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CANADA



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, \$1.50
- II - The Manufacturing Industries of Canada, (7 sections, as follows:)

 - Section A. Summary for Canada, 25¢
 - Section B. Atlantic Provinces, 25¢
 - Section C. Quebec, 25¢
 - Section D. Ontario, 25¢
 - Section E. Prairie Provinces, 25¢
 - 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 - 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

1953

Forty-one plants in Canada, classified under the Acids, Alkalies and Salts Industry, were engaged chiefly in the production of chemicals in 1953. Factory shipments reported by this group were valued at \$127,299,437, an increase of 11.5 per cent over the total for the previous year. Twenty of these plants were located in Ontario, 16 in Quebec, 2 in British Columbia, 1 in Nova Scotia, 1 in Alberta and 1 in the Northwest Territories. These concerns gave employment to 8,278 people who were paid \$31,174,479 in salaries and wages. Materials used in manufacturing processes cost \$43,083,175 and expenditures for fuel and electricity amounted to \$13,264,151.

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 increased to 822,608 tons (100% acid) in 1953 from the 816,270 tons in 1952. 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 1953, while the output of caustic soda amounted to 192,000 tons. In 1953 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.

TABLE 1. Principal Statistics of the Acids, Alkalies and Salts Industry, 1949-1953

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
			\$	\$	\$	\$
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
1953	41	8,278	31,174,479	13,264,151	43,083,175	127,299,437 ¹
Per cent change, 1953 from 1952	—	+ 9.0	+ 14.6	+ 18.8	+ 14.0	+ 11.5

1. Factory shipments since 1952. The inventory value of finished products at plant at end of 1952 amounted to \$5,282,000 and at end of 1953 to \$6,752,000.

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, 1952 and 1953

Province	Number of plants	Number of employees	Salaries and wages	Cost of fuel and electricity at works	Cost of materials at works	Value of factory shipments
			\$	\$	\$	\$
1952						
Nova Scotia	1	3,325	11,871,818	3,673,734	16,218,978	43,983,372
Quebec	10					
Ontario	15					
British Columbia	2	4,266	15,336,604	7,493,447	21,558,300	70,204,154
Northwest Territories	1					
Canada	29	7,591	27,208,422	11,167,181	37,777,278	114,187,526
1953						
Nova Scotia	1	3,317	12,506,097	4,488,449	18,793,180	48,673,880
Quebec	16					
Ontario	20					
Alberta	1	459	1,490,790	252,604	1,638,483	3,733,401
British Columbia	2					
Northwest Territories	1					
Canada	41	8,278	31,174,479	13,264,151	43,083,175	127,299,437

TABLE 3. Materials Used in the Acids, Alkalies and Salts Industry, 1952 and 1953

Material	1952		1953		
	Quantity	Cost at works	Quantity	Cost at works	
		\$		\$	
Acetone	lb.	704,974	75,383	1,273,514	130,359
Acetylene	M cu. ft.	47,533	395,163	44,574	371,181
Acid:					
Acetic, 99½%	lb.	13,126	1,750	1,727,563	125,951
Hydrochloric (muriatic)	"	2,484,294	53,285	2,825,061	59,499
Nitric, 42° Be	"	2,015,014	93,888	2,635,623	123,870
Sulphuric, 100%	"	13,685,091	213,697	18,212,965	308,237
Alcohol:					
Butyl	lb.	53,263	8,240	381,501	47,922
Ethyl	Imp. gal.	302	365	305,826	144,449
Isopropyl	lb.	1,159	103	137,588	25,527
Methyl	lb.	71,658	6,711	6,581,350	282,301
Ammonia liquor	lb. NH ₃	1,267,976	83,484	1,189,156	78,184
Ammonia, anhydrous	lb.	2,119,346	109,913	4,045,237	212,423
Benzol	"	1,876,067	96,555	7,300,405	420,631
Calcium chloride	"	342,256	8,196	552,879	15,578
Chlorine, liquid	"	16,343,662	492,000	17,829,294	518,908
Coal (except for fuel):					
Anthracite	tons	37,969	559,318	38,394	566,695
Bituminous	"	4,450	64,051	—	—
Coke (except for fuel):					
Petroleum	tons	13,585	252,855	633	12,000
Other	"	180,130	3,388,586	174,341	3,416,363
Electrodes (purchased)	—	—	1,126,198	—	851,010
Fluorspar	tons	45,399	1,466,067	59,556	1,931,367
Graphite	lb.	617,644	153,478	635,134	152,939
Limestone	tons	975,210	1,795,558	971,337	1,831,228
Lime, hydrated	"	27,558	108,003	41,855	178,977
Lime, quick	"	17,197	250,413	10,512	165,585
Mercury	lb.	103,385	137,521	113,513	181,668
Pyrites	tons	65,291	583,472	77,997	731,215
Quartz, quartzite and silica sand	"	35,317	198,399	44,798	263,031
Sodium carbonate (soda ash)	lb.	74,274,905	1,457,436	86,722,387	1,759,978
Sodium chloride, dry and brine (salt content)....	tons	631,272	2,592,428	636,922	2,605,979
Sodium bichromate	lb.	123,109	16,169	239,888	31,657
Sodium hydroxide (caustic soda)	"	7,464,041	280,562	15,311,932	552,683
Sodium nitrate	"	556,792	19,353	540,354	18,728
Sodium silicate (water glass)	"	1,521,635	33,731	1,400	32
Sodium sulphide	"	197,157	12,055	153,680	8,638
Sulphur (brimstone)	tons	88,332	2,605,571	89,479	2,974,849
Zinc oxide	lb.	156,533	29,190	71,780	11,173
Containers of all kinds and packing materials	—	—	2,625,609	—	2,787,313
Steel sheets for making containers	tons	4,018	793,465	3,224	562,995
Lumber	M bd. ft.	227	16,033	327	46,476
All other materials and supplies	—	—	15,573,024	—	18,575,563
Total	—	—	37,777,278	—	43,083,175

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 phar-

maceutical industry; ammonium sulphate is produced in coke plants; cobalt and nickel salts are made in the non-ferrous metal refineries, and so on. The Bureau has made, therefore, a special compilation shown in Table 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 1953 was around \$255,582,000 compared with \$230,050,000 in 1952.

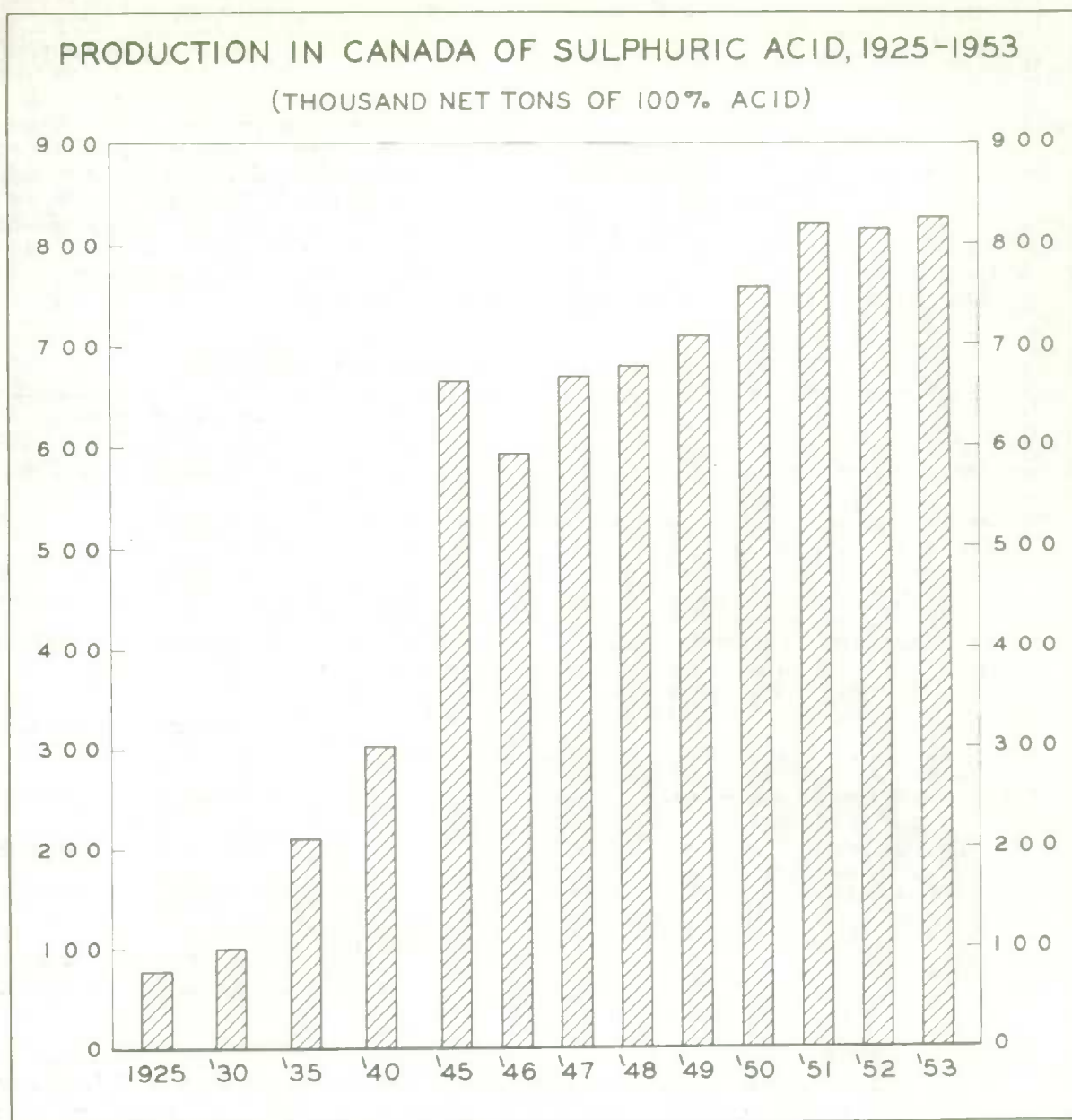
TABLE 4. Total Production of Chemicals, 1952 and 1953

	Selling value at works	
	1952	1953
	\$	\$
<i>Acids, including acetic, muriatic, nitric, sulphuric, phosphoric, stearic, etc.</i>	12,926,000	14,651,000
<i>Calcium compounds, including carbide, chloride, phosphide, cyanamide, cyanide, acid phosphate, grey acetate, arsenate, chloride of lime, etc.</i>	16,640,000	16,032,000
<i>Sodium compounds, 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)....</i>	29,795,000	30,814,000
<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>	51,896,000	61,539,000
<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>	28,896,000	31,130,000
<i>Fertilizer chemicals, including ammonium sulphate, ammonium nitrate (fertilizer grade), ammonium phosphate, and superphosphate</i>	47,993,000	50,682,000
<i>Synthetic resins, including casein type, vinyls, polystyrene, phenol-formaldehyde, urea-formaldehyde, alkyds, sodium carboxymethylcellulose, etc.</i>	19,100,000	26,251,000
<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>	22,804,000	24,483,000
Total	230,050,000	255,582,000

TABLE 5. Production, Imports, Exports and Apparent Consumption of Sulphuric Acid, 1925-1953

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
1953	822,608	70	47,889	774,789

1. No allowance made for changes in inventories.

**TABLE 6. Production, Imports and Exports of Chlorine and Caustic Soda, 1949-1953**

Year	Chlorine	Caustic soda ² (100% Na OH)
	Tons	
(a) Production:		
1949	96,000	111,000
1950	131,000	148,000
1951	155,000	180,000
1952	169,000	190,000
1953	169,000	192,000
(b) Imports:		
1949	10,363	11,700
1950	5,498	15,600
1951	12,916	23,300
1952	15,800	28,500
1953	20,400	43,700
(c) Exports ¹ :		
1952	14,200	6,600
1953	17,900	2,600

1. Not available separately prior to 1952.

2. Imports of caustic soda solution shown in Table 10 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, 1951-1953

Industry	1951	1952	1953
	Short tons of 100% acid		
Fertilizers	510,100	510,600	485,600
Heavy chemicals	84,500	103,300	124,400
Explosives	31,900	31,300	29,000
Non-ferrous metal smelting and refining	12,900 ¹	12,900 ¹	12,900 ¹
Textiles	24,100	28,000	30,200
Coke and gas	32,000	33,700	33,600
Petroleum refining	12,700	9,500	7,400
Leather tanning	1,700	1,900	2,100
Iron and steel	30,700	29,400	29,900
Electrical apparatus	5,300	5,700	5,700
Plastics	8,900	8,000	9,100
Soaps	7,700	8,700	10,400
Adhesives	700	500	300
Miscellaneous chemicals	2,300	2,100	3,000
Sugar refining	100	400	400
Pulp and paper	3,400	4,000	6,900
Vegetable oils	100	100	100
Total accounted for	769,100	790,100	791,000

1. Estimated.

TABLE 8. Available Data on Consumption of Chlorine, by Industries, 1951-1953

Industry	1951	1952	1953
	Tons		
Pulp and paper	88,100	89,000	97,400
Heavy chemicals	56,700	60,300	65,300
Soaps	3,400	3,200	3,300
Municipal waterworks	1,400	1,200	1,340
Mining	1,100 ¹	1,100 ¹	1,100 ¹
Starch and glucose	150	200	160
Dyeing and finishing of textiles	30	30	30
Miscellaneous chemicals	50	50	50
Fertilizers	100	100	30
Synthetic textiles	50	430	30
Primary plastics	140	130	140
Medicinal and pharmaceutical preparations	—	120	230
Total accounted for	151,220	155,860	169,110

1. Estimated.

TABLE 9. Available Data on Consumption of Caustic Soda, by Industries, 1951-1953

Industry	1951	1952	1953
	Tons		
Pulp and paper	75,700	80,900	102,200
Soaps, washing compounds and cleaning preparations	19,500	19,100	19,600
Heavy chemicals	34,000	48,000	53,900
Synthetic textiles and silk industry	15,500	16,500	19,200
Petroleum refining	5,200	6,600	6,900
Primary plastics	6,100	6,000	6,100
Miscellaneous chemicals	2,700	2,500	3,300
Miscellaneous foods	1,500	1,650	1,500
Mining	1,300 ¹	1,300 ¹	1,300 ¹
Coke and gas	800	800	800
Medicinals and pharmaceuticals	1,300	500	1,500
Non-ferrous metal refining	260 ¹	260 ¹	260 ¹
Starch and glucose	320	450	400
Dyeing and finishing of textiles	60	80	90
Toilet preparations	210	240	300
Compressed gases	210	160	170
Fertilizers	150	140	420
Fruit and vegetable preparations	90	—	—
Sugar refining	50	50	30
Vegetable oils	100	100	130
Adhesives	530	520	630
Total accounted for	165,580	185,850	218,730

1. Estimated.

TABLE 10. Imports of Acids and Certain Inorganic Chemicals, 1952 and 1953

Commodity	1952		1953		
	Quantity	Value	Quantity	Value	
		\$		\$	
ACIDS					
Inorganic acids:					
Acid, boracic, in packages of not less than 25 pounds	lb.	3,497,829	181,397	3,803,483	197,927
Acid, hydrofluosilicic	"	101,753	8,989	125,951	14,029
Acid, muriatic	"	975,227	14,711	1,132,261	16,227
Acid, nitric	"	225,732	13,449	297,965	19,253
Acid, phosphoric	"	691,176	41,650	843,550	57,767
Acid, sulphuric	"	170,920	2,764	140,248	3,575
Acid, arsenic	"	670,303	29,919	1,126,802	40,181
Acid, chromic	"	604,135	159,609	900,322	224,566
Organic acids:					
Acid, salicylic and acetylsalicylic	lb.	778,462	401,526	735,801	361,911
Acid, lactic	"	444,015	96,510	588,078	115,582
Acid, nicotinic	"	24,806	81,151	83,215	252,183
Acid, oleic, or red oil	"	297,717	73,878	781,746	125,622
Acid, acetic and pyroligneous	gal.	1,202	1,250	613	1,356
Acid, citric	lb.	1,555,416	401,868	1,864,626	414,924
Acid, cresylic	"	501,910	60,770	588,727	48,156
Xanthates and sulpho-thiophosphoric (dithiophosphoric compounds, for concentrating ores, metals or minerals)	"	5,141,522	1,262,941	5,850,066	1,400,501
Acid, oxalic	"	643,812	88,766	824,924	100,197
Acid, stearic	"	768,662	96,284	1,206,203	145,428
Acid, tannic	"	317,655	59,008	391,005	66,397
Tartaric acid crystals or powder	"	544,930	176,136	811,571	187,232
Acid, ascorbic	"	24,767	221,846	42,070	350,451
Acid, formic	"	613,919	77,696	822,124	92,593
Acid, carbollic or phenol	"	9,682,468	1,855,967	11,899,073	2,152,742
Acids, other, n.o.p.	"	3,377,530	700,586	2,567,143	873,584
Total acids	—	—	6,108,671	—	7,262,384
INORGANIC CHEMICALS, N.O.P.					
Alum, in bulk, ground or unground, but not calcined	cwt.	15,247	74,223	14,097	49,748
Chloralum or chloride of aluminum	"	7,604	91,728	12,328	111,845
Sulphate of iron (copperas)	"	18,393	32,338	17,426	29,537
Sulphate of alumina or alum cake	"	192,211	337,074	288,593	509,861
Ammonia, nitrate of	lb.	2,802,607	121,899	1,609,181	79,088
Sal ammoniac	"	440,742	25,275	488,088	29,056
Sal ammoniac skimmings	"	145,125	15,635	271,982	24,289
Ammonia, anhydrous	"	17,067,945	669,112	16,805,079	698,653
Ammonia compounds, n.o.p.	"	5,770,116	210,521	5,818,457	229,539
Antimony, arsenic, copper, tin and zinc compounds:					
Antimony salts, viz., tartar emetic, chloride and lactate (antimonine)	lb.	29,424	17,033	30,125	17,437
Arsenious oxide and arsenic sulphide	"	19,249	3,521	32,233	5,881
Copper, sub-acetate of, or verdigris, dry, and precipitate of	"	4,183,782	602,306	400	174
Copper, sulphate of	"	3,073,265	293,331	3,991,666	467,757
Tin, bichloride of, and tin crystals	"	2,879	3,068	6,040	5,750
Zinc, chloride of	"	190,726	22,171	272,014	29,457
Zinc, sulphate of	"	2,008,880	143,394	2,530,301	142,547
Bismuth and lead compounds:					
Bismuth salts	—	—	26,793	—	18,979
Lead, acetate of, not ground	lb.	96,718	18,581	119,850	18,921
Lead, arsenate of,	"	73,480	15,049	44,832	8,517
Lead, nitrate of, not ground	"	128,736	23,122	150,337	21,917
Compounds of tetraethyl lead	"	23,737,931	9,270,084	26,859,098	10,456,800
Bromine, chlorine and iodine compounds:					
Bromine	"	7,406	3,711	10,956	4,460
Chlorine, liquid, or chlorine gas	"	31,569,473	849,903	40,823,682	1,129,112
Iodine, crude	"	66,586	115,777	114,666	186,485
Iodized mineral salts, for use in the feeding of animals	—	—	16,267	—	16,815

TABLE 10. Imports of Acids and Certain Inorganic Chemicals, 1952 and 1953 - Concluded

Commodity	1952		1953	
	Quantity	Value	Quantity	Value
		\$		\$
Calcium compounds:				
Calcium arsenate	lb. 134,000	10,612	236,672	15,888
Calcium chloride	cwt. 255,478	276,259	189,719	245,264
Chloride of lime	" 31,761	144,782	38,321	177,427
Calcium molybdate, vanadium oxide and tungsten oxide, for the manufacture of steel	lb. 168,372	270,444	197,758	101,433
Calcium compounds, n.o.p.	" 4,701,773	500,532	5,648,701	536,528
Potash and potassium compounds, n.o.p.:				
Argols	—	—	—	—
Cream of tartar in crystals	lb. 253,416	67,502	291,018	62,988
Potash and pearl ash	" 178,295	14,930	360,255	25,279
Potash, bicarbonate of	" 25,450	3,745	18,810	2,717
Potash, bichromate of, crude	" 381,524	54,767	259,021	37,054
Potash, caustic	" 3,798,029	211,538	4,345,697	246,334
Potash, chlorate of, not further prepared than ground	" 70,199	9,883	98,187	13,191
Potash, red and yellow, prussiate of	" 27,490	10,047	97,268	22,261
Potash, nitrate of, or saltpetre	" 784,337	59,613	1,208,365	72,421
Potash compounds, n.o.p.	" 2,345,689	351,214	2,155,476	346,934
Soda and sodium compounds, n.o.p.:				
Borax, in packages of not less than 25 pounds, and fused borax known as borax-glass	lb. 16,672,850	486,749	19,160,379	567,060
Glauber's salt	" 9,154,487	122,294	10,986,420	150,263
Soda, arseniate, binarsenate and stannate of	" 73,088	27,138	137,798	41,650
Soda ash or barilla	" 71,359,896	900,968	221,408,146	3,146,748
Soda, bicarbonate of	" 15,089,521	276,106	15,326,954	286,400
Soda, bichromate of	" 3,708,149	392,092	5,003,229	505,411
Soda, bisulphate of, or nitre cake	" 2,245,670	55,336	2,351,479	60,588
Soda, bisulphite of	" 296,562	14,321	409,996	18,120
Soda, caustic, in packages	" 4,976,521	196,936	8,171,246	350,845
Soda, caustic, in solution	" 104,133,147	1,303,698	158,614,004	2,004,458
Soda, chlorate of	" 445	403	220,240	15,314
Sodium cyanide	" 7,106,675	884,613	8,323,569	1,010,742
Sodium glutamate	" 740,528	1,109,483	914,727	1,482,822
Soda, hyposulphite of	" 669,984	34,141	885,850	40,350
Soda, nitrite of	" 592,227	26,194	961,446	39,884
Soda, peroxide of	" 710,902	128,575	695,071	122,603
Soda phosphate, di-sodium	" 32,374	3,066	114,566	8,139
Soda phosphate, tri-sodium	" 630,755	31,152	1,063,860	51,009
Soda phosphate, n.o.p.	" 5,853,518	479,778	9,398,911	761,987
Soda, prussiate of	" 589,432	74,884	520,041	62,621
Soda, sal	" 67,050	1,993	67,308	1,752
Soda, silicate of, in crystals or in water solution	" 3,693,937	139,926	4,926,516	170,111
Soda, sulphate of, crude, or salt cake	" 39,151,625	313,739	65,604,024	516,863
Soda, sulphide of	" 2,071,063	85,988	2,618,044	116,805
Soda, sulphite of	" 1,056,353	41,423	3,689,576	143,901
Soda, benzoate of	" 137,710	38,558	125,189	31,427
Soda, bromide of	" 38,280	12,634	66,814	20,437
Soda, citrate of	" 29,993	7,005	81,566	20,078
Soda, fluoride of	" 177,596	20,362	182,657	23,109
Soda, antimonate of	" 154,000	48,929	303,440	82,329
Sodium compounds, n.o.p.	" 14,842,052	1,210,643	12,846,728	1,371,236
Other inorganic chemicals:				
Acid phosphate, not medicinal	lb. 1,964,958	160,992	2,496,921	211,238
Hydrogen peroxides, solutions of	" 439,175	98,099	361,387	99,291
Magnesium carbonate, basic or otherwise, excepting crude rock; and magnesium carbonate, for use in the com- pounding or manufacture of rubber products	" 586,093	42,995	636,972	48,111
Magnesium salts or compounds, n.o.p.	" 2,688,371	261,598	6,708,858	273,587
Magnesium sulphate, or Epsom salts	" 4,371,450	76,419	5,522,791	80,885
Mercury salts	—	27,043	—	34,155
Phosphorus and compounds thereof, n.o.p.	lb. 22,678	17,929	43,204	11,900
Radium	—	61,896	—	428,251
Molybdenum oxide	lb. 520,104	537,356	358,124	374,518
Barium peroxide	" 1	1	6,000	1,376
Total inorganic chemicals, n.o.p.	—	24,741,238	—	30,986,718

1. Not available separately.

TABLE 11. Exports of Acids and Inorganic Chemicals, 1952 and 1953

Commodity	1952		1953		
	Quantity	Value	Quantity	Value	
		\$		\$	
Acid, sulphuric	cwt.	662,699	610,032	957,784	895,340
Acids, n.o.p.	"	370,493	2,389,392	189,968	973,632
Total acids	-	-	2,999,424	-	1,868,972
Ammonium sulphate	cwt.	3,993,629	8,717,210	2,947,414	6,492,953
Ammonium compounds, n.o.p.	"	5,580	12,810	6,217	13,837
Arsenic	"	35,716	147,594	9,353	39,675
Acetate of lime	"	3,030	6,270	-	-
Calcium compounds	"	509,021	1,978,011	391,505	1,388,955
Lye	-	-	4,867	-	1,636
Baking powder	cwt.	28	445	35	546
Soda and sodium compounds	"	2,085,796	7,476,580	1,839,755	7,012,873
Cobalt oxide and cobalt salts	lb.	785,976	1,636,193	932,499	1,900,399
Chlorine, liquid, or chlorine gas	cwt.	283,246	610,434	358,180	810,799
Caustic soda	"	131,023	520,851	51,285	138,500
Total other chemicals	-	-	21,111,265	-	17,800,173

TABLE 12. Employees and Earnings, by Provinces, 1952 and 1953

Province	Number of employees				Total	Earnings		Total earnings
	Administrative		Workmen			Admin-istrative	Workmen	
	Male	Female	Male	Female	\$			\$
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
1953								
Quebec	665	209	2,409	24	3,307	3,937,835	8,503,713	12,441,548
Ontario	1,049	316	3,114	23	4,502	5,993,230	11,184,362	17,177,592
Other provinces	161	44	225	39	469	671,204	884,135	1,555,339
Canada	1,875	569	5,748	86	8,278	10,602,269	20,572,210	31,174,479

TABLE 13. Capital and Repair Expenditures in the Acids, Alkalies and Salts Industry, 1949-1953

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						
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	41,591	40,822	82,413	1,638	10,661	12,299	94,712
1953 ¹	18,993	61,151	80,144	1,460	10,703	12,163	92,307

1. Preliminary.

TABLE 14. Fuel and Electricity Used¹ in the Acids, Alkalies and Salts Industry, 1948 and 1953

Kind	1948		1953	
	Quantity	Cost at works	Quantity	Cost at works
		\$		\$
Bituminous coal:				
From Canadian mines tons	5,696	58,986	12,631	142,493
Imported "	260,252	2,434,263	323,404	3,003,805
Anthracite coal "	457	6,355	336	5,632
Coke "	576	8,841	443	9,134
Gasoline Imp. gal.	132,533	36,677	277,869	94,707
Kerosene "	6,191	1,411	147,512	23,399
Fuel oil "	2,143,393	272,741	7,266,643	757,459
Gas:				
Liquefied petroleum gases (propane, etc.) Imp. gal.	2	2	1,549	649
Other manufactured gas M cu. ft.	7,410	7,073	54,672	48,981
Natural gas "	1,372	1,465	2,326,619	260,330
Other fuel -	-	568,194	-	157,707
Electricity purchased k.w.h.	1,513,278,449	4,356,684	1,985,844,885	8,759,855
Total cost -	-	7,752,690	-	13,264,151
Electricity generated for own use k.w.h.	104,282,070	-	275,562,726	-

1. Details shown in Tables 14 and 15 are collected only every five years; accordingly, data for intervening years are not available.

2. Not collected separately.

TABLE 15. Power Equipment¹ in the Acids, Alkalies and Salts Industry, 1948 and 1953

	Ordinarily in use		In reserve or idle	
	Number of units	Total rated horse power	Number of units	Total rated horse power
1948				
Steam engines	17	3,996	3	98
Steam turbines	13	10,968	4	990
Diesel engines	1	125	-	-
Gasoline, gas and oil engines, other than Diesel engines	18	560	1	150
Hydraulic turbines or water-wheels	5	10,520	-	-
Total primary	54	26,169	8	1,238
Electric motors run by purchased power	5,430	75,530	1,045	12,883
Total	5,484	101,699	1,053	14,121
Electric motors run by above primary units	1,249	14,121	333	2,020
Boilers for power purposes only	26	9,485	6	2,180
Motor-generator sets	47	31,684 k.v.a.	5	360 k.v.a.
1953				
Steam engines	32	8,497	13	308
Steam turbines	58	29,713	38	10,977
Diesel engines	2	211	3	1,263
Gasoline, gas and oil engines, other than Diesel engines	16	3,645	11	1,211
Hydraulic turbines or water-wheels	5	10,000	-	-
Total primary	113	52,066	65	13,759
Electric motors	9,348	124,621	1,565	17,452
Total	9,461	176,687	1,630	31,211
Electric motors run by above primary units	3,223	24,326	338	1,907
Boilers for power purposes only	41	23,113	7	4,675
Motor-generator sets	64	30,023 k.v.a.	6	124 k.v.a.

1. See footnote to Table 14.

List of Firms in the Acids, Alkalies and Salts Industry, 1953

Name and location of plant	Principal chemicals made
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); aluminum chloride.
B.A. - Shawinigan Limited Montreal East	Acetone; phenol.
Canadian Industries Limited Shawinigan Falls	Perchloroethylene; trichloroethylene; chlorine (liquid); anhydrous hydrogen chloride; sodium hydroxide (caustic soda); hydrogen peroxide (liquid); chloroform.
Defence Industries (1951) Limited Shawinigan Falls	Hexachlorethane.
Dominion Alkali and Chemical Co. of Canada Beauharnois	Chlorine (liquid); sodium hydroxide (caustic soda); hydrogen gas.
Durham Industries (Canada) Limited Montreal	Zinc oxide.
Electric Reduction Co. 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.
Electric Reduction Co. of Canada Varenes	Yellow phosphorus.
Gallowhur Chemicals Canada Ltd. Lachine	Dehydrocholic acid; insecticides; rutin (crude and refined).
Monsanto (Canada) Limited Ville La Salle	Anhydrous caffeine; sodium benzoate; phenacetin; dioctyl phthalate; slimicides; acetic acid.
The Nichols Chemical Co. Ltd. Valleyfield	Sulphuric acid; aluminum sulphate; pyrites cinder; insecticides.
Shawinigan Chemicals Ltd. Shawinigan Falls	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; paraldehyde; crotonic acid; polyvinyl alcohol; butyraldehyde, methyl acetone.
Shell Oil Company of Canada, Limited Montreal East	Acetone; isopropyl alcohol.
Standard Chemical Company, Limited Montreal East	Ethylene glycol, polyglycols; ethylene dichloride.
St. Maurice Chemicals Limited Varenes	Formaldehyde; pentaerythritol.
Zinc Oxide Co. of Canada, Ltd. Montreal	Zinc oxide.
Ontario:	
Bunner Mond Canada, Ltd. Amherstburg	Calcium chloride; sodium carbonate (soda ash).
Cabot Carbon of Canada, Limited Sarnia	Carbon black.
Canadian Industries Limited Hamilton	Hydrochloric (muriatic) acid; sulphuric acid; ammonium chloride; sodium sulphate (salt cake); sodium sulphite (anhydrous); sodium metabisulphite; sodium thiosulphite; zinc chloride (50% solution); soldering and galvanizing fluxes.

List of Firms in the Acids, Alkalies and Salts Industry, 1953 - Concluded

Name and location of plant	Principal chemicals made
Ontario - concluded:	
Canadian Industries Limited Cornwall	Hydrochloric (muriatic) acid; chlorine (liquid); sodium hydroxide (caustic soda); sodium hypochlorite.
Canadian Industries Limited Copper Cliff	Sulphuric acid; liquid sulphur dioxide
Canadian Industries Limited Windsor	Chlorine (liquid); sodium hydroxide (caustic soda); ferric chloride; ammonia anhydrous, 100%; ammonia, aqua, 26° Be.
Canadian Industries Limited Maitland	Adipic acid; hexamethylenediamine.
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; styrene; chlorine (liquid); sodium hydroxide (caustic soda); carbon tetrachloride; trichlorethylene; perchlorethylene; hydrochloric (muriatic) acid; ammonia, anhydrous, 100%; ammonia, aqua, 26° Be; ethylene chloride.
W.C. Hardesty Co. of Canada Ltd. New Toronto	Hydrogenated stearic acid; vegetable fatty acids; animal fatty acids; glycerine; oleic acid; pressed stearic acid.
Howards & Sons (Canada) Ltd. Cornwall	Cyclohexanol phthalate; methylcyclohexanol phthalate.
Kamball, Bishop, & Co. (Canada) Ltd. Cornwall	Citric acid
Nauyatuck Chemicals Division of Dominion Rubber Co. Ltd. Elmira	Aniline; rubber accelerators and specialties; D.D.T.; 2, 4-D; sodium sulphamethazine; nitrobenzol; ammonia, anhydrous, 100%; synthetic resin (alkyd polyester type).
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.
S. Nord Chemical Company Limited Petrolia	Benzene
North American Cyanamid Ltd., (Welland). Niagara Falls	Calcium cyanamide; sodium cyanide; lime, unhydrated.
Nuodex Products of Canada, Ltd. Leaside	Lead naphthenate; cobalt naphthenate; manganese naphthenate; zinc naphthenate; copper naphthenate; calcium naphthenate; iron naphthenate; lead octoate; cobalt octoate; calcium octoate; cobalt tallate.
North American Cyanamid Ltd., (Welland works) Niagara Falls	Ammonia (anhydrous); dicyandiamide; guanidine nitrate; sulphuric acid; urea-formaldehyde adhesives; nitric acid; picrite; thiourea.
Alberta:	
Canadian Chemical Company Limited Edmonton	Acetone; acetic acid; butyl alcohol; propylene glycol; formaldehyde; methyl alcohol; pentaerythritol; n-propyl acetate; cellulose acetate.
British Columbia:	
Consolidated Mining and Smelting Co. of Canada, Ltd. Tadanac	Hydrofluosilicic acid; sulphuric acid.
The Nichols Chemical Co. Ltd. Barnet	Sulphuric acid; pyrites cinder.
Northwest Territories:	
Eldorado Mining & Refining Ltd. Port Radium	Sulphuric acid

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