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ANNUAL INDUSTRY REPORT

CHEMICALS AND ALLIED PRODUCTS GROUP

THE ACIDS, ALKALIES AND SALTS INDUSTRY, 1943

Plants in Canada's heavy chemical industry continued to operate at capacity during 1943 and increased sales were again recorded for sulphuric acid, carbide, cyanamide, soda ash, caustic soda, chlorine and other basic items. There was some easing in the military requirements for sulphuric acid and ammonium nitrate and larger quantities were made available for fertilizer purposes. Tonnage or value figures for the individual items made in this industry are not available for publication as in most instances there is only one producer, and in others only two producers in Canada. For example, the Canadian Industries Limited is the only maker of caustic soda and liquid chlorine; the Brunner, Mond Canada, Ltd. is the only manufacturer of soda ash and calcium chloride; the North American Cyanamid Ltd. is the only maker of cyanide and cyanamide; the Electric Reduction Company of Canada Ltd. is the only maker of phosphates and chlorates; Shawinigan Chemicals Limited is the only producer of glacial acetic acid, butyl acetate, ethyl acetate, etc. For the industry as a whole, production was up \$13.3 millions from 1942 to a total of \$78.4 millions. Thirty-eight plants were in operation and the average number of employees was 8,045.

Output of sulphuric acid was much higher than in any previous year, reaching a total of 621,435 tons of 66° Bé acid compared with 578,474 tons in 1942. There was no change in the list of producers, which was as follows: The Consolidated Mining and Smelting Company of Canada Ltd., at Trail, B.C.; Canadian Industries Limited at Copper Cliff, Ont., Hamilton, Ont., and New Westminster, B.C.; the Nichols Chemical Company Ltd. at Sulphide, Ont., Valleyfield, Que., and Barnet, B.C.; the Dominion Steel and Coal Corp. Ltd. at Sydney, N.S.; the Welland Chemicals Limited at Welland, Ont., and the Aluminum Company of Canada Limited at Arvida, Que. The highest pre-war tonnage for sulphuric acid was 282,716 in 1937.

Since 1939 there has been a three-fold expansion in the heavy chemical industry. Output in 1939 was \$23.0 millions, capital was \$36.9 millions and employees numbered 3,128; in 1943 the corresponding figures were \$78.4 for production, \$102.9 for capital and 8,045 for employees.

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Acids, etc.

Table 1 - PRINCIPAL STATISTICS OF THE ACIDS, ALKALIES AND SALTS INDUSTRY, 1933-1943

Year	Number of plants	Capital employed \$	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 \$
1933	15	44,239,418	1,891	2,315,425	1,407,378	2,463,958	12,713,045
1934	16	45,033,355	2,289	2,841,853	1,872,137	3,674,265	16,494,139
1935	18	33,381,688	2,627	3,490,897	2,158,692	4,606,713	19,012,615
1936	20	32,596,308	2,966	3,988,310	2,516,389	4,680,299	18,959,512
1937	21	35,094,008	3,863	4,396,618	2,810,364	6,008,377	22,410,168
1938	24	32,254,723	2,991	4,571,579	2,349,819	5,223,443	20,476,578
1939	25	36,978,482	3,128	5,032,898	2,548,217	6,021,716	23,056,606
1940	27	45,832,949	4,002	6,627,695	3,794,629	8,818,251	31,000,323
1941	32	61,329,966	6,482	11,169,284	5,701,507	17,108,347	50,109,348
1942 -							
Nova Scotia	1)						
Quebec	10)	23,146,818	2,620	4,305,415	2,757,238	11,838,595	21,235,243
Ontario ...	19	31,697,116	4,416	3,177,222	4,308,393	11,079,082	36,146,175
Alberta ...	1)						
British Columbia..	4)	20,325,393	806	1,645,573	649,723	1,010,292	7,742,159
CANADA...	35	75,169,327	7,842	14,128,610	7,615,359	23,927,969	65,123,577
1943 -							
Nova Scotia	1)						
Quebec	11)	25,457,191	2,968	5,256,239	3,242,359	15,489,290	31,428,336
Ontario ...	21	57,201,970	4,286	8,177,086	4,435,124	11,231,978	34,509,997
Alberta ...	1)						
British Columbia..	4)	20,268,146	791	1,624,398	324,734	992,751	12,421,120
CANADA ..	38	102,927,307	8,045	15,057,723	8,502,717	27,714,019	78,359,453

Per cent change 1943 from 1942.. ..

..	+36.9	+2.6	+6.6	+11.6	+15.8	+20.3
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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 - CAPITAL EMPLOYED, 1942 and 1943 (On the last day of the year)

Year	Present value of land, buildings, machinery, tools and other equipment \$	Value of Inventories		Cash, bills and accounts receivable, etc. \$	TOTAL CAPITAL EMPLOYED \$
		Raw materials, fuel and other supplies on hand and stocks in process \$	Finished products on hand \$		
1942					
Quebec	11,964,728	3,368,007	1,498,156	6,515,927	23,146,818
Ontario ...	18,229,493	3,789,528	2,092,881	7,585,214	31,697,116
Other provinces	17,913,693	1,190,195	167,670	1,053,835	20,325,393
CANADA ..	48,107,914	8,347,730	3,758,707	14,954,976	75,169,327

Table 2 - CAPITAL EMPLOYED, 1942 and 1943 (On the last day of the year) (Concluded)

Year	Present value of land, build- ings, machinery, tools and other equipment	Value of Inventories		Cash, bills and accounts receivable, etc.	TOTAL CAPITAL EMPLOYED
		Raw materials, fuel and other supplies on hand and stocks in process	Finished products on hand		
	\$	\$	\$	\$	\$
<u>1943</u>					
Quebec	11,515,629	3,711,513	309,140	9,420,909	25,457,191
Ontario ...	37,944,977	5,040,333	1,821,762	12,394,348	57,201,370
Other prov- inces	17,472,229	1,323,043	200,969	1,271,905	20,268,146
CANADA ..	66,932,835	10,075,489	2,831,871	23,087,162	102,927,307

Table 3 - EMPLOYEES, SALARIES AND WAGES, 1942 and 1943

Year	Average Number of Employees				TOTAL	Salaries	Wages	TOTAL SALARIES and WAGES
	On Salaries		On Wages					
	Male	Female	Male	Female				
					\$	\$	\$	
<u>1942</u>								
Quebec	238	61	2,269	41	2,609	934,601	3,344,339	4,279,090
Ontario	894	233	3,157	132	4,416	2,338,684	5,838,538	8,177,222
Other prov- inces	90	22	577	14	703	261,534	1,010,364	1,271,898
CANADA ...	1,222	316	6,003	187	7,723	3,534,909	10,193,301	13,728,210
<u>1943</u>								
Quebec	252	91	2,557	57	2,957	1,027,111	4,196,912	5,224,023
Ontario	757	262	2,970	227	4,236	2,232,724	5,944,362	8,177,086
Other prov- inces	77	35	595	95	802	259,527	1,337,037	1,656,614
CANADA ...	1,086	388	6,122	449	8,045	3,519,362	11,538,361	15,057,725

Table 4 - WAGE-EARNERS, BY MONTHS, 1942 and 1943 (Number on payroll on the last work day of each month)

Month	1942			1943		
	Male	Female	TOTAL	Male	Female	TOTAL
January	6,204	51	6,255	6,033	429	6,462
February	6,305	53	6,358	6,101	445	6,546
March	6,183	55	6,238	6,147	481	6,628
April	6,112	57	6,169	6,017	501	6,518
May	6,195	89	6,284	6,005	498	6,503
June	6,285	152	6,437	6,123	446	6,569
July	6,191	212	6,403	6,159	414	6,573
August	6,065	263	6,328	6,250	395	6,645
September	5,979	311	6,290	6,230	423	6,653
October	6,007	344	6,351	6,152	434	6,646
November	5,964	354	6,318	6,181	457	6,638
December	5,940	365	6,305	6,090	401	6,491
AVERAGE	6,117	187	6,304	6,122	449	6,571

Table 5 - HOURS WORKED PER WEEK BY WAGE-EARNERS, 1943 (In one week in month of highest employment; overtime included)

Hours worked per week -	Number of Wage-Earners			
	1 9 4 2		1 9 4 3	
	Male	Female	Male	Female
30 hours or less	119	7	231	41
31-43 hours	486	31	418	123
44 hours	444	7	623	82
45-47 hours	252	19	142	25
48 hours	3,454	12	3,043	162
49-50 hours	135	...	122	16
51-54 hours	636	2	310	14
55 hours	14	...	47	2
56-64 hours	1,089	...	1,446	39
65 hours and over	103	3	226	1
TOTAL	6,732	81	6,608	505
Total wages paid in selected week \$	226,276	2,031	251,546	12,021

Table 6 - FUEL AND ELECTRICITY USED, 1942 and 1943

Kind	Unit of measure	1 9 4 2		1 9 4 3	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Bituminous coal--Canadian	ton	11,957	72,731	24,161	155,227
Foreign	ton	291,875	1,733,476	324,852	2,074,581
Anthracite coal	ton	478	5,123	338	3,403
Coke	ton	622	7,317	350	4,555
Gasoline	Imp. gal.	168,016	35,745	167,723	36,162
Fuel oil	Imp. gal.	1,552,559	109,707	1,251,867	93,485
Gas - Natural	M cu.ft.	1,999,415	161,133	2,495,582	200,162
Other fuel .....	...	...	236,186	...	230,186
Electricity purchased ...	K.W.H.	1,736,839,206	5,253,951	1,750,413,745	5,648,956
TOTAL .....	...	...	7,615,359	...	8,502,717
Electricity generated for own use	K.W.H.	10,254,817	...	130,794,207	...

Table 7 - POWER EQUIPMENT, 1942 and 1943

Kind	Ordinarily in Use		In Reserve or Idle	
	Number of units	Total rated horse power	Number of units	Total rated horse power
	1 9 4 2			
Steam engines and steam turbines..	57	18,271	22	2,053
Diesel engines .....	...	...	1	65
Gasoline, gas and oil engines	2	135	2	200
Hydraulic turbines or water wheels	5	10,520	...	...
Total Primary Equipment	64	28,926	25	2,318
Electric motors operated by purchased power	4,323	115,325	344	17,317
TOTAL	4,392	144,251	369	19,635
Electric motors operated by above primary units	1,009	11,881	81	704
Motor generator sets	25	26,327	...	...
Stationary boilers	44	23,062	8	1,477

Table 7 - POWER EQUIPMENT, 1942 and 1943 - (Concluded)

Kind	Ordinarily in Use		In Reserve or Idle	
	Number of units	Total rated horse power	Number of units	Total rated horse power
	<u>1</u>	<u>9</u>	<u>4</u>	<u>3</u>
Steam turbines	19	5,167	2	55
Steam engines	37	11,892	21	2,783
Diesel engines .....	...	...	1	65
Gasoline, gas and oil engines	1	35	4	315
Hydraulic turbines or water wheels	5	10,520	...	...
Total Primary Equipment	62	27,614	28	3,218
Electric motors operated by purchased power	6,125	150,962	844	16,873
TOTAL	6,187	178,576	872	20,091
Electric motors operated by above primary units	1,088	12,036	81	704
Stationary boilers	43	23,261	8	1,503
Motor generator sets	61	31,934	6	209

TOTAL PRODUCTION OF CHEMICALS IN CANADA, 1943

The heavy chemical industry, as it is defined for statistical purposes, includes only the plants which were occupied chiefly in this line of manufacture. Only 38 establishments were placed in this category in 1943, but there were numerous other works, such as coke plants, metal refineries and liquor distilleries, which produced chemicals as a secondary or minor part of their operations. Data on the total output of chemicals from all sources have been assembled and are shown in Table 8, the values covering only the products made for sale as there is no adequate record of the intermediates made for the use of the producers.

Output in 1943 at \$109 millions was \$10 millions greater than in 1942, and was made up as follows, in millions of dollars: acids, 6.5; calcium compounds, 17.9; sodium compounds, 8.2; organic chemicals, 31.0; fine chemicals, 3.0; industrial gases, 14.7; fertilizer chemicals, 14.0, and other chemicals, 14.0.

Table 8 - TOTAL PRODUCTION OF CHEMICALS IN CANADA, 1942 and 1943 (From all Industries)

Commodity	Selling Value at Works	
	1942	1943
Acids, including acetic, muriatic, nitric, sulphuric, phosphoric, stearic, cresylic and fatty	6,700,000	6,500,000
Calcium compounds, including carbide, chloride, phosphide, cyanamide, cyanide, acid phosphate, grey acetate, arsenate, chloride of lime and stearate	16,900,000	17,900,000
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)	8,400,000	8,200,000

Table 8 - TOTAL PRODUCTION OF CHEMICALS IN CANADA, 1942 and 1943 (From all Industries)
(Concluded)

Commodity	Selling Value at Works	
	1942	1943
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)	27,300,000	31,000,000
Fine chemicals and precious metal salts, including salts of bismuth, mercury, potassium, sodium, ammonium, magnesium, etc. (uranium and radium salts not included)	2,600,000	3,000,000
Compressed and liquefied gases, etc., including acetylene, carbon dioxide, oxygen, nitrous oxide, liquid sulphur dioxide, liquid chlorine, anhydrous and aqua ammonia, etc.	13,600,000	14,700,000
Ammonium sulphate, phosphate and nitrate and superphosphate (fertilizers)	7,800,000	14,000,000
Other chemicals, including white lead, zinc oxide, red lead, litharge, cobalt salts, nickel salts, ferric chloride, lead arsenate, zinc stearate, phosphorus, white arsenic, sulphur, hexachlorethane, ammonium nitrate, etc.	15,600,000	14,000,000
TOTAL	98,900,000	109,300,000

LIST OF FIRMS IN THE ACIDS, ALKALIES AND SALTS INDUSTRY, 1943

Name of Company	Location of Plant
Dominion Steel and Coal Corp. Ltd.	Sydney, N.S.
Shawinigan Chemicals Limited (3 plants)	Transmission Ave., Shawinigan Falls, Que.
Canadian Industries Limited (2 plants)	Summit Ave., Shawinigan Falls, Que.
Zinc Oxide Company of Canada, Ltd.	6894 Notre Dame St. E., Montreal, Que.
Electric Reduction Co. of Canada, Ltd.	Buckingham, Que.
Canadian Industries Limited	Clouthier St., Shawinigan Falls, Que.
Aluminum Company of Canada, Ltd.	Arvida, Que.
Defence Industries Limited	Summit Ave., Shawinigan Falls, Que.
The Nichols Chemical Company Limited	Clark Island, Valleyfield, Que.
North American Cyanamid Limited	Niagara Falls, Ont.
Brunner, Mond Canada, Limited	Amherstburg, Ont.
H. S. & T. Crystal Company, Limited	New Toronto, Ont.
Canadian Hanson and Van Winkle Co. Ltd.	1525 Morrow Ave., Toronto, Ont.
Canadian Industries Limited	4016 Sandwich St. E., Windsor, Ont.
W. C. Hardesty Co. of Canada Limited	521 Front St. E., Toronto, Ont.
Canadian Industries Limited	Copper Cliff, Ont.
Canadian Industries Limited	Cornwall, Ont.
Canadian Industries Limited	Burlington St., Hamilton, Ont.

LIST OF FIRMS IN THE ACIDS, ALKALIES AND SALTS INDUSTRY, 1943
(Concluded)

Name of Company	Location of Plant
Watts Chemical Company	355 Weston Rd. S., Toronto, Ont.
Nuodex Products of Canada Ltd.	34 Industrial St., Leaside, Ont.
The Nichols Chemical Company Ltd.	Sulphide, Ont.
Defence Industries Limited	Windsor, Ont.
Electro Metallurgical Company of Canada Ltd.	Welland, Ont.
National Silicates Limited	Kipling Ave., New Toronto, Ont.
Church and Dwight, Limited	Amherstburg, Ont.
Welland Chemical Works Ltd.	Garner Road, Niagara Falls, Ont.
Naugatuck Chemicals (2 plants)	Erb Street, Elmira, Ont.
Cornwall Chemicals Limited	Cornwall, Ont.
The Ontario Paper Company Limited	Allanburg Rd., Thorold, Ont.
Alberta Nitrogen Products Ltd.	Calgary, Alta.
The Consolidated Mining and Smelting Company of Canada Ltd. (2 plants)	Trail, B.C.
The Nichols Chemical Company Ltd.	Barnet, B.C.
Canadian Industries Limited	foot of 16th Street, New Westminster, B.C.

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