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ANNUAL INDUSTRY REPORTCHEMICALS AND ALLIED PRODUCTS GROUPTHE ACIDS, ALKALIES AND SALTS INDUSTRY - 1941

Thirty-two plants in Canada, classified under the Acids, Alkalies and Salts Industry, were engaged chiefly in the production of heavy chemicals in 1941. Production reported by this group was valued at \$50,109,348, an increase of 61.6 per cent over the total for the previous year. The investment in plants, equipment and supplies totalled \$61,329,966 and the number of employees was 6,482.

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, sodium cyanide, sodium silicate, sodium chlorate, sodium hypochlorite, hexachlorethane, disodium and trisodium phosphate, sodium acid pyrophosphate, tetrasodium pyrophosphate, liquid chlorine, satin white, phosphorus, acid calcium phosphate, potassium chlorate, potassium perchlorate, synthetic ammonia, sulphur dichloride, sulphur monochloride, aluminium fluoride, metallic naphthenates, ferric chloride, hydrogen peroxide, butyl acetate, ethyl acetate, vinylacetate, pentasol acetate, acetone, acetic anhydride, vinyl acetate resins, acetylene carbon black, zinc chloride, zinc oxide, nickel formate, liquid sulphur dioxide, perchlorethylene, trichlorethylene, ammonium chloride, ammonium nitrate, plating and galvanizing salts, weed killer and elemental sulphur. Separate production figures are published for sulphuric acid only, as each of the other items was made by less than three firms.

The output of sulphuric acid increased to 468,712 tons (600 Bt) in 1941 from 312,009 tons in 1940. Nine plants were operated by five companies, as follows: The Consolidated Mining and Smelting Company of Canada, Limited, at Trail, B.C.; Canadian Industries Limited at Copper Cliff, Ont., Hamilton, Ont., New Westminster, B.C.; Nichols Chemical Company Limited at Sulphide, Ont., Valleyfield, Que., and Barnet, B.C.; Dominion Steel and Coal Corporation Limited at Sydney, N.S.; and Welland Chemical Works Ltd., at Niagara Falls, Ont. The first two of these works, at Trail and at Copper Cliff, operated entirely on sulphur bearing smelter gases.

Table 1 - PRINCIPAL STATISTICS OF THE ACIDS, ALKALIES AND SALTS INDUSTRY, 1931 - 1941

Years	No. 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
		\$		\$	\$	\$	\$
1931	14	44,994,323	1,694	2,426,330	2,167,535	2,407,682	10,352,497
1932	14	44,067,194	1,679	2,211,467	2,103,675	2,233,076	11,357,649
1933	15	44,239,418	1,891	2,215,425	1,407,373	2,463,953	12,713,045
1934	16	45,033,355	2,239	2,341,853	1,372,137	3,674,265	16,494,139
1935	18	53,381,638	2,627	3,490,397	2,153,692	4,606,713	19,012,615
1936	20	32,596,308	2,966	3,988,310	2,316,389	4,680,299	13,959,512
1937	21	35,094,093	3,863	4,896,613	2,810,364	6,008,977	22,410,168
1938	24	32,254,723	2,991	4,571,579	2,349,819	5,223,443	29,476,573
1939	25	36,973,482	3,128	5,032,393	2,543,217	6,021,716	23,636,606
1940	27	45,332,949	4,002	6,627,695	3,794,629	8,813,251	31,000,928
1941							
Quebec	9	20,149,969	2,161	3,584,759	2,050,338	7,393,726	14,542,579
Ontario	18	31,904,259	3,906	6,617,410	3,526,220	3,511,362	30,823,361
British Columbia	3	737,523	235	636,088	36,740	392,339	4,237,095
Nova Scotia	2	8,488,215	132	131,027	38,159	205,530	451,313
CANADA	32	61,329,966	6,482	11,169,284	5,701,507	17,108,347	50,109,348

Per cent

change 1941  
from 1940

+ 53.8    + 62.0    + 68.5    + 50.3    + 94.0    + 61.6

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 1932 1941

Years	Present value of lands, buildings, machinery, tools and other equipment	Inventory value of materials on hand stocks in process, finished products, fuel and other supplies	Operating capital (cash bills and accounts receivable, etc.)	TOTAL CAPITAL EMPLOYED
	\$	\$	\$	\$
1932	30,740,174	3,303,349	9,517,371	44,067,194
1933	29,840,243	3,470,243	10,923,929	44,239,418
1934	29,775,661	4,206,938	11,050,696	45,033,355
1935	25,907,178	4,172,459	3,302,051	33,381,638
1936	24,971,587	4,174,038	3,450,633	32,596,308
1937	25,845,956	5,200,279	4,047,773	35,094,093
1938	22,512,947	5,021,973	4,719,303	32,254,723
1939	24,009,603	4,710,704	3,258,175	36,973,482
1940	25,433,060	9,464,353	10,335,531	45,332,949
1941				
Quebec	10,393,363	3,250,074	6,000,927	20,149,969
Ontario	16,904,923	4,973,727	10,923,309	31,904,259
Other provinces	9,011,156	129,750	131,332	9,275,732
CANADA	36,318,047	8,353,551	10,153,368	61,329,966



Table 3 - EMPLOYEES, SALARIES AND WAGES, 1932 - 1941

Years	Average number of employees				Salaries	Wages	TOTAL SALARIES and WAGES	
	On salaries		On wages					
	Male	Female	Male	Female				TOTAL
1932 .....	312	33	1,329	5	1,679	746,726	1,464,741	2,211,467
1933 .....	527	39	1,521	4	1,591	730,267	1,535,159	2,265,425
1934 .....	403	49	1,832	5	2,239	845,253	1,996,600	2,841,853
1935 .....	584	110	1,925	8	2,627	1,227,893	2,263,004	3,490,897
1936 .....	603	112	2,242	9	2,966	1,297,033	2,631,272	3,928,305
1937 .....	603	114	2,654	3	3,359	1,487,125	3,426,293	4,913,418
1938 .....	576	100	2,305	10	2,991	1,583,938	2,987,641	4,571,579
1939 .....	601	121	2,393	13	3,123	1,707,077	3,325,221	5,032,298
1940 .....	601	136	3,249	16	4,002	1,873,962	4,743,733	6,627,695
1941 -								
Quebec .....	201	43	1,899	18	2,161	802,139	2,732,620	3,534,759
Ontario .....	360	102	2,369	15	3,906	1,821,136	4,736,274	6,557,410
Other provinces .	104	20	291	-	415	128,626	323,433	452,059
CANADA .....	1,165	225	5,059	33	6,482	2,821,901	3,547,363	6,369,264

Table 4 - WAGE-EARNERS, BY MONTHS, 1940 and 1941 (number on payroll on the last work day of each month)

	1940			1941		
	Male	Female	TOTAL	Male	Female	TOTAL
January .....	2,846	13	2,859	3,481	19	3,500
February .....	2,970	12	2,882	3,549	20	3,569
March .....	2,362	14	2,382	3,561	22	3,583
April .....	2,981	14	2,995	4,271	22	4,291
May .....	3,212	14	3,226	4,951	22	4,971
June .....	3,305	16	3,321	5,438	29	5,467
July .....	3,321	19	3,340	5,721	37	5,753
August .....	3,532	20	3,552	5,868	38	5,906
September .....	3,333	20	3,353	5,321	44	5,365
October .....	3,503	22	3,520	6,193	46	6,244
November .....	3,511	21	3,532	5,941	46	5,987
December .....	3,485	18	3,503	5,909	47	5,956
AVERAGE .....	3,249	16	3,265	5,059	33	5,092

Table 5 - HOURS WORKED PER WEEK, by WAGE-EARNERS, 1941 (In one week in month of highest employment; overtime included)

Hours worked per week	Number		Hours worked per week	Number	
	of wage- earners	Per cent of total		of wage- earners	Per cent of total
30 hours or less ...	76	1.2	49 - 50 hours .....	226	3.4
31 - 43 hours .....	436	6.6	51 - 54 hours .....	274	4.2
44 hours .....	304	4.6	55 hours .....	31	.5
45 - 47 hours .....	191	2.9	56 - 64 hours .....	1,133	17.2
48 hours .....	3,321	58.2	65 hours and over ..	79	1.2
			Total .....	6,571	100.0
			Total wages paid in selected week ...		\$184,111

Table 6 -- FUEL AND ELECTRICITY USED, 1940 and 1941

Kinds	Unit of measure	1 9 4 0		1 9 4 1	
		Quantity	Cost at works \$	Quantity	Cost at works \$
Bituminous coal - Canadian	ton	37,838	172,270	34,313	134,350
Foreign	ton	154,125	707,061	214,900	1,202,833
Anthracite coal	ton	430	4,335	532	6,102
Coke	ton	30	530	145	1,564
Gasoline	Imp. gal.	62,904	10,198	146,830	23,966
Fuel oil	Imp. gal.	310,459	45,832	1,372,967	94,524
Gas -- Manufactured	M cu. ft.	727	617	5,671	4,787
Natural	M cu. ft.	342	451	223,208	17,526
Other fuel	xxx	-	83,049	-	130,443
Electricity purchased	K. W. H. I.	283,401,705	2,709,576	1,451,736,332	4,019,302
<b>TOTAL</b>	<b>xxx</b>	-	<b>3,794,029</b>	-	<b>5,701,507</b>
Electricity generated for own use	K. W. H.	107,023,958	-	105,302,004	-

Table 7 -- POWER EQUIPMENT 1940 and 1941

Kinds	Ordinarily in use		In reserve or idle	
	Number of units	Total rated horse power	Number of units	Total rated horse power
<u>1 9 4 0</u>				
Steam engines and steam turbines	29	9,260	3	712
Gasoline, gas and oil engines	-	-	1	150
Hydraulic turbines or water wheels	5	10,520	-	-
Total primary equipment	34	19,780	9	862
Electric motors operated by purchased power	2,819	58,160	140	5,532
<b>TOTAL</b>	<b>2,853</b>	<b>77,940</b>	<b>149</b>	<b>6,394</b>
Electric motors operated by above primary units	934	10,065	53	1,245
Stationary boilers	26	8,796	9	2,550
<u>1 9 4 1</u>				
Steam engines and steam turbines	52	17,049	10	1,718
Diesel engines	-	-	1	65
Gasoline, gas and oil engines	1	35	2	200
Hydraulic turbines or water wheels	5	10,520	-	-
Total primary equipment	58	27,604	13	1,983
Electric motors operated by purchased power	3,904	97,052	470	9,071
<b>TOTAL</b>	<b>3,962</b>	<b>124,656</b>	<b>483</b>	<b>11,054</b>
Electric motors operated by above primary units	996	10,525	56	445
Stationary boilers	53	10,472	8	1,517

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 1941 was around \$75,000,000 compared with \$48,000,000 in 1940. Imports in 1941, on a similar basis, amounted to \$32,000,000 and exports totalled \$23,000,000. Canadian factories thus accounted for about 58 per cent of the chemical requirements of this country, besides contributing to exports.

Table 8 - TOTAL PRODUCTION OF INDUSTRIAL CHEMICALS IN CANADA, 1940 and 1941.

Commodity	Selling value at works	
	1940	1941
<u>Acids, including acetic, muriatic, nitric, sulphuric, phosphoric, and stearic</u> .....	\$ 3,740,000	\$ 5,300,000
<u>Calcium Compounds, including carbide, chloride, phosphide, cyanamide, cyanide, acid phosphate, grey acetate, arsenate, chloride of lime, etc.</u> .....	12,600,000	16,300,000
<u>Sodium Compounds, including hydroxide, phosphate, silicate, hypochlorite, bisulphite, salt cake, Glauber's salt, chlorate, acid pyro-phosphate, soda ash, sal soda, bisulphate, etc. (pharmaceutical salts included elsewhere) ...</u>	5,500,000	6,000,000
<u>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)</u> .....	7,200,000	17,500,000
<u>Fine Chemicals and Precious Metal Salts, including salts of bismuth, mercury, potassium, sodium, ammonium, magnesium, silver, gold, uranium and radium</u> .....	1,400,000	3,100,000
<u>Compressed and Liquefied Gases, etc., including acetylene, carbon dioxide, oxygen, nitrous oxide, liquid sulphur, dioxide, liquid chlorine, anhydrous and aqua ammonia, etc.</u>	7,100,000	10,300,000
<u>Ammonium Sulphate, Phosphate and Superphosphate</u> .....	3,000,000	3,400,000
<u>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.</u> .....	5,100,000	3,700,000
<b>TOTAL</b>	<b>48,000,000</b>	<b>75,000,000</b>



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