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CANADA

THE ACIDS, ALKALIES AND SALTS INDUSTRY 1952



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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 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, by Provinces
 - Section 1. Principal Statistics of Major Industrial Groups and Leading Industries, 50¢
 - Section 2. Principal Statistics of Individual Industries, 75¢
 - Section 3. Principal Statistics by Regional Distribution, 75¢
- III - Foods and Beverages
- IV - Tobacco and Tobacco Products
- V - Rubber Products
- VI - Leather Products
- VII - Textiles
- VIII - Wood and Paper Products
- IX - Printing Trades
- X - Iron and Steel Products
- XI - Transportation Equipment
- XII - Non-ferrous Metal Products
- XIII - Electrical Apparatus and Supplies
- XIV - Non-metallic Mineral Products
- XV - Products of Petroleum and Coal
- XVI - Chemicals and Allied Products
- XVII - Miscellaneous Manufactures

The present report belongs in Part XVI, 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

1952

Twenty-nine plants in Canada, classified under the Acids, Alkalies and Salts Industry, were engaged chiefly in the production of chemicals in 1952. Factory shipments reported by this group were valued at \$114,187,526, a decline of 3.1 per cent from the total for the previous year. Fifteen of these plants were located in Ontario, 10 in Quebec, 2 in British Columbia, 1 in Nova Scotia and 1 in the Northwest Territories. These concerns gave employment to 7,591 people who were paid \$27,208,422 in salaries and wages. Materials used in manufacturing processes cost \$37,777,278 and expenditures for fuel and electricity amounted to \$11,167,181.

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 declined to 816,270 tons (100% acid) in 1952 from the 820,867 tons in 1951. Ten plants were operated by seven companies, as follows: The Consolidated Mining and Smelting Company of Canada, Limited, at Trail, British

Columbia; Canadian Industries Limited, at Copper Cliff and Hamilton in 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; and Eldorado Mining and Refining Ltd., at Port Radium, Northwest Territories. The first two of these works, at Trail and Copper Cliff, operated entirely on sulphur-bearing smelter gases.

Production of chlorine, either as a gas or liquid, totalled 169,000 tons in 1952, while the output of caustic soda amounted to 190,000 tons. In 1952 there were ten caustic soda-chlorine plants in Canada. The Canadian Industries Limited had works at Windsor and Cornwall in Ontario, and at Shawinigan Falls, Quebec. Other producers included the Dow Chemical of Canada Limited, Sarnia, Ontario; the Dominion Alkali & Chemical Company Limited, Beauharnois, Quebec; the Aluminum Company of Canada Limited, Arvida, Quebec; the Canadian International Paper Company, Temiskaming, Ontario; the Howard Smith Paper Mills Limited, Cornwall, Ontario; the KVP Company Limited, Espanola, Ontario; and the Marathon Paper Mills of Canada Limited, Marathon, Ontario. The last four concerns are paper mills which make these chemicals for their own use.

Note: Data presented in this bulletin for 1952 under the heading of "Production" actually represent "Factory Shipments" and therefore, are not exactly comparable with previous years.

TABLE 1. Principal Statistics of the Acids, Alkalies and Salts Industry, 1948-1952

Year	Number of plants	Number of employees	Salaries and wages	Cost of fuel and electricity at works	Cost of materials at works	Gross selling value of products at works
			\$	\$	\$	\$
1948	29	5,889	15,348,441	7,752,690	22,551,999	70,600,246
1949	28	5,861	16,504,908	7,355,353	27,392,521	74,411,796
1950	28	6,020	18,039,492	8,639,420	30,327,614	87,494,365
1951	29	7,371	24,579,398	11,127,663	39,238,794	117,822,758
1952	29	7,591	27,208,422	11,167,181	37,777,278	114,187,526 ¹
Per cent change, 1952 from 1951	—	+ 3.0	+ 10.7	+ 0.4	- 3.7	- 3.1

1. The 1952 total represents the value of factory shipments. The inventory value of finished products at plant at end of 1951 amounted to \$4,752,000 and at end of 1952 to \$5,282,000.

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. Principal Statistics, by Provinces, 1951 and 1952

Province	Number of plants	Number of employees	Salaries and wages	Cost of fuel and electricity at works	Cost of materials at works	Gross selling value of products at works
			\$	\$	\$	\$
1951						
Nova Scotia	1	3,269	11,165,358	4,238,035	17,987,898	49,257,353
Quebec	10					
Ontario	16	4,102	13,414,040	6,889,628	21,250,896	68,565,405
British Columbia.....	2					
Canada	29	7,371	24,579,398	11,127,663	39,238,794	117,822,758
1952						
Nova Scotia	1	3,325	11,871,818	3,673,734	16,218,978	43,983,372
Quebec	10					
Ontario	15	4,266	15,336,604	7,493,447	21,558,300	70,204,154
British Columbia.....	2					
North West Territories.....	1					
Canada	29	7,591	27,208,422	11,167,181	37,777,278	114,187,526

TABLE 3. Materials Used in the Acids, Alkalies and Salts Industry, 1951 and 1952

Material	Unit of measure	1951		1952	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Acetone	lb.	644,468	73,364	704,974	75,363
Acetylene	M cu.ft.	43,331	305,588	47,533	395,163
Acid:					
Acetic, 99½%.....	lb.	51,183	5,816	13,126	1,750
Hydrochloric (muriatic)	"	4,131,694	78,468	2,484,294	53,285
Nitric, 42° Be	"	3,135,524	159,836	2,015,014	93,888
Sulphuric, 100%.....	"	16,147,376	224,620	13,685,091	213,697
Ammonia liquor	lb. NH ₃	1,520,749	101,735	1,267,976	83,484
Ammonia, anhydrous	lb.	5,149,239	246,657	2,119,346	109,913
Benzol	"	2,985,970	159,694	1,876,067	96,555
Calcium chloride	"	465,414	10,302	342,256	8,196
Chlorine, liquid	"	28,672,698	631,907	16,343,662	492,000
Coal (except for fuel):					
Anthracite	ton	25,511	385,284	37,969	559,318
Bituminous.....	"	150	2,173	4,450	64,051
Coke (except for fuel):					
Petroleum.....	ton	27,076	552,806	13,585	252,855
Other	"	185,576	3,440,383	180,130	3,388,586
Electrodes (purchased)	—	—	1,201,740	—	1,126,198
Fluorspar	ton	33,266	904,734	45,399	1,466,067
Graphite	lb.	663,236	143,708	617,644	153,478
Limestone	ton	1,014,432	1,918,524	975,210	1,795,558
Lime, hydrated	"	51,578	101,504	27,558	108,003
Lime, quick	"	24,859	345,936	17,197	250,413
Mercury.....	lb.	104,483	119,333	103,385	137,521
Pyrites	ton	70,859	551,800	65,291	583,472
Quartz, quartzite and silica sand.....	"	44,494	268,573	35,317	198,399
Sodium carbonate (soda ash).....	lb.	85,675,704	1,543,823	74,274,905	1,457,436
Sodium chloride, dry and brine (salt content).....	ton	648,356	2,604,175	631,272	2,592,428
Sodium bichromate	lb.	153,849	15,992	123,109	16,169
Sodium hydroxide (caustic soda)	"	7,800,537	305,822	7,464,041	280,562
Sodium nitrate	"	868,761	30,573	556,792	19,353
Sodium silicate (water glass)	"	12,075,011	253,333	1,521,635	33,731
Sodium sulphide	"	215,098	10,999	197,157	12,055
Sulphur (brimstone).....	ton	97,172	2,804,514	88,332	2,605,571
Zinc oxide	lb.	1	1	156,533	29,190
Containers of all kinds and packing materials....	—	—	2,863,871	—	2,625,609
Steel sheets for making containers	ton	5,027	807,077	4,018	793,465
Lumber	M bd. ft.	262	18,948	227	16,033
All other materials and supplies	—	—	16,045,182	—	15,588,443
Total	—	—	39,238,794	—	37,777,278

1. Not available separately in 1951.

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, methyl alcohol comes under wood distillation; 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 1952 was around \$230,050,000 compared with \$238,925,000 in 1951.

TABLE 4. Total Production of Chemicals, 1951 and 1952

	Selling value at works	
	1951	1952
	\$	\$
<i>Acids</i> , including acetic, muriatic, nitric, sulphuric, phosphoric, stearic, etc.	15,550,000	12,926,000
<i>Calcium compounds</i> , including carbide, chloride, phosphide, cyanamide, cyanide, acid phosphate, grey acetate, arsenate, chloride of lime, etc.	14,462,000	16,640,000
<i>Sodium compounds</i> , including hydroxide, phosphate, cyanide, silicate, hypochlorite, bisulphite, salt cake, Glauber's salt, chlorate, acid pyrophosphate, soda ash, sal soda, bisulphate, etc., (pharmaceutical salts included elsewhere)	32,356,000	29,795,000
<i>Organic chemicals</i> , 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).....	55,759,000	51,896,000
<i>Compressed and liquefied gases, etc.</i> , including acetylene, carbon dioxide, oxygen, nitrous oxide, liquid sulphur dioxide, liquid chlorine, anhydrous and aqua ammonia, liquefied petroleum gases, etc.	25,003,000	28,896,000
<i>Fertilizer chemicals</i> , including ammonium sulphate, ammonium nitrate (fertilizer grade), ammonium phosphate, and superphosphate	44,933,000	47,993,000
<i>Synthetic resins</i> , including casein type, vinyls, polystyrene, phenol-formaldehyde, urea-formaldehyde, alkyds, sodium carboxymethylcellulose, etc.	23,097,000	19,100,000
<i>Other chemicals</i> , 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.	27,765,000	22,804,000
Total	238,925,000	230,050,000

TABLE 5. Production, Imports, Exports and Apparent Consumption of Sulphuric Acid, 1925-1952

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
1946.....	593,577	166	3,296	590,447
1947.....	668,802	116	29,909	639,009
1948.....	679,448	59	29,478	650,029
1949.....	707,717	24	17,336	690,405
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

1. No allowance made for changes in inventories.

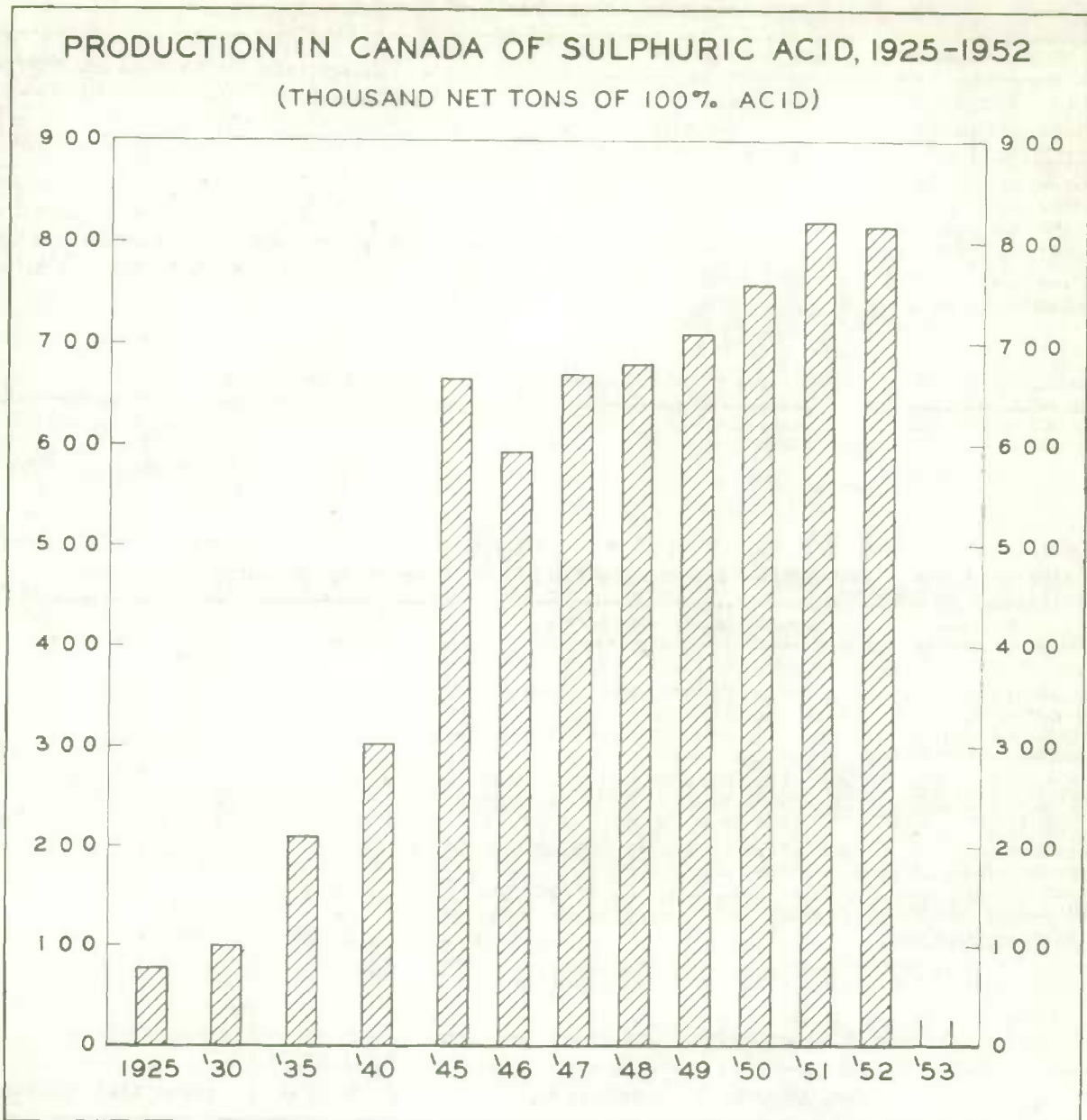


TABLE 6. Production, Imports and Exports of Chlorine and Caustic Soda, 1949-1952

Year	Chlorine	Caustic soda
	tons	
(a) Production:		
1949	96,000	111,000
1950	131,000	148,000
1951	155,000	180,000
1952	169,000	190,000
(b) Imports:		
1949	10,363	21,724
1950	5,498	27,464
1951	12,916	45,069
1952	15,800	54,600
(c) Exports¹:		
1952	14,200	6,600

1. Not available separately prior to 1952.

TABLE 7. Consumption of Sulphuric Acid, by Industries, 1950-1952

Industry	1950	1951	1952
	Short tons of 100% acid		
Fertilizers	503,900	510,100	510,600
Heavy chemicals	60,000	84,500	103,300
Explosives	25,300	31,900	31,300
Non-ferrous metal smelting and refining	12,900 ¹	12,900 ¹	12,900 ¹
Textiles	22,100	24,100	28,000
Coke and gas	34,900	32,000	33,700
Petroleum refining	15,700	12,700	9,500
Leather tanning	2,000	1,700	1,900
Iron and steel	26,100	30,700	29,400
Electrical apparatus	5,700	5,300	5,700
Plastics	7,800	8,900	8,000
Soaps	6,400	7,700	8,700
Adhesives	700	700	500
Miscellaneous chemicals	2,200	2,300	2,100
Sugar refining	300	100	400
Pulp and paper	2,400	3,400	4,000
Vegetable oils	100	100	100
Total accounted for	728,500	769,100	790,100

1. Estimated.

TABLE 8. Available Data on Consumption of Chlorine, by Industries, 1950-1952

Industry	1950	1951	1952
	Tons		
Pulp and paper	73,900	88,100	89,000
Heavy chemicals	42,600	56,700	60,300
Soaps	3,300	3,400	3,200
Municipal waterworks	1,400	1,400	1,400 ¹
Mining	1,100 ¹	1,100 ¹	1,100 ¹
Starch and glucose	120	150	200
Dyeing and finishing of textiles	30	30	30
Miscellaneous chemicals	40	50	50
Fertilizers	90	100	100
Synthetic textiles	50	50	430
Primary plastics	120	140	130
Medicinal and pharmaceutical preparations	—	—	120
Total accounted for	122,750	151,220	156,060

1. Estimated.

TABLE 9. Available Data on Consumption of Caustic Soda, by Industries, 1950-1952

Industry	1950	1951	1952
	Tons		
Pulp and paper	60,800	75,700	80,900
Soaps, washing compounds and cleaning preparations	21,000	19,500	19,100
Heavy chemicals	37,800	34,000	48,000
Synthetic textiles and silk industry	14,350	15,500	16,500
Petroleum refining	5,000	5,200	6,600
Primary plastics	5,500	6,100	6,000
Miscellaneous chemicals	2,190	2,700	2,500
Miscellaneous foods	1,270	1,500	1,650
Mining	1,300 ¹	1,300 ¹	1,300 ¹
Coke and gas	650	800	800
Medicinals and pharmaceuticals	740	1,300	500
Non-ferrous metal refining	260 ¹	260 ¹	260 ¹
Starch and glucose	280	320	450
Dyeing and finishing of textiles	40	60	80
Toilet preparations	240	210	240
Compressed gases	190	210	160
Fertilizers	100	150	140
Fruit and vegetable preparations	100	90	—
Sugar refining	70	50	50
Miscellaneous non-metallics	40	—	—
Adhesives	550	530	520
Total accounted for	152,470	165,480	185,750

1. Estimated.

TABLE 10. Imports of Acids and Certain Inorganic Chemicals, 1951 and 1952

Commodity	1951		1952	
	Quantity	Value	Quantity	Value
		\$		\$
ACIDS				
Inorganic acids:				
Acid, boracic in packages of not less than 25 pounds..... lb.	5,023,193	269,420	3,497,829	181,397
Acid, hydrofluosilicic	151,755	20,394	101,753	8,989
Acid, muriatic	1,764,724	23,455	975,227	14,711
Acid, nitric	486,066	22,077	225,732	13,449
Acid, phosphoric.....	615,500	37,824	691,176	41,650
Acid, sulphuric.....	2,323,218	26,180	170,920	2,764
Acid, arsenic.....	1,664,855	82,427	670,303	29,919
Acid, chromic	1,104,238	305,763	604,135	159,609
Organic acids:				
Acid, salicylic and acetysalicylic.....	637,283	356,449	778,462	401,526
Acid, lactic	394,571	98,381	444,015	96,510
Acid, nicotinic	7,045	27,076	24,806	81,151
Acid, oleic, or red oil.....	491,601	92,062	497,717	73,878
Acid, acetic and pyroligneous	1,999	2,617	1,202	1,250
Acid, citric.....	3,790,256	1,009,262	1,555,416	401,868
Acid, cresylic.....	2,049,339	225,604	501,910	60,770
Xanthates and sulpho-thiophosphoric(dithiophosphoric com- pounds, for concentrating ores, metals or minerals).....	6,102,523	1,579,395	5,141,522	1,262,941
Acid, oxalic.....	881,728	144,075	643,812	88,766
Acid, stearic	1,189,256	256,642	768,662	96,284
Acid, tannic.....	476,427	87,778	317,655	59,008
Tartaric acid crystals or powder	1,190,799	479,237	544,930	176,136
Acid, ascorbic.....	18,590	168,168	24,767	221,846
Acid, formic.....	625,286	106,059	613,919	77,696
Acid, carbolic, or phenol.....	8,504,492	1,606,654	9,682,468	1,855,967
Acids, other, n.o.p.	3,296,527	862,916	3,377,530	700,586
Total acids	-	7,889,915	-	6,108,671
INORGANIC CHEMICALS, N.O.P.				
Alum, in bulk, ground or unground, but not calcined..... cwt.	13,140	56,281	15,247	74,223
Chloralum or chloride of aluminum.....	12,869	170,842	7,604	91,728
Sulphate of iron (copperas)	21,942	30,151	18,393	32,338
Sulphate of alumina or alum cake.....	165,796	278,655	192,211	337,074
Ammonia, nitrate of	2,864,644	133,915	2,802,607	121,899
Sal ammoniac.....	2,227,248	123,319	440,742	25,275
Sal ammoniac skimmings	299,970	22,805	145,125	15,635
Ammonia, anhydrous.....	2,719,484	114,586	17,067,945	669,112
Ammonia compounds, n.o.p.	7,656,835	252,648	5,770,116	210,521
Antimony, arsenic, copper, tin and zinc compounds:				
Antimony salts, viz., tartar emetic, chloride and lactate (an- timonine)	29,590	16,749	29,424	17,033
Arsenious oxide and arsenic sulphide.....	35,231	7,773	19,249	3,521
Copper, sub-acetate of, or verdigris, dry, and precipitate of	800	371	4,183,782	602,306
Copper, sulphate of	74,731	16,291	3,073,265	293,331
Tin, bichloride of, and tin crystals	9,599	11,582	2,879	3,068
Zinc, chloride of.....	409,164	51,132	190,726	22,171
Zinc, sulphate of.....	2,354,936	189,449	2,008,880	143,394
Bismuth and lead compounds:				
Bismuth salts	-	24,371	-	26,793
Lead, acetate of, not ground..... lb.	244,647	51,478	96,718	18,581
Lead, arsenate of,	4,480	961	73,480	15,049
Lead, nitrate of, not ground.....	132,126	30,180	128,736	23,122
Compounds of tetraethyl lead	22,608,868	8,996,288	23,737,931	9,270,084
Bromine, chlorine and iodine compounds:				
Bromine	26,302	10,358	7,406	3,711
Chlorine, liquid, or chlorine gas	25,832,522	729,081	31,569,473	849,903
Iodine, crude.....	111,252	198,723	66,586	115,777
Iodized mineral salts, for use in the feeding of animals	-	30,927	-	16,267

TABLE 10. Imports of Acids and Certain Inorganic Chemicals, 1951 and 1952 - Concluded

Commodity	1951		1952	
	Quantity	Value	Quantity	Value
		\$		\$
Calcium compounds:				
Calcium arsenate	lb. 59,080	4,134	134,000	10,612
Calcium chloride	cwt. 273,281	324,995	255,478	276,259
Chloride of lime	cwt. 29,074	131,247	31,761	144,782
Calcium molybdate, vanadium oxide and tungsten oxide for the manufacture of steel	lb. 62,364	50,230	168,372	270,444
Calcium compounds, n.o.p.	" 3,837,583	425,282	4,701,773	500,532
Potash and potassium compounds, n.o.p.:				
Argols	" 100	45	—	—
Cream of tartar in crystals	" 216,712	66,194	253,416	67,502
Potash and pearl ash	" 312,352	26,550	178,295	14,930
Potash, bicarbonate of	" 22,080	3,683	25,450	3,745
Potash, bichromate of, crude	" 471,695	69,420	381,524	54,767
Potash, caustic	" 4,855,833	289,095	3,798,029	211,538
Potash, chlorate of, not further prepared than ground	" 159,999	28,299	70,199	9,883
Potash, red and yellow, prussiate of	" 35,975	17,807	27,490	10,047
Potash, nitrate of, or saltpetre	" 1,419,702	114,886	784,337	59,613
Potash compounds, n.o.p.	" 2,010,156	412,484	2,345,689	351,214
Soda and sodium compounds, n.o.p.:				
Borax, in packages of not less than 25 pounds, and fused borax known as borax-glass	lb. 18,216,181	569,420	16,672,850	486,749
Glauber's salt	" 6,467,309	102,930	9,154,487	122,294
Soda, arseniate, binarsenate and stannate of	" 148,609	69,278	73,088	27,138
Soda ash or barilla	" 120,186,831	1,577,142	71,359,896	900,968
Soda, bicarbonate of	" 16,104,420	299,793	15,089,521	276,106
Soda, bichromate of	" 7,028,440	778,799	3,708,149	392,092
Soda, bisulphate of, or nitre cake	" 1,763,946	48,332	2,245,670	55,336
Soda, bisulphite of	" 458,446	27,662	296,562	14,321
Soda, caustic, in packages	" 3,224,383	148,336	4,976,521	196,936
Soda, caustic, in solution	" 86,913,954	1,176,494	104,133,147	1,303,698
Soda, chlorate of	" 809	1,081	445	403
Sodium cyanide	" 7,745,373	945,685	7,106,675	884,613
Sodium glutamate	" 695,359	1,090,280	740,528	1,109,483
Soda, hyposulphite of	" 1,155,348	73,307	669,984	34,141
Soda, nitrite of	" 1,839,554	114,881	592,227	26,194
Soda, peroxide of	" 765,376	157,306	710,902	128,575
Soda phosphate, di-sodium	" 401,989	32,894	32,374	3,066
Soda phosphate, tri-sodium	" 1,214,500	60,205	630,755	31,152
Soda, phosphate, n.o.p.	" 3,927,215	381,227	5,853,518	479,778
Soda, prussiate of	" 384,685	53,721	589,432	74,884
Soda, sal	" 50,000	1,042	67,050	1,993
Soda, silicate of, in crystals or in water solution	" 11,774,352	295,598	3,693,937	139,926
Soda, sulphate of, crude, or salt cake	" 38,864,668	340,740	39,151,625	313,739
Soda, sulphide of	" 3,018,879	112,227	2,071,063	85,988
Soda, sulphite of	" 1,614,248	78,847	1,056,353	41,423
Soda, benzoate of	" 116,400	35,786	137,710	38,558
Soda, bromide of	" 45,560	18,487	38,280	12,634
Soda, citrate of	" 8,250	2,378	29,993	7,005
Soda, fluoride of	" 393,241	45,638	177,596	20,362
Soda, antimonate of	" 275,025	116,901	154,000	48,929
Sodium compounds, n.o.p.	" 18,100,214	1,622,754	14,842,052	1,210,643
Other inorganic chemicals:				
Acid phosphate, not medicinal	" 2,163,262	195,389	1,964,958	160,992
Hydrogen peroxides, solutions of	" 564,456	128,269	439,175	98,099
Magnesium carbonate, basic or otherwise, excepting crude rock; and magnesium carbonate, for use in the com- pounding or manufacture of rubber products	" 2,354,248	135,565	586,093	42,995
Magnesium salts or compounds, n.o.p.	" 1,909,968	231,405	2,688,371	281,598
Magnesium sulphate, or Epsom salts	" 6,130,377	95,005	4,371,450	76,419
Mercury salts	" —	12,448	—	27,043
Phosphorus and compounds thereof, n.o.p.	lb. 62,718	60,763	22,678	17,929
Radium	" —	369,864	—	61,896
Molybdenum oxide	lb. 566,334	553,222	520,104	537,356
Total inorganic chemicals, n.o.p.	—	25,674,368	—	24,741,238

TABLE 11. Exports of Acids and Inorganic Chemicals, 1951 and 1952

Commodity	1951		1952		
	Quantity	Value	Quantity	Value	
		\$		\$	
Acid, sulphuric	cwt.	1, 140, 004	920, 406	662, 699	6 10, 032
Acids, n.o.p.	"	731, 416	4, 902, 597	370, 493	2, 389, 392
Total acids	-	-	5, 823, 003	-	2, 999, 424
Ammonium sulphate	cwt.	2, 914, 472	6, 456, 603	3, 993, 629	8, 717, 210
Ammonium compounds, n.o.p.	"	17, 383	45, 051	5, 580	12, 810
Arsenic	"	48, 524	199, 460	35, 716	147, 594
Acetate of lime	"	1, 620	4, 161	3, 030	6, 270
Calcium compounds	"	791, 692	2, 757, 874	509, 021	1, 978, 011
Lye	-	-	620	-	4, 867
Baking powder	cwt.	164	2, 397	28	445
Soda and sodium compounds	"	3, 269, 578	9, 680, 198	2, 085, 796	7, 476, 580
Cobalt oxide and cobalt salts	lb.	659, 486	1, 172, 343	785, 976	1, 636, 193
Chlorine, liquid, or chlorine gas	cwt.	1	1	283, 246	610, 434
Caustic soda	cwt.	1	1	131, 023	520, 851
Total other chemicals	-	-	20, 318, 707	-	21, 111, 263

1. Not available separately in 1951.

TABLE 12. Employees and Earnings, by Provinces, 1951 and 1952

Province	Number of employees					Earnings		Total earnings
	Administrative		Workmen		Total	Admin-istrative	Workmen	
	Male	Female	Male	Female				
						\$	\$	\$
1951								
Quebec	552	180	2, 499	27	3, 258	3, 195, 941	7, 899, 247	11, 095, 188
Ontario	879	260	2, 814	28	3, 981	3, 936, 758	9, 135, 101	13, 071, 859
Other provinces	4	1	127	-	132	17, 432	394, 919	412, 351
Canada	1, 435	441	5, 440	55	7, 371	7, 150, 131	17, 429, 267	24, 579, 398
1952								
Quebec	603	193	2, 493	25	3, 314	3, 670, 662	8, 121, 128	11, 791, 790
Ontario	944	283	2, 892	23	4, 142	4, 759, 446	10, 205, 531	14, 964, 977
Other provinces	5	1	129	-	135	24, 740	426, 915	451, 655
Canada	1, 552	477	5, 514	48	7, 591	8, 454, 848	18, 753, 574	27, 208, 422

TABLE 13. Capital and Repair Expenditures in the Acids, Alkalies and Salts Industry, 1948-1952

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						
1948	3,309	7,575	10,884	555	6,114	6,669	17,553
1949	3,269	3,342	6,611	519	6,291	6,810	13,421
1950	1,143	4,324	5,467	1,029	7,477	8,506	13,973
1951	2,448	9,050	11,498	1,222	9,871	11,093	22,591
1952 ¹	39,365	31,774	71,139	1,631	10,661	12,292	83,431

1. Preliminary.

List of Firms in the Acids, Alkalies and Salts Industry, 1952

Name and location of plant	Principal chemicals made
Dominion Iron & Steel, Ltd., Sydney, Nova Scotia	Sulphuric acid
Aluminum Company of Canada, Ltd., Arvida, Quebec	Sulphuric acid; aluminum sulphate (alum); aluminum fluoride; refined fluor-spar; liquid chlorine; recovered cryolite; sodium hydroxide (caustic soda); sodium fluoride; aluminum chloride.
Canadian Industries Limited, Shawinigan Falls, Quebec	Perchloroethylene; trichloroethylene; chlorine (liquid and gas); anhydrous hydrogen chloride; sodium hydroxide (caustic soda); hydrogen peroxide (liquid); chloroform.
Defence Industries (1951) Limited, Shawinigan Falls, Quebec	Hexachlorethane.
Dominion Alkali and Chemical Co. of Canada, Beauharnois, Quebec	Chlorine (liquid); sodium hydroxide (caustic soda).
Electric Reduction Co. of Canada, Buckingham, Quebec	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.
Monsanto (Canada) Limited, Ville La Salle, Quebec	Anhydrous caffeine; sodium benzoate; phenacetin; di-iso-octyl phthalate; dioctyl phthalate; simicides.
The Nichols Chemical Co. Ltd., Valleyfield, Quebec	Sulphuric acid; aluminum sulphate; pyrites cinder; insecticides.
Shawinigan Chemicals Ltd., Shawinigan Falls, Quebec	Monochloroacetic acid; acetaldehyde; acetic anhydride; acetone; acetylene black; acetylene gas; acetic acid; butyl acetate; butyl alcohol; calcium carbide; dibutyl phthalate; ethyl acetate; pentasol acetate; vinyl acetate; vinyl acetate resins; cerium; croton aldehyde; paraldehyde; crotonic acid; polyvinyl alcohol; butyraldehyde, methyl acetone.
Durham Industries (Canada) Limited, Montreal, Quebec	Zinc oxide.
Zinc Oxide Co. of Canada, Ltd., Montreal, Quebec	Zinc oxide.
Brunner, Mond Canada, Ltd., Amherstburg, Ontario	Calcium chloride; sodium carbonate (soda ash).



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List of Firms in the Acids, Alkalies and Salts Industry, 1952 - Concluded

Name and location of plant	Principal chemicals made
Canadian Industries Limited, Hamilton, Ontario	Hydrochloric (muriatic) acid; sulphuric acid; ammonium chloride; sodium silicate; sodium sulphate (salt cake); sodium sulphite (anhydrous); sodium metabisulphite; sodium thiosulphite; zinc chloride (50% solution); soldering and galvanizing fluxes.
Canadian Industries Limited, Cornwall, Ontario	Hydrochloric (muriatic) acid; chlorine (liquid); sodium hydroxide (caustic soda); sodium hypochlorite.
Canadian Industries Limited, Copper Cliff, Ontario	Sulphuric acid; liquid sulphurdioxide.
Canadian Industries Limited, Windsor, Ontario	Chlorine (liquid); sodium hydroxide (caustic soda); ferric chloride; ammonia, anhydrous, 100%; ammonia, aqua, 26° Be.
Church & Dwight Ltd., Amherstburg, Ontario	Sodium carbonate (sal soda).
Cornwall Chemicals Limited, Cornwall, Ontario	Carbon bisulphide; sodium hydrosulphide.
Dow Chemical of Canada Ltd., Sarnia, Ontario	Ethylene glycol; diethylene glycol; triethylene glycol; ethylene dichloride; chlorine (liquid); sodium hydroxide (caustic soda); ethylene oxide; carbon tetrachloride; trichlorethylene; perchlorethylene; hydrochloric (muriatic) acid; ammonia, anhydrous, 100%; ammonia, aqua, 26° Be.
W. C. Hardesty Co. of Canada Ltd., New Toronto, Ontario	Hydrogenated stearic acid; vegetable fatty acids; animal fatty acids; glycerine; oleic acid.
Naugatuck Chemicals, Division of Dominion Rubber Co. Ltd., Elmira, Ontario	Aniline; rubber accelerators and specialties; D.D.T.; 2, 4-D; parathion, 100%; sodium sulphamethazine; nitrobenzol; ammonia, anhydrous, 100%.
National Silicates Ltd., New Toronto, Ontario	Sodium silicate; sodium metasilicate.
The Nichols Chemical Co. Ltd., Sulphide, Ontario	Hydrochloric (muriatic) acid; nitric acid; sulphuric acid; ammonia (aqua); pyrites cinder; aluminum chloride.
North American Cyanamid Ltd., Niagara Falls, Ontario	Calcium cyanamide; sodium cyanide; sodium silicate; lime unhydrated.
Nuodex Products of Canada, Ltd., Leaside, Ontario	Lead naphthenate; cobalt naphthenate; manganese naphthenate; zinc naphthenate; copper naphthenate; calcium naphthenate; iron naphthenate; lead octoate; cobalt octoate; calcium octoate.
North American Cyanamid Ltd., (Welland works) Niagara Falls, Ontario	Ammonia (anhydrous); dicyandiamide; guanidine nitrate; sulphuric acid; urea-formaldehyde adhesives; nitric acid.
Consolidated Mining and Smelting Co. of Canada, Ltd., Tadanac, British Columbia	Hydrofluosilicic acid; sulphuric acid.
The Nichols Chemical Co. Ltd., Barnet, British Columbia	Sulphuric acid; pyrites cinder.
Eldorado Mining & Refining Ltd., Port Radium, Northwest Territories	Sulphuric acid.