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CANADA

DEPARTMENT OF TRADE AND COMMERCE

DOMINION BUREAU OF STATISTICS

CENSUS OF INDUSTRY

MINING, METALLURGICAL & CHEMICAL BRANCH

THE ACIDS, ALKALIES AND SALTS INDUSTRY IN CANADA 1937

OTTAWA
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ANNUAL INDUSTRY BULLETIN

CHEMICALS AND ALLIED PRODUCTS GROUP

THE ACIDS, ALKALIES AND SALTS INDUSTRY, 1937.

Twenty-one plants in Canada made heavy chemicals as their chief products in 1937 and were classified to the acids, alkalies and salts industry. Production amounted to $22,410,168 or 18 per cent more than in 1936. The investment in these works totalled $35,094,008 and the number of employees was 3,363.

Steady expansion has been the outstanding feature of this industry during the past decade, and scarcely a year has passed without the appearance of new plants and new products. In 1937 reports were received for the first time for the new trichlorethylene plant of Canadian Industries Limited at Shawinigan Falls, P.Q., and for the new elemental sulphur works of the Consolidated Mining and Smelting Company of Canada, Ltd., at Trail, B.C.. Both of these establishments are producing chemicals which previously were not made in Canada. Another large works -- a caustic soda-chlorine unit -- is being constructed at Shawinigan Falls by Canadian Industries Limited.

The list of chemicals made by the factories in this group is quite a long one and includes the following: sulphuric acid, hydrochloric acid, nitric acid, glacial acetic acid, phosphoric acid, calcium carbide, calcium cyanamide, calcium chloride, caustic soda, soda ash, nitre cake, salt cake, Glauber's salt, sodium cyanide, disodium and trisodium phosphate, sodium silicate, sodium chlorate, sodium hypochlorite, liquid chlorine, phosphorus, acid calcium phosphate, synthetic ammonia, sulphur dichloride, sulphur monochloride, ferric chloride, hydrogen peroxide, butyl acetate, ethyl acetate, paraldehyde, croton aldehyde, vinyl acetate, pentasol acetate, acetone, acetic anhydride, vinyl acetate resins, acetylene carbon black, zinc oxide, liquid sulphur dioxide, perchlorethylene, trichlorethylene, and elemental sulphur. Production statistics are not published for these items separately as, except for sulphuric acid, each was made by only one or two concerns. In almost every instance the output in 1937 was higher than in 1936.

The output of sulphuric acid surpassed the previous record and reached a total of 282,716 tons of 68° Be acid. Seven plants were operated by four 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., and New Westminster, B.C.; Nichols Chemical Company Limited at Sulphide, Ont., and Barnet, B.C.; and the Dominion Steel and Coal Corporation Limited at Sydney, N.S. The first

two of these works, at Trail and at Copper Cliff, operated entirely on sulphur-bearing smelter gases. Most of the Trail output was used in the company's own fertilizer works and part of the Copper Cliff production was used to make nitre cake for use in the nickel-copper smelter of the International Nickel Company. Only 108 tons of sulphuric acid were imported during 1937 and 1,608 tons were exported.

Imports of acids of all kinds were valued at $1,941,670 in 1937. Stearic acid, citric acid, tartaric acid and boracic acid were among the more important items. Exports of acids were appraised at $2,902,209.

Imports of inorganic chemicals totalled $9,954,179 in 1937 including, among the more important items, sodium cyanide, sodium nitrate, zinc oxide, sulphate of alumina, liquid chlorine, calcium chloride, sodium bicarbonate, copper sulphate, tin bichloride, borax, caustic soda, sodium bichromate, sodium phosphate, litharge and sodium silicate. Exports of inorganic chemicals amounted to $10,410,651, mostly calcium cyanamide, ammonium sulphate, sodium compounds, and cobalt oxides and salts.

Table 1 - PRINCIPAL STATISTICS OF THE ACIDS, ALKALIES AND SALTS INDUSTRY, 1920 - 1937.

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
		$		$	$	$	$
1920	25	28,439,339	3,033	4,774,855	1,018,354	4,448,870	16,736,068
1923	24	31,963,419	2,488	3,318,679	1,957,997	4,505,307	15,105,724
1926	19	34,589,930	2,040	3,075,649	2,140,193	3,643,357	18,526,247
1929	15	49,417,431	2,897	4,338,686	2,921,129	6,301,121	28,021,972
1930	17	52,314,567	2,409	3,502,834	2,490,790	4,712,471	20,111,602
1931	14	44,994,828	1,694	2,426,880	2,167,585	2,407,682	10,952,497
1932	14	44,067,194	1,679	2,211,467	2,103,675	2,283,076	11,357,649
1933	15	44,239,418	1,891	2,315,425	1,407,378	2,463,958	12,713,045
1934	16	45,032,355	2,289	2,841,853	1,872,137	3,674,265	16,494,139
1935	18	33,381,388	2,327	3,490,897	2,158,692	4,306,713	19,012,615
1936	20	32,596,308	2,966	3,988,310	2,316,389	4,680,299	18,959,512
1937 -							
Quebec	5	11,711,924	1,147	1,428,480	758,226	1,858,574	4,678,248
Ontario	12	22,277,527	2,025	3,097,998	2,023,896	3,958,359	16,145,428
Nova Scotia .	1)						
British Columbia	3)	1,104,557	191	370,140	28,242	192,044	1,586,492
CANDA	21	35,094,008	3,363	4,896,618	2,810,364	6,008,977	22,410,168

Table 2 - CAPITAL EMPLOYED, 1930 - 1937.

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
	$	$	$	$
1930	38,064,081	5,054,885	9,195,601	52,314,567
1931	31,608,809	3,385,719	10,000,300	44,994,828
1932	30,746,174	3,803,349	9,517,671	44,067,194
1933	29,840,246	3,470,243	10,928,929	44,239,418
1934	29,775,661	4,203,998	11,050,696	45,033,355
1935	25,907,178	4,172,459	3,302,051	33,381,688
1936	24,971,587	4,174,038	3,450,683	32,596,308
1937 -				
Quebec	9,228,616	1,310,191	1,173,117	11,711,924
Ontario	15,573,229	3,840,742	2,863,556	22,277,527
Other provinces	1,044,111	49,346	11,100	1,104,557
CANADA ...	25,845,956	5,200,279	4,047,773	35,094,008

Table 3 - EMPLOYEES, SALARIES AND WAGES, 1930-1937.

Years	Average number of employees					Salaries	Wages	TOTAL SALARIES and WAGES
	On salaries		On wages					
	Male	Female	Male	Female	TOTAL			
						$	$	$
1930	351	37	2,017	4	2,409	888,220	2,614,614	3,502,834
1931	341	26	1,324	3	1,694	771,271	1,655,609	2,426,880
1932	312	33	1,329	5	1,679	746,726	1,464,741	2,211,467
1933	327	39	1,521	4	1,891	780,267	1,535,158	2,315,425
1934	403	49	1,832	5	2,289	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	1,297,038	2,691,272	3,988,310
1937 -								
Quebec	149	26	968	4	1,147	412,523	1,015,957	1,428,480
Ontario	428	87	1,508	4	2,021	988,592	2,106,206	3,094,798
Other provinces	26	1	164	...	191	66,010	304,130	370,140
CANADA ...	603	114	2,634	8	3,359	1,467,125	3,426,293	4,893,418

Table 4 - WAGE-EARNERS, BY MONTHS, 1936 and 1937.

	1936			1937		
	Male	Female	TOTAL	Male	Female	TOTAL
January	2,174	10	2,184	2,351	8	2,359
February	2,143	9	2,152	2,405	8	2,413
March	2,189	9	2,198	2,581	8	2,589
April	2,177	9	2,186	2,625	8	2,633
May	2,179	9	2,188	2,731	8	2,739
June	2,289	9	2,298	2,800	9	2,809
July	2,295	11	2,306	2,732	14	2,746
August	2,341	12	2,353	2,810	11	2,821
September	2,347	9	2,356	2,742	8	2,750
October	2,234	9	2,243	2,767	8	2,775
November	2,274	9	2,283	2,599	8	2,607
December	2,274	9	2,283	2,472	8	2,480
AVERAGE	2,242	9	2,251	2,637	9	2,646

Table 5 - REGULAR HOURS WORKED PER WEEK, 1936 AND 1937 (Overtime not included)

Regular hours worked per week	Percent of wage-earners 1936	1937	Regular hours worked per week	Percent of wage-earners 1936	1937
40 hours or less	29.1	14.1	49 - 50 hours	...	0.1
41 - 47 hours	16.6	17.8	51 - 53 hours	0.3	...
44 hours	15.2	28.4	54 hours	0.2	0.4
45 - 47 hours	1.2	1.3	56 - 59 hours	5.9	1.8
48 hours	31.5	36.0	60 hours and over	...	0.1

Table 6 - FUEL AND ELECTRICITY USED, 1936 AND 1937.

Kinds	Unit of measure	1936 Quantity	1936 Cost at works $	1937 Quantity	1937 Cost at works $
Bituminous coal - Canadian	short ton	2,550	14,971	3,066	19,044
Foreign.	short ton	148,533	660,067	170,762	768,584
Anthracite coal	short ton	308	2,549	248	2,071
Coke	short ton	684	5,808	748	6,739
Gasoline	Imp. gal.	2,266	385	4,807	793
Fuel oil	Imp. gal.	636,583	37,978	660,204	41,091
Gas - Manufactured	M cu. ft.	...	...	61	46
Natural	M cu. ft.	...	...	1,216	635
Other fuel	xxx	...	35,712	...	32,012
Electricity purchased	K. W. H.	812,959,908	1,558,919	1,009,469,930	1,980,089
TOTAL	xxx	...	2,316,389	...	2,851,104
Electricity generated for own use	K. W. H.	85,834,385	...	88,686,369	...

Table 7 - POWER EQUIPMENT, 1936 AND 1937.

Kinds	1936 Number of units	1936 Total rated horse power	1937 Number of units	1937 Total rated horse power
Steam engines and steam turbines ..	35	9,885	35	9,885
Gasoline, gas and oil engines	...	...	1	150
Hydraulic turbines and water wheels	5	8,250	5	8,250
Total Primary Equipment	40	18,135	41	18,285
Electric motors operated by purchased power	2,162	55,153	2,352	55,885
TOTAL	2,202	73,288	2,393	74,170
Electric motors operated by above primary units	532	6,751	606	7,553
Total Electric Motors	2,724	61,904	2,958	63,438
Boilers	35	11,117	52	15,658

Table 8 - POWER EQUIPMENT SUBDIVIDED BETWEEN "ORDINARILY IN USE" and "IN RESERVE OR IDLE" 1937.

Kinds	Ordinarily in use		In reserve or idle	
	Number of units	Total rated horse power	Number of units	Total rated horse power
Steam engines and steam turbines	23	7,599	12	2,286
Gasoline, gas and oil engines	...	...	1	150
Hydraulic turbines or water wheels ..	5	8,250	...	...
Total Primary Equipment	28	15,849	13	2,436
Electric motors operated by purchased power	2,241	48,905	111	6,980
TOTAL	2,269	64,754	124	9,416
Electric motors operated by above primary units	536	6,195	70	1,358
Total Electric Motors	2,777	55,100	181	8,338
Boilers	38	12,111	14	3,547

Table 9 - MATERIALS USED IN MANUFACTURING, 1936 and 1937.

Materials	Unit of measure	1936 Quantity	1936 Cost at works $	1937 Quantity	1937 Cost at works $
Acid, hydrochloric(muriatic),20° Bé	lb.	174,169	3,990	101,720	2,470
Acid, nitric, 42° Bé	lb.	...	...	9,921	529
Acid, sulphuric, 66° Bé	lb.	7,065,583	59,682	3,999,671	58,310
Aluminium sulphate	lb.	233,710	5,388	285,475	5,035
Ammonia liquor	lb.NH_3	190,526	9,964	734,112	23,213
Ammonia, anhydrous	lb.	24,006	3,898	30,462	2,223
Calcium chloride	lb.	568,235	7,081	608,050	17,377
Chlorine, liquid	lb.	157,677	3,889	1,247,625	30,199
Coal, anthracite (except for fuel)	short ton	3,238	24,650	2,421	19,801
Coal, bituminous (except for fuel)	short ton	15,746	88,931	18,885	109,615
Coke, petroleum (except for fuel)	short ton	28,337	230,371	32,625	262,301
Coke, other (except for fuel) ...	short ton	82,638	589,977	127,065	915,563
Electrodes	xxx	...	255,296	...	301,378
Fluorspar	short ton	3,502	46,402	3,503	52,035
Limestone	short ton	381,165	524,117	489,303	654,873
Lime, hydrated	short ton	20,387	76,930	15,103	63,927
Lime, quick	short ton	51,246	288,211	63,243	343,540
Potassium hydroxide(caustic potash)	lb.	14,599	1,487	42,000	4,277
Pyrites	short ton	93,426	129,889	25,036	138,611
Quartz, quartzite and silica sand	short ton	13,898	66,675	13,196	58,401
Sodium carbonate (soda ash)	lb.	14,616,574	200,068	15,132,472	205,387
Sodium chloride, dry, and brine (salt content)	short ton	193,114	718,824	237,777	783,549
Sodium bichromate	lb.	27,091	2,318	32,299	1,907
Sodium hydroxide (caustic soda) .	lb.	2,145,393	35,003	3,277,520	86,410
Sodium nitrate	lb.	1,342,857	25,321	1,377,466	27,305
Sodium silicate	lb.	7,780,344	109,463	9,392,416	134,315
Sodium sulphate (salt cake)	lb.	14,439,780	120,176	16,010,568	113,054
Sodium sulphide	lb.	63,331	1,973	100,786	2,955
Sulphur (brimstone)	short ton	11,738	222,053	21,329	403,511
Sulphur dioxide in smelter gases (for making sulphuric acid)	xxx	...	53,830	...	42,900
Zinc metal	lb.	...	...	3,584,568	175,494
Containers of all kinds and packing materials	xxx	...	346,185	...	377,780
Steel sheets for making containers	short ton	3,939	256,219	4,576	333,548
Lumber for making containers, etc.	M bd.ft.	420	10,195	275	7,544
All other materials and supplies	xxx	...	589,543	...	689,640
TOTAL	xxx	...	4,380,299	...	6,008,977

Table 10 - PRODUCTION, IMPORTS, EXPORTS and APPARENT CONSUMPTION OF SULPHURIC ACID, 1923 - 1937.

Years	Production	Imports	Exports	Apparent consumption(x)
		(short tons)		
1923	87,150	291	12,203	75,238
1924	71,991	47	7,678	64,360
1925	83,796	52	19,179	64,269
1926	108,230	53	28,137	80,146
1927	98,470	53	17,407	81,116
1928	96,227	55	13,329	82,953
1929	110,749	111	8,397	102,463
1930	107,352	150	571	106,931
1931	119,541	80	997	118,624
1932	136,846	62	712	136,196
1933	148,142	58	1,013	147,187
1934	205,325	82	953	204,454
1935	224,410	83	1,027	223,466
1936	241,075	108	1,128	240,055
1937	282,716	108	1,608	281,216

(x) No allowance made for changes in stocks on hand.

Table 11 - AVAILABLE DATA ON THE CONSUMPTION OF SULPHURIC ACID, 66° Bé, by INDUSTRIES, 1935 and 1936.

Industries	1935		1936	
	Short tons	Cost at works	Short tons	Cost at works
		$		$
Acids, alkalies and salts	3,303	74,240	3,533	59,682
Explosives	12,083	233,111	12,588	257,657
Fertilizers	135,456	1,300,627	142,646	1,399,320
Adhesives	253	6,870	590	9,869
Cellulose products	1,554	31,376	2,050	40,688
Miscellaneous chemicals	188	5,352	224	5,929
Wire and wire goods	4,989	90,608	6,013	97,153
Sheet metal products	2,382	43,265	2,149	43,972
Electrical apparatus	1,770	58,714	1,839	60,391
Coke and gas	20,388	280,079	19,970	312,270
Petroleum refining	11,549	224,014	11,405	213,433
Leather tanning	1,328	45,933	1,775	45,193
TOTAL ACCOUNTED FOR	195,543	2,394,249	204,782	2,545,557

NOTE - Information on consumption was not asked for on all questionnaires which were sent out under the annual Census of Industry, consequently complete data are not available.

Table 12 - IMPORTS INTO CANADA OF ACIDS AND CERTAIN INORGANIC CHEMICALS, 1937.

Commodities		Quantity	Value $
ACIDS			
Inorganic acids -			
Acid, boracic, in packages not less than 25 pounds	lb.	1,847,217	76,497
Acid, hydrofluosilicic	lb.	19,759	2,534
Acid, muriatic	lb.	415,535	18,074
Acid, nitric	lb.	303,312	29,430
Acid, phosphoric	lb.	238,490	11,252
Acid, sulphuric	lb.	215,430	12,437
Acid, salicylic and acetyl salicylic	lb.	243,796	111,856
Organic acids -			
Acid, acetic and pyroligneous, crude, of any strength not exceeding 30%	gal.	312	385
Acid, acetic and pyroligneous, n.o.p.	gal.	2,249	3,025
Acid, citric	lb.	859,457	200,889
Acid, cresylic, for use only in the manufacture of preparations for disinfecting, dipping and spraying	lb.	43,275	3,712
Cresylic acid and compounds of cresylic acid used in concentrating ores, n.o.p.	lb.	278,281	17,713
Xanthates and sulpho-thio-phosphoric (dithio-phosphoric) compounds for use in concentrating ores, etc.	lb.	3,504,479	586,676
Acid, oxalic	lb.	239,776	26,927
Acid, stearic, n.o.p.	lb.	2,957,517	230,061
Acid, stearic, when imported by manufacturers of candles or crayons for use only in their own factories in the manufacture of candles or crayons	lb.	138,300	12,167
Acid, tannic	lb.	65,539	33,139
Tartaric acid, crystals	lb.	845,915	171,067
Acids, others, n.o.p.	lb.	3,946,421	392,829
Total Acids	$	...	1,941,670
INORGANIC CHEMICALS, N.O.P.			
Alum in bulk, ground or unground, but not calcined.	cwt.	35,508	46,991
Chloralum and chloride of aluminium	cwt.	10,396	10,439
Sulphate of iron (copperas)	cwt.	13,512	10,257
Sulphate of alumina or alum cake	cwt.	719,491	739,059
Ammonia and its compounds -			
Ammonia, nitrate of	lb.	10,339,200	356,691
Sal ammoniac	lb.	3,937,298	92,683
Sal ammoniac skimmings	lb.	1,554,659	70,369
Ammonia, sulphate of	cwt.	64,607	82,440
Ammonia compounds, n.o.p.	lb.	3,369,198	97,765
Antimony, arsenic, copper, tin and zinc compounds -			
Antimony salts, viz. = tartar emetic, chloride and lactate (antimonine)	lb.	53,293	10,340
Arsenic, sulphide of	lb.	24,647	3,377
Arsenious oxide	lb.	7,694	462
Copper, sub-acetate of, or verdigris, dry	lb.	3,325	653
Copper sulphate (blue vitriol)	lb.	5,365,495	238,636
Tin, bichloride of, or tin crystals	lb.	272,398	72,590

Table 12 - IMPORTS INTO CANADA OF ACIDS AND CERTAIN INORGANIC CHEMICALS, 1937, (Continued)

Commodities		Quantity	Value
			$
INORGANIC CHEMICALS, N.O.P. (Continued)			
Antimony, arsenic, copper, tin and zinc compounds - (concluded)			
Zinc, sulphate of	lb.	976,592	19,064
Zinc, chloride of	lb.	1,284,296	44,703
Bismuth and lead compounds -			
Bismuth salts	xx	...	17,489
Lead, acetate of, not ground	lb.	177,352	13,552
Lead, arsenate of	lb.	277,992	19,565
Compounds of tetraethyl lead	lb.	4,518,567	2,032,333
Lead, nitrate of, not ground	lb.	312,776	23,739
Lead, red, and orange mineral	lb.	679,276	53,805
Bromine, chlorine and iodine compounds -			
Bromine	lb.	1,029	804
Bromides, crude, for the production of bromine	lb.	330	240
Chlorine, liquid or chlorine gas	lb.	7,947,330	170,936
Iodine, crude	lb.	75,323	61,127
Iodized mineral salts, for use exclusively in the feeding of animals	xx	...	2,496
Calcium compounds -			
Acetate of lime	lb.	80	18
Arsenate of lime	lb.	71,168	4,305
Calcium chloride, in packages of not less than 25 pounds	cwt.	3,770	7,511
Calcium chloride, in packages of less than 25 pounds	lb.	816	439
Calcium chloride, not in solution, for road treating purposes	cwt.	66,216	31,389
Chloride of lime and hypochlorite of lime, in packages of not less than 25 pounds	cwt.	6,270	26,625
Chloride of lime and hypochlorite of lime, in packages of less than 25 pounds	lb.	45,858	5,739
Calcium molybdate, when imported by manufacturers of steel for use exclusively in the manufacture of steel in their own works	lb.	212,566	70,737
Potash and potassium compounds, n.o.p. -			
Argols	lb.	3,290	450
Cream of tartar in crystals	lb.	681,035	98,626
Potash and pearl ash, in packages of not less than 25 pounds	lb.	184,512	10,836
Potash and pearl ash, in packages of less than 25 pounds	lb.	265	83
Potash, bicarbonate of	lb.	15,997	1,298
Potash, bichromate of, crude	lb.	136,454	11,603
Potash, sulphate of, crude	cwt.	110,025	155,390
Potash, muriate of, crude	cwt.	824,907	1,003,842
Potash, caustic, in packages of not less than 25 pounds	lb.	802,473	50,640
Potash, caustic, in packages of less than 25 pounds.	lb.	2,229	853
Potash, chlorate of, not further prepared than ground	lb.	1,114,096	50,951
Potash, red and yellow prussiate of	lb.	28,685	4,329
Saltpetre or nitrate of potash	lb.	2,512,739	75,792
Potash compounds, n.o.p.	lb.	489,020	74,115

Table 12 - IMPORTS INTO CANADA OF ACIDS AND CERTAIN INORGANIC CHEMICALS, 1937, (Concluded)

Commodities		Quantity	Value
			$
INORGANIC CHEMICALS, N.O.P. (Concluded)			
Soda and sodium compounds, n.o.p. -			
Borax, in packages of not less than 25 pounds	lb.	6,746,372	187,947
Glauber's salt	lb.	3,402,133	24,348
Soda, arseniate, biarseniate and stannate of	lb.	18,510	5,908
Soda ash or barilla	lb.	10,103,477	113,219
Soda, bicarbonate of	lb.	12,835,249	139,011
Soda, bichromate of	lb.	2,958,505	175,431
Soda, bisulphate of, or nitre cake	lb.	2,269,512	18,318
Soda, bisulphite of	lb.	635,161	23,507
Soda, caustic, when in packages of not less than 25 pounds	lb.	11,754,028	274,702
Soda, caustic, when in packages of less than 25 pounds	lb.	54,085	6,318
Soda, caustic, in solution	lb.	1,131,155	14,788
Soda, chlorate of	lb.	3,910	370
Soda, hyposulphite, when imported by tanners for use in their own factories in the tanning of leather	lb.	918,101	18,669
Soda, hyposulphite of, n.o.p.	lb.	2,426,106	54,354
Soda, nitrate of, n.o.p.	cwt.	562,842	728,365
Soda, nitrite of	lb.	197,379	6,187
Soda, peroxide of	lb.	87,865	15,371
Soda, phosphate of	lb.	1,358,500	55,198
Soda, prussiate of	lb.	325,046	34,783
Soda, sulphite of	lb.	1,042,497	27,748
Soda, sal	lb.	346,318	9,687
Soda, cyanide of	lb.	5,986,908	845,569
Soda, silicate of, in crystals or in solution	lb.	7,234,777	121,893
Soda, sulphate of, crude, known as salt cake	lb.	28,234,278	132,352
Soda, sulphide of	lb.	4,458,423	91,651
Sodium compounds, n.o.p.	lb.	7,676,506	388,940
Other inorganic chemicals -			
Acid, phosphate, not medicinal	lb.	405,396	23,186
Barium, peroxide of, non-alcoholic, for use in the manufacture of peroxide of hydrogen	lb.	1,552	177
Hydrogen perioxide, solutions of	lb.	27,796	4,213
Magnesia (magnesium oxide)	lb.	869,578	30,868
Magnesium carbonate, when imported for use in the manufacture of rubber products	lb.	975,044	48,002
Magnesium sulphate or Epsom salts	lb.	3,355,147	33,116
Mercury salts	xx	...	9,681
Phosphorus and compounds thereof, n.o.p.	lb.	92,293	28,370
Litharge	cwt.	25,605	194,421
Radium	xx	...	6,402
Total Inorganic Chemicals	$	...	9,954,179

Table 13 - EXPORTS FROM CANADA OF ACIDS AND INORGANIC CHEMICALS, 1937.

Commodities		Quantity	Value
			$
Acid, sulphuric	cwt.	32,159	20,276
Acids, other, n.o.p.	cwt.	461,584	2,881,933
Total Acids	$	...	2,902,209
Ammonium sulphate	cwt.	1,129,715	1,212,258
Calcium cyanamide	cwt.	2,924,414	3,264,043
Soda and sodium compounds	cwt.	929,152	4,674,097
Cobalt oxides and cobalt salts	lb.	597,869	754,965
Other inorganic chemicals, n.o.p.	xx	...	456,382
Acetate of lime	cwt.	34,415	48,906
Total Inorganic Chemicals	$	...	10,410,651

LIST OF FIRMS INCLUDED IN THE ACIDS, ALKALIES AND SALTS INDUSTRY, 1937.

Names of Companies and Location of Plants	Products reported in 1937.
Dominion Steel & Coal Corporation Limited, Sydney, N.S.	Sulphuric acid.
Canadian Industries Limited, Shawinigan Falls, P.Q.	Hydrogen peroxide
Canadian Industries Limited, Shawinigan Falls, P.Q.	Trichlorethylene, perchlorethylene
Electric Reduction Company of Canada, Limited, Buckingham, P.Q.	Phosphorus, phosphoric acid, ferro-phosphorus, sodium chlorate, acid calcium phosphate, di-sodium phosphate (2 hydrate and 12 hydrate), tri-sodium phosphate, sodium acid pyrophosphate, and chlorate weed-killing mixture.
Shawinigan Chemicals Limited, Shawinigan Falls, P.Q. (2 plants)	Calcium carbide, acetylene carbon black, glacial acetic acid, acetic anhydride, butyl acetate, iso-butyl acetate, ethyl acetate, paraldehyde, croton aldehyde, vinyl acetate, pentasol acetate, hydrated lime, acetone, frothing agent, vinyl acetate resins.
Zinc Oxide Co. of Canada, Ltd., Montreal, P.Q.	Zinc oxide.
Brunner, Mond Canada, Limited, Amherstburg, Ont.	Sodium carbonate (soda ash), tanners alkali (sodium carbonate and sodium hydroxide), super-alkali (sodium carbonate and sodium hydroxide), and calcium chloride.
Canadian Hanson & Van Winkle Co. Ltd., 15 Morrow Avenue, Toronto, Ont.	Plating and galvanizing salts (copper cyanide, copper carbonate, zinc cyanide, nickel salts, tin salts).
Canadian Industries Limited, Copper Cliff, Ont.	Sulphuric acid, sodium bisulphate (nitre cake).

LIST OF FIRMS INCLUDED IN THE ACIDS, ALKALIES AND SALTS INDUSTRY, 1937.

(Concluded)

Names of Companies and Location of plants	Products reported in 1937.
Canadian Industries Limited, Cornwall, Ont.	Hydrochloric acid, liquid chlorine, liquid sodium hydroxide (caustic soda), sodium hypochlorite.
Canadian Industries Limited, Burlington St., Hamilton, Ont.	Hydrochloric acid, sulphuric acid, sodium sulphate (Glauber's salt), sodium sulphate (salt cake), soldering flux and liquid sulphur dioxide.
Canadian Industries Limited, Windsor, Ont.	Liquid chlorine, sodium hydroxide (caustic soda), sodium hypochlorite, synthetic anhydrous ammonia, aqua ammonia, 26°, sulphur dichloride, sulphur monochloride, ferric chloride, lye vat alkali, chloride of lime.
Electro Metallurgical Co. of Canada, Ltd., Welland, Ont.	Calcium carbide.
H. S. & T. Crystal Co. Ltd., 169 Yonge St., Toronto, Ont.	Satin white, solvents.
National Silicates Limited, New Toronto, Ont.	Sodium silicate.
The Nichols Chemical Company Limited, Sulphide, Ont.	Nitric acid, sulphuric acid, sodium bisulphate (nitre cake).
North American Cyanamid Limited, Niagara Falls, Ont.	Calcium cyanamide, cyanide, and sodium silicate.
Watts Chemical Co., 355 Weston Rd., Toronto, Ont.	Zinc oxide and zinc dust.
Canadian Industries Limited, New Westminster, B.C.	Sulphuric acid and hydrochloric acid.
Consolidated Mining & Smelting Company of Canada, Limited, Trail B.C.	Hydrofluosilicic acid, sulphuric acid and sulphur (brimstone).
The Nichols Chemical Company Limited, Barnet, B.C.	Sulphuric acid.

A P P E N D I X

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 smelters and 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 1937 was around $36,200,000 compared with $31,000,000 in 1936. Imports in 1937, on a similar basis amounted to $19,000,000 and exports totalled $13,500,000. Canadian factories thus accounted for about 55 per cent of the chemical requirements of this country, besides contributing to exports.

Table 14 - TOTAL PRODUCTION OF INDUSTRIAL CHEMICALS IN CANADA (EXCLUSIVE OF ALLIED PRODUCTS), 1936 and 1937.

Commodity	Selling Value at works	
	1936	1937
	$	$
Acids, including acetic, muriatic, nitric, sulphuric and phosphoric	3,400,000	3,500,000
Calcium Compounds, including carbide, chloride, cyanamide, acid phosphate, grey acetate, arsenate and chloride of lime	4,200,000	5,900,000
Sodium Compounds, including hydroxide, cyanide, phosphate, silicate, hypochlorite, bisulphite, salt cake, Glauber's salt, chlorate, acid pyro-phosphate, soda ash, sal soda, bisulphate, etc. (pharmaceutical salts included elsewhere).	7,400,000	8,600,000
Organic Chemicals, including acetic anhydride, butyl acetate, iso-butyl acetate, croton aldehyde, ethyl acetate, paraldehyde, pantasol acetate, vinyl acetate, ethyl alcohol, methyl hydrate, glycerine, phenol, cresol, benzol, synthetic resins, etc. (acetic acid and acetylene included elsewhere)	4,800,000	5,700,000
Fine Chemicals and Precious Metal Salts, including salts of bismuth, mercury, potassium, sodium, ammonium, magnesium, silver, gold, uranium and radium	1,000,000	1,300,000
Compressed and Liquefied Gases, etc., including acetylene, carbon dioxide, oxygen, nitrous oxide, liquid sulphur dioxide, liquid chlorine, anhydrous and aqua ammonia, etc.	4,650,000	4,600,000
Ammonium Sulphate and Phosphate, and Superphosphate	3,200,000	3,900,000
Other Chemicals, including white lead, zinc oxide, red lead, litharge, cobalt salts, nickel salts, ferric chloride, lead arsenate, zinc stearate, phosphorus, white arsenic, sulphur, etc.	2,350,000	2,700,000
TOTAL	31,000,000	36,200,000