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Annual Industry Report — Chemicals and Allied Products Group

THE ACIDS, ALKALIES AND SALTS INDUSTRY, 1945

Thirty-five plants in Canada, classified under the Acids, Alkalies and Salts Industry, were engaged chiefly in the production of heavy chemicals in 1945. Production reported by this group was valued at $67,467,062, a decrease of 17.1 per cent from the total for the previous year. Twenty of these plants were located in Ontario; 10 in Quebec; 3 in British Columbia, and 1 in each of Nova Scotia and Alberta. These concerns gave employment to an average of 7,022 people who were paid $14,527,508 in salaries and wages. Materials used in manufacturing processes cost $22,351,361 and expenditures for fuel and electricity amounted to $8,598,563.

The following chemicals were made by the factories in this group: Sulphuric acid, hydrochloric acid, nitric acid, glacial acetic acid, phosphoric acid, stearic acid, fatty acids, calcium carbide, calcium cyanamide, calcium chloride, calcium phosphide, soda ash, nitre cake, salt cake, caustic soda, Glauber's salt, sal soda, calcium cyanide, sodium silicate, sodium chlorate, sodium sulphite, sodium hypochlorite, sodium thiosulphite, hexachlorethane, disodium and trisodium phosphate, sodium acid pyrophosphate, tetrasodium pyrophosphate, liquid chlorine, satin white, phosphorus, acid calcium phosphate, potassium chlorate, potassium perchlorate, barium chlorate, synthetic ammonia, sulphur dichloride, sulphur monochloride, aluminium fluoride, metallic naphthenates, ferric chloride, hydrogen peroxide, butyl acetate, ethyl acetate, vinyl acetate, pentasol acetate, acetone, acetic anhydride, vinyl acetate resins, acetylene carbon black, zinc chloride, zinc oxide, nickel formate, liquid sulphur dioxide, perchlorethylene, trichlorethylene, aniline oil, carbon bisulphide, chloride of lime, diphenylamine, monoethylaniline, ammonium chloride, ammonium perchlorate, ammonium nitrate, plating and galvanizing salts, weed killer, etc. Separate production figures are published for sulphuric acid only, as most of the other items were made by less than three firms.

The output of sulphuric acid decreased to 200,482 tons (66° Bé) in 1945 from 686,644 tons in 1944. Eight plants were operated by six companies, as follows: The Consolidated Mining and Smelting Company of Canada, Limited, at Trail, British Columbia; Canadian Industries Limited, at Copper Cliff, Ontario, 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; and the Aluminum Company of Canada Ltd., at Arvida, Quebec. The first two of these works, at Trail and at Copper Cliff, operated entirely on sulphur-bearing smelter gases.

Note: This report was prepared by J. J. Parchelo, Statistician, Metal and Chemical Products.

Table 1 - PRINCIPAL STATISTICS OF THE ACIDS, ALKALIES AND SALTS INDUSTRY, 1935-1945

Year	Number of plants	Average 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
			$	$	$	$
1935	18	2,627	3,490,897	2,158,692	4,606,713	19,012,615
1936	20	2,966	3,988,310	2,316,389	4,680,299	18,959,512
1937	21	3,863	4,896,618	2,810,364	6,008,977	22,410,168
1938	24	2,991	4,571,579	2,349,819	5,223,443	20,476,578
1939	25	3,128	5,032,898	2,548,217	6,021,716	23,056,606
1940	27	4,002	6,627,695	3,794,629	8,818,251	31,000,928
1941	32	6,482	11,169,284	5,701,507	17,108,347	50,109,348
1942	35	7,842	14,128,610	7,615,359	23,927,969	65,123,577
1943	38	8,045	15,057,723	8,502,717	27,714,019	78,359,453
1944	37	7,964	15,752,782	8,980,955	29,540,390	81,323,151
1945	35	7,022	14,527,508	8,598,563	22,351,361	67,467,062
Per cent change - 1945 from 1944	..	-11.8	-7.8	-4.3	-24.4	-17.1

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, 1944 and 1945

Province	Number of plants	Average 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
			$	$	$	$
1944						
Nova Scotia .... 1) Quebec ..... 11)	2,770	5,332,250	2,947,155	12,966,279	28,679,914	
Ontario ..... 20) Alberta ..... 1) British Columbia 4)	5,194	10,420,532	6,033,800	16,574,111	52,643,237	
CANADA	37	7,964	15,752,782	8,980,955	29,540,390	81,323,151
1945						
Nova Scotia .... 1) Quebec ..... 10)	2,527	4,915,785	2,579,289	10,028,454	20,388,800	
Ontario ..... 20) Alberta ..... 1) British Columbia 3)	4,495	9,611,723	6,019,274	12,322,907	47,078,262	
CANADA	35	7,022	14,527,508	8,598,563	22,351,361	67,467,062

Table 3 - EMPLOYEES, SALARIES AND WAGES, BY PROVINCES, 1944 and 1945

Province	Average Number of Employees					Salaries	Wages	TOTAL SALARIES and WAGES
	On Salaries		On Wages		Total			
	Male	Female	Male	Female				
						$	$	$
1944								
Quebec ...	272	102	2,339	46	2,759	1,125,435	4,174,906	5,300,341
Ontario ..	677	276	3,047	339	4,339	2,190,391	6,549,227	8,739,618
Other provinces	82	37	640	107	866	288,497	1,424,326	1,712,823
CANADA..	1,031	415	6,026	492	7,964	3,604,323	12,148,459	15,752,782
1945								
Quebec ...	306	96	2,073	41	2,516	1,157,255	3,724,633	4,881,888
Ontario ..	530	244	2,864	173	3,811	1,928,201	5,994,373	7,922,574
Other provinces	83	35	509	68	695	295,020	1,428,026	1,723,046
CANADA..	919	375	5,446	282	7,022	3,380,476	11,147,032	14,527,508

Table 4 - WAGE-EARNERS, BY MONTHS, 1944 and 1945 (On the last work-day of each month)

Month	1944			1945		
	Male	Female	Total	Male	Female	Total
January	6,314	366	6,680	5,538	468	6,006
February	6,203	359	6,562	5,523	460	5,983
March	6,144	356	6,500	5,525	445	5,970
April	5,890	363	6,253	5,575	431	6,006
May	6,010	481	6,491	5,647	414	6,061
June	6,085	585	6,670	5,462	273	5,735
July	6,156	625	6,781	5,532	267	5,799
August	6,081	641	6,722	5,452	200	5,652
September	5,986	583	6,569	5,330	159	5,489
October	5,891	554	6,445	5,290	137	5,427
November	5,823	513	6,336	5,227	121	5,348
December	5,739	469	6,208	5,299	104	5,403
AVERAGE	6,026	492	6,518	5,446	282	5,728

Table 5 - HOURS WORKED PER WEEK BY WAGE-EARNERS, 1944 and 1945 (In one week of month of highest employment; overtime included)

Hours Worked per Week	Number of Wage-earners			
	1944		1945	
	Male	Female	Male	Female
30 hours or less	234	30	232	24
31-43 hours	402	147	403	84
44 hours	313	22	342	9
45-47 hours	187	27	374	39
48 hours	3,392	299	3,260	184
49-50 hours	150	10	258	4
51-54 hours	332	16	287	13
55 hours	93	3	34	2
56-64 hours	1,050	57	812	27
65 hours and over	138	2	124	...
TOTAL	6,291	613	6,126	386
Total wages paid during week $	239,830	18,350	227,618	11,687

Table 6 - FUEL AND ELECTRICITY USED, 1944 and 1945

Kind	Unit of measure	1944 Quantity	1944 Cost at works	1945 Quantity	1945 Cost at works
			$		$
Bituminous coal -					
Canadian	ton	41,275	264,868	42,950	258,707
Foreign	ton	333,675	2,366,445	308,357	2,189,631
Anthracite coal	ton	515	5,870	696	8,035
Coke	ton	696	7,825	960	11,806
Gasoline	Imp.gal.	153,851	34,518	146,486	32,634
Fuel oil	Imp.gal.	1,414,594	104,939	2,382,538	162,871
Gas--Manufactured ...	M cu.ft.	52,884	5,761	1,180	1,014
Natural	M cu.ft.	1,334,986	107,932	152,342	108,777
Other fuel	...	...	267,119	...	225,048
Electricity purchased	K.W.H.	2,031,092,614	5,815,678	1,310,702,738	5,600,040
TOTAL	...	...	8,980,955	...	8,598,563
Electricity generated for own use	K.W.H.	108,658,273	...	46,085,413	...

Table 7 - POWER EQUIPMENT, 1944 and 1945

Kind	Ordinarily in Use: Number of units	Ordinarily in Use: Total rated horse power	In Reserve or Idle: Number of units	In Reserve or Idle: Total rated horse power
1944				
Steam engines and steam turbines..	55	19,402	13	1,635
Diesel engines	1	38	1	65
Gasoline, gas and oil engines	11	221	4	315
Hydraulic turbines or water wheels	5	10,520	...	...
Total Primary Equipment	72	30,181	18	2,015
Electric motors operated by purchased power	5,666	126,584	1,029	15,919
TOTAL	5,738	156,765	1,047	17,934
Electric motors operated by above primary units	1,067	12,085	227	1,044
Stationary power boilers	35	22,399	7	1,697
Motor-generator sets	66	32,384	5	284
1945				
Steam engines and steam turbines..	50	19,070	15	1,685
Diesel engines	1	38	...	...
Gasoline, gas and oil engines	13	302	3	215
Hydraulic turbines or water wheels	5	10,520	...	...
Total Primary Equipment	69	29,930	18	1,900
Electric motors operated by purchased power	5,738	129,524	973	13,095
TOTAL	5,807	159,454	991	14,995
Electric motors operated by above primary units	1,062	11,861	247	1,055
Stationary power boilers	36	19,529	9	2,197
Motor-generator sets	74	32,427	5	484

TOTAL PRODUCTION OF CHEMICALS IN CANADA

It is very difficult, if not impossible, 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 great number of different industries. Ethyl alcohol, for example, is a product of the distilled liquors industry; methyl alcohol comes under wood distillation; 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 which gives a fairly good summary of the total output as gathered up from all industries, this being shown below. 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 1945 was around $118,696,000 compared with $136,140,000 in 1944.

Table 8 - TOTAL PRODUCTION OF CHEMICALS IN CANADA, 1944 and 1945

Commodity	Selling Value at Works	
	1944	1945
	$	$
Acids, including acetic, muriatic, nitric, sulphuric, phosphoric, and stearic	10,417,000	7,081,000
Calcium Compounds, including carbide, chloride, phosphide, cyanamide, cyanide, acid phosphate, grey acetate, arsenate, chloride of lime, etc.	18,202,000	12,573,000
Sodium Compounds, including hydroxide, phosphate, silicate, hypochlorite, bisulphite, salt cake, Glauber's salt, chlorate, acid pyrophosphate, soda ash, sal soda, bisulphate, etc. (pharmaceutical salts included elsewhere)	8,935,000	8,600,000
Organic Chemicals, including acetic anhydride, butyl acetate, ethyl acetate, paraldehyde, pentasol acetate, vinyl acetate, ethyl alcohol, methyl hydrate, glycerine, phenol, cresol, benzol, etc. (acetic acid and acetylene included elsewhere)	43,947,000	35,189,000
Compressed and Liquefied Gases, etc., including acetylene, carbon dioxide, oxygen, nitrous oxide, liquid sulphur dioxide, liquid chlorine, anhydrous and aqua ammonia, etc.	13,957,000	12,983,000
Ammonium Sulphate, Phosphate and Superphosphate.	16,151,000	18,734,000
Other Chemicals, including white lead, zinc oxide, red lead, litharge, cobalt salts, nickel salts, ferric chloride, lead arsenate, phosphorus, white arsenic, ammonium nitrate, fine chemicals, precious metal salts, etc.	24,531,000	23,536,000
TOTAL	136,140,000	118,696,000

LIST OF FIRMS IN THE ACIDS, ALKALIES AND SALTS INDUSTRY, 1945

Name and Location of Plant	Principal Chemicals Made
Dominion Steel & Coal Corp. Ltd. Sydney, Nova Scotia.	Sulphuric acid
Aluminum Company of Canada, Ltd. Arvida, Quebec.	Sulphuric acid; aluminum sulphate (alum); aluminum fluoride
Canadian Industries Limited, Shawinigan Falls, Quebec.	Perchlorethylene; trichlorethylene; chlorine (liquid and gas); anhydrous hydrogen chloride; sodium hydroxide (caustic soda); hydrogen peroxide; monochlorbenzene.
Defence Industries Ltd. Shawinigan Falls, Quebec.	Hexachlorethane; trichlorethylene
Electric Reduction Co. of Canada, Buckingham, Quebec.	Phosphoric acid; acid calcium phosphate; ammonium perchlorate; calcium phosphide; phosphorus (amorphous and yellow); potassium chlorate; sodium acid pyrophosphate; potassium perchlorate; sodium chlorate; phosphates of sodium (mono-di-tri-tetra); weed killing mixtures.
The Nichols Chemical Co. Ltd., Valleyfield, Quebec.	Sulphuric acid
Shawinigan Chemicals Ltd. Shawinigan Falls, Quebec.	Monoethylaniline; acetaldehyde; acetic anhydride; acetone; acetylene black; acetylene gas; acetic acid; butyl acetate; calcium carbide; dibutyl phthalate; ethyl acetate; pentasol acetate; vinyl acetate; vinyl acetate resins; cerium.
Zinc Oxide Co. of Canada, Ltd. Montreal, Quebec.	Zinc oxide
Brunner, Mond Canada, Ltd. Amherstburg, Ontario.	Calcium chloride; sodium carbonate (soda ash)
Canadian Hanson & Van Winkle Co. Ltd. Toronto, Ontario.	Electroplaters' chemicals

LIST OF FIRMS IN THE ACIDS, ALKALIES AND SALTS INDUSTRY, 1945
(Continued)

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; sulphur dioxide (liquid); zinc chloride (50% solution)
Canadian Industries Limited, Cornwall, Ontario.	Hydrochloric (muriatic) acid; chlorine (liquid); sodium hydroxide (caustic soda); sodium hypochlorite
Canadian Industries Limited, Copper Cliff, Ontario.	Sulphuric acid
Canadian Industries Limited, Windsor, Ontario.	Chlorine (liquid); chloride of lime; sodium hydroxide (caustic soda)
Church & Dwight Ltd., Amherstburg, Ontario.	Sodium carbonate (sal soda)
Cornwall Chemicals Limited, Cornwall, Ontario.	Carbon bisulphide
Defence Industries Limited, Windsor, Ontario.	Carbamite
Electro Metallurgical Company of Canada, Ltd., Welland, Ontario.	Calcium carbide
W. C. Hardesty Co. of Canada Ltd., New Toronto, Ontario.	Hydrogenated stearic acid; hydrogenated tallow fatty acids; tallow fatty acids; cocoanut fatty acids; mixed fatty acids; glycerine; hydrogenated fish oils
H. S. & T. Crystal Co. Ltd., New Toronto, Ontario.	Satin white
Naugatuck Chemicals, Division of Dominion Rubber Co. Ltd., Elmira, Ontario.	Aniline; rubber accelerators and specialties; nitrobenzene; D.D.T.

LIST OF FIRMS IN THE ACIDS, ALKALIES AND SALTS INDUSTRY, 1945
(Concluded)

Name and Location of Plant	Principal Chemicals Made
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 (anhydrous)
North American Cyanamid Ltd., Niagara Falls, Ontario.	Calcium cyanamide; calcium cyanide; sodium silicate
Nuodex Products of Canada, Ltd., Leaside, Ontario.	Lead naphthenate; cobalt naphthenate; manganese naphthenate; zinc naphthenate; copper naphthenate; calcium naphthenate
Stormont Chemicals Ltd., Cornwall, Ontario.	Military gases; respirator charcoal
Watts Chemical Company, Toronto, Ontario.	Zinc oxide; zinc dust
Welland Chemical Works Ltd., Niagara Falls, Ontario.	Ammonia (anhydrous); ammonium nitrate; dicyandiamide; guanidine nitrate; nitroguanidine
Alberta Nitrogen Products Ltd., Calgary, Alberta.	Ammonia (anhydrous); ammonium nitrate
Consolidated Mining and Smelting Co. of Canada, Ltd., Tadanac, British Columbia.	Ammonium nitrate; nitraprills; hydrofluosilicic acid; sulphuric acid
The Nichols Chemical Co. Ltd., Barnet, British Columbia.	Sulphuric acid

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