ..... Uranium City	Sulphuric acid.
Alberta:	
Canadian Chemical Company Limited..... Edmonton	Acetone; acetic anhydride; acetic acid; iso-butyl alcohol; propylene glycol; formaldehyde; methyl alcohol; pentaerythritol; n-propyl acetate; n-propyl alcohol; solvents; normal butyl alcohol; butyl acetate; diethylene glycol; methyl isobutyl carbinol; methyl isobutyl ketone; methyl anyl acetate; solvents.
Northwest Nitr-Chemicals Ltd. ..... Medicine Hat	Sulphuric acid.
Western Chemicals Limited ..... Duvernay	Chlorine (liquid); sodium hydroxide (caustic soda); hydrochloric acid.
Inland Chemicals Ltd..... Fort Saskatchewan	Sulphuric acid

List of Firms in the Acids, Alkalies and Salts Industry, 1957 – Concluded

Name and location of plant	Principal chemicals made for sale
British Columbia:	
Consolidated Mining and Smelting Co. of Canada, Ltd. Tadanac	Hydrofluosilicic acid; sulphuric acid; liquid sulphur dioxide.
Electric Reduction Co. of Canada Ltd. .... North Vancouver	Sodium chlorate
Hooker Chemicals Ltd. ..... North Vancouver	Chlorine liquid, sodium hydroxide (caustic soda).
The Nichols Chemical Co. Ltd. ..... Barnet	Sulphuric acid; pyrites cinder; aluminum sulphate.
Northwest Territories:	
Eldorado Mining & Refining Ltd. ..... Port Radium	Sulphuric acid