

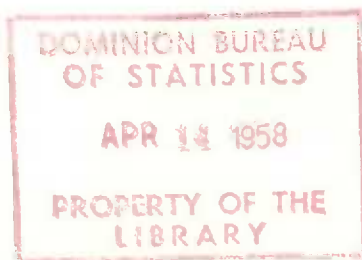
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CANADA

THE ACIDS, ALKALIES AND SALTS INDUSTRY 1956



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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, \$1.50
- II - The Manufacturing Industries of Canada, (7 sections, as follows:)
 - Section A. Summary for Canada, 25¢
 - Section B. Atlantic Provinces, 50¢
 - Section C. Quebec, 25¢
 - Section D. Ontario, 25¢
 - Section E. Prairie Provinces, 40¢
 - Section F. British Columbia, 25¢
 - Section G. The Manufacturing Industries of Canada, Regional Distribution, 75¢
- 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, 25¢
- B - The Acids, Alkalies and Salts Industry, 25¢
- C - The Fertilizers Industry, 25¢
- D - The Fertilizer Trade in Canada, 25¢
- E - The Medicinal and Pharmaceutical Preparations Industry, 25¢
- F - The Paints, Varnishes and Lacquers Industry, 25¢
- G - The Primary Plastics Industry, 25¢
- H - The Soaps, Washing Compounds and Cleaning Preparations Industry, 25¢
- I - The Toilet Preparations Industry, 25¢
- J - The Vegetable Oils Industry, 25¢
- K - The Inks Industry, 25¢
- L - The Adhesives Industry, 25¢
- M - The Polishes and Dressings Industry, 25¢
- N - The Compressed Gases Industry, 25¢
- O - The Coal Tar Distillation Industry, 25¢
- P - The Miscellaneous Chemical Products Industry, 25¢

THE ACIDS, ALKALIES AND SALTS INDUSTRY

1956

Forty-eight plants in Canada, classified under the Acids, Alkalies and Salts Industry, were engaged chiefly in the production of chemicals in 1956. Factory shipments reported by this group were valued at \$193,541,164, an increase of 12.4 per cent over the total for the previous year. Twenty-five of these plants were located in Ontario, 15 in Quebec, 3 in Alberta, 2 in British Columbia and in each of Nova Scotia, Saskatchewan and the Northwest Territories. These concerns gave employment to 9,083 people who were paid \$40,664,572 in salaries and wages. Materials used in manufacturing processes cost \$85,087,630 and expenditures for fuel and electricity amounted to \$17,194,318.

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 1,052,000 tons in 1956, an increase of about 10 per cent over the 1955 total of 950,000 tons. Manufacturing facilities for the production of sulphuric acid were augmented in 1956 by the entry of three new producers. These were Northwest Nitro-Chemicals Ltd. with a plant at Medicine Hat, Alberta, Noranda Mines Limited with a plant at Cutler, Ontario, and Shawinigan Chemicals Limited with a plant at Shawinigan Falls, Quebec. The total for sulphuric acid plants, therefore, now stands at 16 as the thirteen producers already active in this field continued operations during 1956 as follows: The Consolidated Mining and Smelting Company of Canada Limited at Kimberley and Trail, British Columbia; Canadian Industries Lim-

ited at Copper Cliff and Hamilton, Ontario; Nichols 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; The North American Cyanamid Limited (Welland Works), at Niagara Falls, Ontario; Gunnar Mines at Uranium City, Saskatchewan; Inland Chemicals Limited, at Fort Saskatchewan, Alberta; and Eldorado Mining and Refining Ltd., at Port Radium, Northwest Territories.

Production of chlorine totalled 223,000 tons in 1956, while the output of caustic soda amounted to 256,000 tons. There was no change in the number of firms operating caustic and chlorine plants in 1956. The nine firms represented in 1955 were again in production in 1956 operating ten 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; 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: Figures for value added by manufacture, shown in Table 1, prior to 1952 were obtained by subtracting the cost of materials used, including fuel and electricity, from the value of production. In 1952 the gross value of production was replaced by value of factory shipments, f.o.b. plant. As no information on inventory change is available for 1952 and 1953, value added figures for these years were obtained by subtracting from the value of shipments the cost of materials, fuel and electricity. In 1954 and later years information on the value of year-end inventory holdings at plant and plant warehouses was collected as part of the annual Census of Industry and information thus made available was taken into account in calculating the value added figures.

TABLE 1. Principal Statistics of the Acids, Alkalies and Salts Industry, Significant Years 1929-1956 and by Provinces, 1955 and 1956

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	Gross selling value of products ¹
	No.	No.	\$	\$	\$	\$	\$
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
1952	29	7,591	27,208,422	11,167,181	37,777,278	65,243,067	114,187,526
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							
Nova Scotia	1	3,648	15,409,741	5,344,111	27,709,287	35,153,060	67,849,364
Quebec	16						
Ontario	21	4,455	17,876,310	8,927,890	30,991,574	52,176,835	92,645,255
Saskatchewan	1						
Alberta	3	494	2,261,800	761,500	2,985,653	7,694,104	11,761,141
British Columbia	2						
Northwest Territories	1						
Canada	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						
Alberta	3	537	2,697,098	892,742	4,264,266	9,515,755	13,828,990
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

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. Inventories¹, 1956

	Raw materials and supplies	Goods in process	Finished goods of own manufacture	Total
	\$	\$	\$	\$
Opening:				
Nova Scotia and Quebec	6,570,214	393,456	3,842,128	10,805,798
Ontario	7,120,965	950,456	3,546,898	11,618,319
Saskatchewan, Alberta, British Columbia and North- west Territories	1,178,795	221,513	798,505	2,198,813
Canada	14,869,974	1,565,425	8,187,531	24,622,930
Closing:				
Nova Scotia and Quebec	7,994,679	249,641	5,390,847	13,635,167
Ontario	8,479,780	1,546,837	6,147,762	16,174,379
Saskatchewan, Alberta, British Columbia and North- west Territories	1,496,861	373,272	1,490,519	3,360,652
Canada	17,971,320	2,169,750	13,029,128	33,170,198

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 1956 does not necessarily agree with the closing inventory for 1955 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, 1955 and 1956

Material	1955		1956	
	Quantity	Cost at works	Quantity	Cost at works
		\$		\$
Acetone..... lb.	1,067,389	96,351	1,211,841	110,713
Acetylene..... M cu. ft.	43,125	380,120	46,441	428,145
Acid - Acetic, 99½%..... lb.	10,774	1,435	11,380	2,331
Fatty - Oleic..... "	321,896	45,206	61,269	11,452
Other fatty acids..... "	65,777	11,787	28,217	4,835
Hydrochloric (muriatic),..... "	4,203,750	98,907	5,174,589	104,565
Nitric..... "	2,429,979	121,538	2,703,378	138,019
Phosphoric..... "	1	1	129,630	12,351
Sulphuric, as 100%..... "	24,698,281	415,654	29,810,349	475,412
Alcohol, butyl (including isobutyl and normal)..... "	546,467	65,944	700,232	83,225
Alcohol, ethyl..... Imp. gal.	8,538	10,988	9,226	11,924
Alcohol, isopropyl..... lb.	107,572	17,726	27,535	2,412
Ammonia liquor..... lb. NH ₃	1,303,946	91,909	1,369,029	96,286
Ammonia, anhydrous..... lb.	16,441,076	926,642	18,057,393	918,688
Barium chloride..... "	400,997	26,627	490,610	31,829
Benzol..... "	2,490,355	132,977	2,818,519	151,914
Calcium chloride..... "	483,150	10,694	623,180	16,415
Carbon, activated..... "	246,384	92,459	391,283	125,736
Chlorine, liquid..... "	6,856,651	233,793	5,005,646	180,208
Coal, (except for fuel) - Anthracite..... ton	12,259	149,511	8,985	132,756
Cobalt acetate..... lb.	3,482	4,039	5,678	6,586
Cobalt sulphate..... "	2,900	3,280	3,194	3,961
Coke (except for fuel) - Petroleum..... ton	3,161	55,209	3,019	51,344
Other..... "	243,079	4,257,774	227,834	4,210,495
Copper sulphate..... lb.	9,280	1,320	16,510	2,726
Cresol (including cresylic acid)..... "	1	1	188,755	24,418
Electrodes (purchased)..... -	-	687,100	-	884,110
Ethanolamines..... lb.	1	1	37,822	10,691
Fluorspar..... ton	68,592	1,978,468	76,452	2,190,772
Formaldehyde..... lb.	976,862	36,078	1,164,953	48,171
Glycerine..... "	1	1	461	172
Glycols - Ethylene..... "	1	1	-	-
Diethylene..... "	1	1	75,319	13,974
Triethylene..... "	1	1	526	132
Propylene..... "	1	1	224,432	36,767
Other grades..... "	1	1	106,871	20,443
Graphite..... "	687,303	153,052	754,042	211,617
Lead sulphate..... "	1	1	164,055	31,903
Limestone..... ton	1,035,368	1,832,345	942,416	1,690,391
Lime, hydrated..... "	8,762	49,238	11,421	95,396
Lime, quick..... "	17,747	289,574	21,133	379,341
Litharge..... lb.	556,580	97,000	609,743	112,750
Mercury..... "	123,428	328,624	153,341	438,227
Oils - Castor..... "	1	1	840,324	125,045
Cocoonut..... "	1	1	1,277,234	162,747
Other oils..... "	1	1	232,557	16,578
Pentanol..... "	91,630	14,873	34,938	5,940
Phenol..... "	1,388,392	240,263	3,327,636	427,583
Petrochemical feed stocks..... -	-	3,694,843	-	4,701,819
Phthalic anhydride..... lb.	1,740,959	342,758	1,294,623	247,733
Pyrites..... ton	123,619	999,695	162,078	1,233,155
Quartz, quartzite and silica sand..... "	52,487	323,525	62,054	375,370
Sodium carbonate (soda ash)..... lb.	87,091,488	1,803,859	86,614,382	2,131,934
Sodium chloride, dry and brine (salt content)..... ton	792,525	3,476,596	774,472	3,682,588
Sodium bichromate..... lb.	136,340	16,379	134,550	17,999
Sodium hydroxide (caustic soda)..... "	24,210,335	879,112	25,782,020	991,220
Sodium nitrate..... "	513,427	22,771	435,720	15,744
Sodium sulphide..... "	151,377	7,099	183,111	9,159
Sulphur (brimstone)..... ton	82,947	3,105,280	108,300	4,267,883
Urea..... lb.	501,755	31,051	604,410	35,439
Xylene (xylol)..... "	1	1	273,506	14,556
Zinc dross..... "	2,092,093	167,288	1,567,597	155,777
Zinc oxide..... "	71,258	9,071	87,056	11,418
Zinc spelter..... "	15,556,160	1,646,046	16,541,982	2,161,386
Steel sheets for making containers..... ton	5,510	891,402	3,214	545,485
Lumber for making containers and for crating..... M bd. ft.	176	11,670	124	10,088
All other materials..... -	-	27,858,781	-	46,378,867
Containers and packing materials..... -	-	3,440,783	-	3,858,514
Total.....	-	61,686,514	-	85,087,630

1. Not available separately.

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 produc-

ed 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 1956 was around \$355,707,000 compared with \$339,677,000 in 1955.

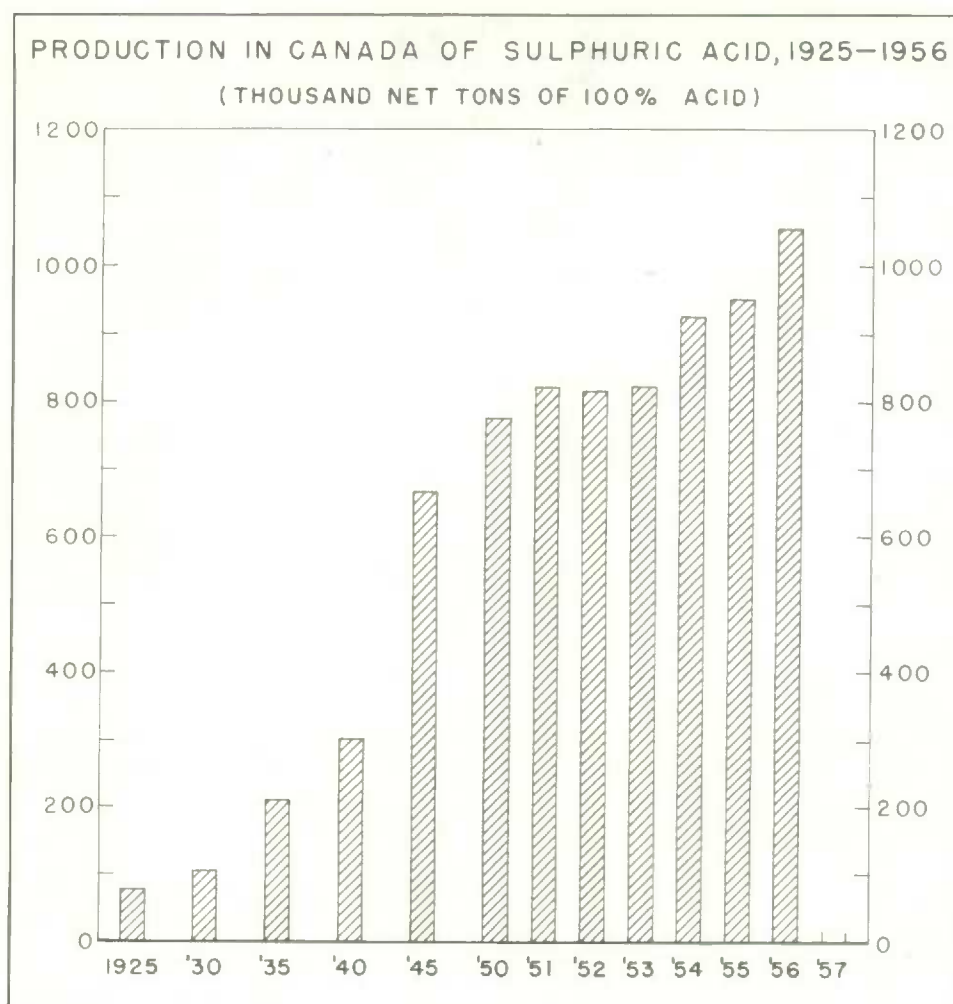
TABLE 4. Total Production of Chemicals, 1955 and 1956

	Selling value at works	
	1955	1956
	\$	\$
<i>Acids, including acetic, muriatic, nitric, sulphuric, phosphoric, stearic, etc.</i>	21,140,000	24,003,000
<i>Calcium compounds, including carbide, chloride, phosphide, cyanamide, cyanide acid phosphate, grey acetate, arsenate, chloride of lime, etc.</i>	18,505,000	17,967,000
<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>	35,096,000	36,425,000
<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>	82,934,000	94,226,000
<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>	38,951,000	46,288,000
<i>Fertilizer chemicals, including ammonium sulphate, ammonium nitrate (fertilizer grade), ammonium phosphate, and superphosphate</i>	59,746,000	48,552,000
<i>Synthetic resins, including casein type, vinyls, polystyrene, phenol-formaldehyde, urea-formaldehyde, alkyds, sodium carboxymethylcellulose, etc.</i>	49,430,000	50,530,000
<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>	33,875,000	37,716,000
Total	339,677,000	355,707,000

TABLE 5. Production, Imports, Exports and Apparent Consumption of Sulphuric Acid, 1925-1956

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
1951.....	820,867	1,162	57,000	765,029
1952.....	816,270	85	33,135	783,220
1953.....	822,608	70	47,889	774,789
1954.....	923,800	110	21,930	901,980
1955.....	950,277	151	29,578	920,850
1956.....	1,052,000	2,100	23,700	1,030,400

1. No allowance made for changes in inventories.

**TABLE 6. Production, Imports and Exports of Chlorine and Caustic Soda, 1952-1956**

Year	Chlorine	Caustic soda ¹ (100% Na OH)
	Tons	
(a) Production:		
1952	169,000	190,000
1953	169,000	192,000
1954	167,000	199,000
1955	193,000	226,000
1956	223,000	256,000
(b) Imports:		
1952	15,800	28,500
1953	20,400	43,700
1954	32,100	65,900
1955	38,000	73,300
1956	34,200	74,200
(c) Exports:		
1952	14,200	6,600
1953	17,900	2,600
1954	2,900	200
1955	10,400	100
1956	21,500	7

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, 1954-1956

Industry	1954	1955	1956
	Short tons of 100% acid		
Fertilizers	603,200	577,100	563,400
Heavy chemicals	123,400 ²	139,700 ²	188,700 ²
Non-ferrous metal smelting and refining	19,300 ¹	24,500 ¹	25,600 ¹
Coke and gas	31,000	37,900	35,600
Petroleum refining	5,400	6,500	11,000
Leather tanning	1,900	2,300	2,300
Iron and steel	25,800	35,300	39,000
Electrical apparatus	6,000	8,100	6,800
Plastics	13,700	15,000	17,000
Soaps	10,600	11,300	12,200
Adhesives	500	200	400
Sugar refining	300	300	300
Pulp and paper	9,300	8,700	9,000
Vegetable oils ³	100	100	100
Miscellaneous ³	72,000	70,800	83,400
Total accounted for	922,500	937,800	994,800

1. Estimated.

2. Includes consumption of "own make" or "captive" acid by uranium ore processing firms.

3. Includes explosives, textiles, miscellaneous chemicals and sausage and sausage casings groups.

TABLE 8. Available Data on Consumption of Chlorine, by Industries, 1954-1956

Industry	1954	1955	1956
	Tons		
Pulp and paper	114,700 ²	128,600 ²	133,500 ²
Heavy chemicals	69,300 ²	70,000 ²	79,300 ²
Soaps	3,900	4,000	4,000
Municipal waterworks	1,500	1,600	1,600 ¹
Mining	3,000 ¹	3,000 ¹	3,000 ¹
Starch and glucose	100	60	30
Dyeing and finishing of textiles	10	10	10
Miscellaneous chemicals	50	500	400
Fertilizers	30	35	50
Synthetic textiles	30	30	30
Primary plastics	200	200	300
Medicinal and pharmaceutical preparations	140	100	200
Total accounted for	192,960	208,135	222,420

1. Estimated.

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

TABLE 9. Available Data on Consumption of Caustic Soda, by Industries, 1954-1956

Industry	1954	1955	1956
	Tons		
Pulp and paper	117,100 ⁵	122,900 ⁵	132,500 ⁵
Soaps, washing compounds and cleaning preparations	20,000	21,200	20,800
Heavy chemicals	52,900 ⁵	67,900 ⁵	74,000 ⁵
Petroleum refining	8,200	8,700	9,300
Primary plastics	7,600	9,400	10,900
Miscellaneous foods	1,400	1,400	1,400

TABLE 9. Available Data on Consumption of Caustic Soda, by Industry, 1954-1956 - Concluded

Industry	1954	1955	1956
		Tons	
Mining	1,400 ¹	1,400 ¹	1,400 ¹
Coke and gas	1,000	1,500	1,000
Medicinals and pharmaceuticals	1,100	1,100	1,200
Non-ferrous metal refining	2	2	2
Starch and glucose	400	4	4
Dyeing and finishing of textiles	60	100	200
Toilet preparations	300	300	300
Compressed gases	200	200	300
Fertilizers	200	200	300
Sugar refining	50	50	60
Vegetable oils	50	50	50
Adhesives	900	80	70
Miscellaneous ³	30,700	37,200	36,020
Total accounted for	243,560	273,680	290,000

1. Estimated.

2. Included with "mining".

3. Includes synthetic textiles, miscellaneous chemicals and sausage and sausage casings groups.

4. Included with miscellaneous foods.

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

TABLE 10. Principal Statistics of the Acids, Alkalies and Salts Industry in Canada, Grouped According to Size of Establishment, 1955 and 1956

Establishments reporting factory shipments valued at	Estab-lish-ments	Employees	Salaries and wages	Cost at plant of materials used	Selling value of factory shipments
	No.	No.	\$	\$	\$
1955					
\$50,000 to \$99,999	1	17	61,915	283,037	398,544
\$100,000 to \$199,999	2				
\$200,000 to \$499,999	6				
\$500,000 to \$999,999	7	302	1,142,972	2,815,227	4,919,957
\$1,000,000 to \$4,999,999	19	1,700	6,644,391	18,343,008	43,519,966
\$5,000,000 and over	10	5,853	23,982,404	39,188,154	121,506,434
Head offices	—	635	3,362,201	—	—
Total	45	8,597	35,547,851	61,686,514	172,255,750
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				
\$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

TABLE 11. Employees and Earnings, by Provinces, 1955 and 1956

Province	Number of employees				Total	Earnings		Total earnings
	Administrative		Workmen			Admin-istrative	Workmen	
	Male	Female	Male	Female				
					\$	\$	\$	
1955								
Quebec	787	261	2,574	17	3,639	5,529,987	9,832,033	15,362,020
Ontario	1,192	295	2,939	29	4,455	6,509,588	11,366,722	17,876,310
Other provinces	133	30	334	6	503	761,982	1,547,539	2,309,521
Canada	2,112	586	5,847	52	8,597	12,801,557	22,746,294	35,547,851
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

TABLE 12. Production Workers, by Months, 1955 and 1956

Month	1955			1956		
	Male	Female	Total	Male	Female	Total
	Number					
January	5,646	42	5,688	5,827	68	5,895
February	5,755	45	5,800	5,823	69	5,892
March	5,751	44	5,795	5,873	68	5,941
April	5,649	47	5,696	6,000	73	6,073
May	5,831	47	5,878	6,045	71	6,116
June	5,952	49	6,001	6,194	68	6,262
July	5,991	60	6,051	6,247	71	6,318
August	5,982	55	6,037	6,225	65	6,290
September	5,939	55	5,994	6,241	66	6,307
October	5,943	59	6,002	6,175	66	6,241
November	5,903	61	5,964	6,127	66	6,193
December	5,822	64	5,886	5,989	66	6,055
Average	5,847	52	5,899	6,064	68	6,132

TABLE 13. Capital and Repair Expenditures in the Acids, Alkalies and Salts Industry, 1952-1956

Year	Capital expenditures		Sub-total	Repair and maintenance expenditures		Sub-total	Total capital and repair expenditures
	Construction	Machinery and equipment		Construction	Machinery and equipment		
	\$'000						
1952	41,591	40,822	82,413	1,638	10,661	12,299	94,712
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 ¹	9,881	28,947	38,828	2,490	13,073	15,563	54,391

1. Preliminary.

TABLE 14. Imports of Acids and Certain Inorganic Chemicals, 1955 and 1956

Commodity	1955		1956	
	Quantity	Value	Quantity	Value
		\$		\$
Acids				
Inorganic acids:				
Acid, boracic, in packages of not less than 25 pounds lb.	3,019,580	185,356	3,724,142	249,994
Acid, hydrofluosilicic	157,312	16,786	192,654	18,067
Acid, muriatic	1,002,680	14,042	1,575,323	23,241
Acid, nitric	487,792	27,031	204,497	16,042
Acid, phosphoric	444,131	45,302	487,394	41,732
Acid, sulphuric	301,732	6,717	4,110,404	55,303
Acid, arsenic	847,413	32,110	408,840	14,490
Acid, chromic	1,183,090	302,200	1,035,109	280,979
Organic acids:				
Acid, salicylic and acetylsalicylic	736,978	398,741	858,455	439,332
Acid, lactic	575,917	131,609	570,842	133,929
Acid, nicotinic	205,525	458,373	78,653	158,927
Acid, oleic, or red oil	1,569,147	285,207	150,549	30,863
Acid, acetic and pyroligneous	921	2,793	6,746	37,035
Acid, citric	167,413	47,024	1	
Acid, cresylic	623,205	54,088	441,226	53,832
Xanthates and sulpho-thiophosphoric (dithiophosphoric compounds, for concentrating ores, metals or minerals) ..	7,173,049	1,723,476	6,775,411	1,639,308
Acid, oxalic	1,204,523	155,113	765,930	96,758
Acid, stearic	1,506,007	220,493	849,391	134,384
Acid, tannic	314,184	60,209	56,303	47,545
Tartaric acid crystals or powder	818,595	259,757	758,458	248,970
Acid, ascorbic	43,048	267,258	—	303,416
Acid, formic	929,975	95,008	1,082,634	112,619
Acid, carbolic or phenol	8,059,780	1,284,810	6,897,695	1,181,332
Acids, other, n.o.p.	5,788,830	1,429,550	9,565,700	2,187,458
Total acids	—	7,503,053	—	7,505,556
Inorganic Chemicals, N.O.P.				
Alum, in bulk, ground or unground, but not calcined	20,656	75,582	19,159	76,757
Chloralum or chloride of aluminum	16,841	133,686	28,771	400,109
Sulphate of iron (copperas)	17,798	29,040	17,054	29,770
Sulphate of alumina or alum cake	291,266	521,659	257,944	461,318
Ammonia, nitrate of	1,659,787	94,531	1,389,877	93,806
Sal ammoniac	566,394	33,048	579,006	38,431
Sal ammoniac skimmings	675,299	63,079	806,283	70,711
Ammonia, anhydrous	46,583,593	1,986,963	35,541,962	1,410,023
Ammonia compounds, n.o.p.	6,236,698	324,295	6,776,493	339,941
Antimony, arsenic, copper, tin and zinc compounds:				
Antimony salts, viz., tartar emetic, chloride and lactate (antimonine)	38,664	19,712	20,121	12,486
Arsenious oxide and arsenic sulphide	—	—	16,320	1,691
Copper, sub-acetate of, or verdigris, dry, and precipitate of	—	—	1,000	604
Copper, sulphate of	2,265,558	309,963	2,062,982	323,126
Tin, bichloride of, and tin crystals	10,402	10,285	9,055	8,798
Zinc, chloride of	257,454	28,299	514,438	52,784
Zinc, sulphate of	2,829,330	143,508	2,378,029	117,403
Bismuth and lead compounds:				
Bismuth salts	—	21,799	—	21,468
Lead, acetate of, not ground	160,084	26,602	179,801	32,180
Lead, arsenate of	130,800	22,912	133,671	26,161
Lead, nitrate of, not ground	313,885	48,219	282,269	45,864
Compounds of tetraethyl lead	35,058,685	12,707,249	36,508,092	13,348,923
Bromine, chlorine and iodine compounds:				
Bromine	31,686	14,625	26,462	10,514
Chlorine, liquid, or chlorine gas	75,978,923	2,158,803	68,394,579	1,950,075
Iodine, crude	111,826	153,509	102,225	140,285
Iodized mineral salts, for use in the feeding of animals ..	—	5,295	—	8,808

1. Not available separately.

TABLE 14. Imports of Acids and Certain Inorganic Chemicals, 1955 and 1956 - Concluded

Commodity	1955		1956	
	Quantity	Value	Quantity	Value
		\$		\$
Calcium compounds:				
Calcium arsenate	lb. 564,865	28,601	12,000	888
Calcium chloride	cwt. 355,178	471,565	599,256	853,407
Chloride of lime	" 36,966	246,746	33,163	221,476
Calcium molybdate, vanadium oxide and tungsten oxide, for the manufacture of steel	lb. 129,130	174,249	322,295	367,194
Calcium compounds, n.o.p.	" 5,096,921	578,055	6,702,175	727,634
Potash and potassium compounds, n.o.p.:				
Argols	—	—	—	—
Cream of tartar in crystals	lb. 305,705	74,413	319,202	84,411
Potash and pearl ash	" 474,303	40,384	517,825	44,331
Potash, bicarbonate of	" 11,080	1,514	17,106	2,145
Potash, bichromate of, crude	" 255,474	38,546	341,140	54,855
Potash, caustic	" 4,940,584	274,830	5,883,625	331,520
Potash, chlorate of, not further prepared than ground	" 131,588	18,656	125,341	16,970
Potash, red and yellow, prussiate of	" 27,524	8,648	34,070	10,131
Potash, nitrate of, or saltpetre	" 1,240,077	81,253	1,091,110	61,171
Potash compounds, n.o.p.	" 3,246,801	485,963	4,193,870	588,521
Soda and sodium compounds, n.o.p.:				
Borax, in packages of not less than 25 pounds, and fused borax known as borax-glass	lb. 18,844,042	552,338	20,715,754	624,204
Glauber's salt	" 7,775,968	131,447	5,536,020	91,330
Soda, arseniate, binarsenate and stannate of	" 94,990	32,843	72,320	34,391
Soda ash or barilla	237,799,515	3,308,412	269,632,885	4,002,140
Soda, bicarbonate of	" 17,033,493	353,892	16,272,850	356,840
Soda, bichromate of	" 6,763,005	736,333	6,013,329	713,456
Soda, bisulphate of, or nitre cake	" 2,491,955	58,039	2,928,732	66,251
Soda, bisulphite of	" 1,292,700	58,922	806,331	38,840
Soda, caustic, in packages	" 18,788,909	710,989	31,835,528	1,151,811
Soda, caustic, in solution	" 255,708,597	3,409,803	233,100,737	3,081,160
Soda, chlorate of	" 121,050	8,983	489,120	40,331
Sodium cyanide	" 9,055,531	1,141,580	8,501,082	1,113,252
Sodium glutamate	" 1,191,755	1,677,444	354,446	410,540
Soda, hyposulphite of	" 779,458	38,235	985,872	47,963
Soda, nitrite of	" 1,517,150	62,723	1,281,048	50,628
Soda, peroxide of	" 723,672	105,523	1,062,973	156,300
Soda phosphate, di-sodium	" 59,700	4,730	82,760	6,363
Soda phosphate, tri-sodium	" 864,010	41,262	939,660	47,516
Soda phosphate, n.o.p.	" 3,244,597	350,583	4,728,575	493,279
Soda, prussiate of	" 768,972	86,080	643,801	68,668
Soda, sal	" 370,220	24,861	192,030	3,849
Soda, silicate of, in crystals or in water solution	" 5,422,613	209,735	6,038,413	246,674
Soda, sulphate of, crude, or salt cake	" 59,855,362	574,440	60,637,894	558,656
Soda, sulphide of	" 3,455,738	165,304	3,897,063	190,965
Soda, sulphite of	" 4,616,081	113,481	6,692,760	155,427
Soda, benzoate of	" 19,625	7,764	2,300	702
Soda, bromide of	" 36,587	11,673	55,579	21,144
Soda, citrate of	" 87,343	24,339	65,196	19,108
Soda, fluoride of	" 732,902	89,710	803,441	94,479
Soda, antimonate of	" 370,100	104,910	278,360	75,446
Sodium compounds, n.o.p.	" 17,375,005	1,576,737	19,744,447	1,803,833
Other inorganic chemicals:				
Acid phosphate, not medicinal	lb. 2,361,776	204,983	2,069,695	194,499
Hydrogen peroxides, solutions of	" 1,404,925	314,829	2,140,942	447,786
Magnesium carbonate, basic or otherwise, excepting crude rock; and magnesium carbonate, for use in the com- pounding or manufacture of rubber products	" 797,879	58,823	957,746	70,520
Magnesium salts or compounds, n.o.p.	" 10,553,814	267,002	14,511,238	438,746
Magnesium sulphate, or Epsom salts	" 4,752,058	69,009	5,228,085	69,517
Mercury salts	—	11,258	—	1,819
Phosphorus and compounds thereof, n.o.p.	lb. 126,226	47,611	229,607	36,596
Radium	—	850,256	—	301,597
Molybdenum oxide	lb. 658,060	545,518	955,308	705,400
Barium peroxide	" 4,900	1,117	—	—
Total inorganic chemicals, n.o.p.	—	39,599,607	—	40,418,716

TABLE 15. Exports of Acids and Inorganic Chemicals, 1955 and 1956

Commodity	1955		1956	
	Quantity	Value	Quantity	Value
		\$		\$
Acid, sulphuric	cwt. 591,558	554,109	473,201	446,360
Acids, n.o.p.	" 345,603	1,318,768	407,513	1,734,301
Total acids	-	1,872,877	-	2,180,661
Ammonium sulphate	cwt. -	10,978,475	-	12,072,905
Ammonium compounds, n.o.p.	" 6,327	26,723	1,596	9,483
Arsenic	" 9,406	40,794	11,681	50,482
Calcium compounds	cwt. 703,362	2,805,619	501,075	2,025,369
Lye	-	788	-	1,775
Baking powder	cwt. 21	369	15	227
Soda and sodium compounds, n.o.p.	" 1,513,908	7,023,374	1,213,471	5,891,569
Cobalt oxide and cobalt salts	lb. 1,640,282	2,894,384	1,289,145	2,315,141
Chlorine, liquid, or chlorine gas	cwt. 208,937	492,585	429,536	1,234,485
Caustic soda	" 1,630	4,417	141	828
Total other chemicals	-	24,267,528	-	23,602,264

TABLE 16. Fuel and Electricity Used¹ in the Acids, Alkalies and Salts Industry, 1956

Kind	Quantity	Cost at works
		\$
Bituminous coal:		
Canadian	ton 30,500	357,119
Imported	ton 298,079	2,777,678
Anthracite coal	ton 3,787	61,078
Coke	ton 357	7,565
Gasoline	Imp. gal. 343,691	119,914
Kerosene	Imp. gal. 5,659	1,257
Fuel oil	Imp. gal. 9,366,571	1,006,354
Gas:		
Liquefied petroleum gases	Imp. gal. 36,815	10,384
Other manufactured gas	M cu.ft. 380,373	202,026
Natural	M cu.ft. 7,039,740	868,187
Other fuel	-	394,954
Electricity purchased	k.w.h. 2,688,415,436	11,387,802
Total	-	17,194,318
Electricity generated for own use	k.w.h. 116,694,076	-

1. Last collected in 1953.

List of Firms in the Acids, Alkalies and Salts Industry, 1956

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

List of Firms in the Acids, Alkalies and Salts Industry, 1956 - 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	Perchloroethylene; trichloroethylene; chlorine (liquid); anhydrous hydrogen chloride; sodium hydroxide (caustic soda); hydrogen peroxide (liquid); chloroform, hydrogen gas; calcium hypochlorite.
Carbide Chemicals Company, Div. of Union Carbide Canada Ltd. Montreal East	Ethylene glycol, diethylene glycol, anti-freeze; polyethylene resin (compounded only)
Defence Industries Limited..... Shawinigan Falls	Hexachlorethane.
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 pyrophosphate; 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 Varenes	Yellow phosphorus, ferrophosphorus.
The Nichols Chemical Co. Ltd. Valleyfield	Sulphuric acid; aluminum sulphate; pyrites cinder.
Shawinigan Chemicals Ltd..... Shawinigan Falls	Monochloroacetic acid; acetaldehyde; acetic anhydride; acetylene black; acetylene gas; acetic acid; butyl acetate; butyl alcohol; calcium carbide; di-butyl 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; isopropyl ether.
Standard Chemical Company Limited..... Beauharnois	Chlorine (liquid); sodium hydroxide (caustic soda); javelle concentrate.
St. Maurice Chemicals Limited..... Varenes	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.
Dow Chemical of Canada Ltd. Sarnia	Ethylene glycol; diethylene glycol; triethylene glycol; ethylene dichloride; chlorine (liquid); sodium hydroxide (caustic soda); carbon tetrachloride; trichloroethylene; perchloroethylene; hydrochloric (muriatic) acid; ammonia, anhydrous, 100%; ethylene oxide; sodium carbonate.
Dupont Co. of Canada Ltd. Maitland	Adipic acid; hexamethylenediamine; adiponitrile.
Dupont Co. of Canada Ltd..... Maitland	Anhydrous hydrogen chloride; chlorofluoromethanes (Freons).

List of Firms in the Acids, Alkalies and Salts Industry, 1956 - Concluded

Name and location of plant	Principal chemicals made for sale
Ontario - Concluded:	
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	Cyclohexanol phthalate; methylcyclohexanol phthalate; methylcyclohexanol; cyclohexanol.
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.
North American Cyanamid Ltd..... Niagara Falls	Calcium cyanamide; sodium cyanide; lime, unhydrated; calcium carbide; amino triazole
North American Cyanamid Ltd., (Welland works) Niagara Falls	Ammonia (anhydrous); dicyandiamide; guanidine nitrate; sulphuric acid; urea-formaldehyde adhesives; nitric acid; picrite; thiourea.
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; toluene; xylene; aromatic naphthas
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 amyl acetate.
Western Chemicals Limited..... Duvernay	Chlorine (liquid); sodium hydroxide (caustic soda); hydrochloric acid.
Inland Chemicals Ltd. Fort Saskatchewan	Sulphuric acid
British Columbia:	
Consolidated Mining and Smelting Co. of Canada, Ltd. Tadanac	Hydrofluosilicic acid; sulphuric acid; ammonia, aqua
The Nichols Chemical Co. Ltd. Barnet	Sulphuric acid; pyrites cinder
Northwest Territories:	
Eldorado Mining & Refining Ltd. Port Radium	Sulphuric acid

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