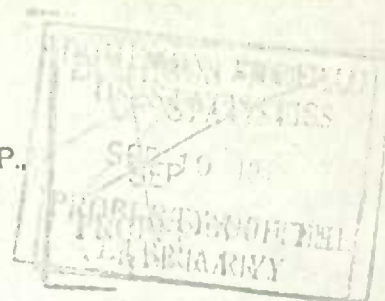


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CANADA
DEPARTMENT OF TRADE AND COMMERCE
DOMINION BUREAU OF STATISTICS
CENSUS OF INDUSTRY
MINING, METALLURGICAL & CHEMICAL BRANCH

THE SALT INDUSTRY
IN
CANADA
1940



OTTAWA
1941

Price 25 cents



Dominion Statistician:	R. H. Coats, LL.D., F.R.S.C., F.S.S. (Hon.)
Chief - Mining, Metallurgical and Chemical Branch:	W. H. Losee, B.Sc.
Mining Statistician:	R. J. McDowall, B.Sc.

SALT, 1940

Commercial production of common salt or sodium chloride in Canada during 1940 totalled 264,714 short tons valued at \$2,823,269 compared with 424,500 short tons at \$2,486,632 in 1939. In 1940 salt was produced in Nova Scotia, Ontario, Manitoba and Alberta and of the total Canadian output in 1940 Ontario contributed 412,401 short tons or 89 per cent. Statistics of Canadian salt production represent the recovery of the mineral from brine wells with the exception of Nova Scotia where the output comes entirely from the underground mining of rock salt deposits.

Of the total salt used or sold in 1940 there were 224,009 short tons or 48 per cent consumed directly by the producers themselves in the manufacture of caustic soda and other chemicals. Table and dairy grades sold were recorded at 75,166 short tons; 6,689 tons were reported as sold as highway salt while the balance of production totalling 158,850 short tons included common fine, common coarse and various other grades.

The number of Canadian firms reporting primary salt production in 1940 totalled 9; capital employed by the industry amounted to \$4,993,914, of which \$3,377,413 represented the value of buildings, machinery, etc., and \$260,598 the value of land. Employees numbered 586, including 70 female workers. Salaries and wages totalled \$836,506; \$321,589 were expended for fuel and electricity and \$40,198 for chemicals and other process supplies.

Data relating to Canadian imports and exports of salt by countries in 1940 are not available for publication, but the "apparent" consumption of salt in Canada during 1940 is estimated at 570,876 short tons valued at \$3,319,115 compared with 531,473 short tons at \$2,917,713 in 1939.

Statistics relating to Canadian salt production are available only since 1886 and salt production in the Dominion since that year to the end of 1940 totalled 8,878,701 short tons valued at \$50,874,109.

Table 1 - PRODUCTION OF SALT IN CANADA, BY GRADES, 1939 and 1940

	1939			1940		
	Manu- factured	Sold	Value of salt sold (Not includ- ing con- tainers)	Manu- factured	Sold	Value of salt sold (Not includ- ing con- tainers)
	Tons	Tons	\$	Tons	Tons	\$
Table dairy and pressed blocks	68,629	70,390	1,223,433	73,907	75,166	1,421,832
Common, fine	85,921	84,106	503,589	93,831	94,817	549,410
Common, coarse	27,733	28,704	286,179	24,143	24,259	263,754
Highway salt	8,156	8,156	40,501	6,689	6,689	34,264
Land salt	288	268	1,697	673	708	4,528
Other grades	46,313	44,918	185,274	40,795	39,066	190,509
Brine for chemical works (Salt equivalent sold or used)	187,958	187,958	245,959	224,009	224,009	358,972
TOTAL	424,998	424,500	2,486,632	464,047	464,714	2,823,269
Value of containers ....	...	...	471,350	...	...	498,981
GRAND TOTAL	424,998	424,500	2,957,982	464,047	464,714	3,322,250

Salt

- 2 -

Table 2 - PRODUCTION OF SALT BY PROVINCES (x), 1931 - 1940

Year	NOVA SCOTIA		ONTARIO		MANITOBA		ALBERTA	
	Tons	\$	Tons	\$	Tons	\$	Tons	\$
1931	27,718	143,761	231,329	1,760,388	...	...	...	...
1932	31,897	150,708	231,138	1,789,751	508	7,092	...	...
1933	34,278	161,889	244,107	1,755,087	1,499	18,388	...	...
1934	42,886	191,917	276,751	1,734,196	1,664	20,137	...	...
1935	38,701	161,659	320,003	1,698,508	1,538	18,765	...	...
1936	38,774	183,915	350,044	1,557,078	2,498	32,151	...	...
1937	47,865	216,401	407,701	1,539,599	3,391	43,465	...	...
1938	44,950	194,759	388,130	1,657,140	2,920	34,979	4,045	446,035
1939	47,885	213,029	370,843	2,200,189	2,453	35,883	3,319	37,526
1940	42,495	220,328	412,401	2,371,780	3,076	45,731	6,742	185,430

(x) In addition, Saskatchewan produced 231 tons valued at \$4,510 in 1933, 452 tons at \$8,703 in 1934 and 101 tons at \$2,046 in 1935.

"Soil stabilization with salt and clay for the foundations of highways and for a surface veneer for gravel roads is now firmly established and this use of salt showed a decided increase in the past few years. The development of soil stabilized bases for runways at Canadian air fields continued, and several air fields have been so prepared. The use of salt for mixing with sand, piled each fall at regular intervals along main highways, has increased greatly during the past few years, as it has been found that even in the coldest of weather the sand in piles which have been so treated remains loose and free flowing, thus allowing easy distribution on the icy roadway." (Bureau of Mines, Ottawa.)

Table 3 - TOTAL PRODUCTION OF SALT IN CANADA FOR YEARS SPECIFIED, 1886 - 1940

Year	Tons	\$	Year	Tons	\$
1886	62,359	227,195	1929	330,264	1,578,086
1890	43,754	198,857	1930	271,695	1,694,631
1900	62,055	279,458	1931	259,047	1,904,149
1913	100,791	491,280	1932	263,543	1,947,551
1914	107,038	493,648	1933	280,115	1,939,874
1915	119,900	600,226	1934	321,753	1,954,953
1916	132,903	717,653	1935	360,343	1,880,978
1917	138,909	1,047,792	1936	391,316	1,773,144
1918	131,727	1,285,039	1937	458,957	1,799,465
1919	148,301	1,397,929	1938	440,045	1,912,913
1920	209,855	1,544,724	1939	424,500	2,486,632
1921	164,658	1,673,685	1940	464,714	2,823,269

Table 4 - SALT PRODUCED FOR CHEMICAL PURPOSES (A), 1926 - 1940

Year	Quantity Tons (2000 lbs.)	Per cent of total salt output	Year	Quantity Tons (2000 lbs.)	Per cent of total salt output
1926	113,020	43	1933	104,740	37
1927	115,995	43	1934	124,132	39
1928	135,138	45	1935	145,433	40
1929	168,327	51	1936	165,882	42
1930	114,737	42	1937	205,149	45
1931	97,958	36	1938	170,938	39
1932	96,242	37	1939	187,358	42
			1940	224,009	48

(A) Used in the manufacture of chemicals by producers of salt.

"In New Brunswick, a salt basin was discovered in 1921, as a result of drilling in the vicinity of Goutreau, south of Moncton, on the east side of the Petitcodiac river. The extent of the basin was further determined when New Brunswick Gas and Oilfields, Limited, in drilling at Weldon on the west side of the Petitcodiac river, penetrated over 1,500 feet of salt formation. This was the second drill hole to strike salt on this side of the river. The top of the rock salt was 1,473 feet below the surface. During 1939 still another drill hole passed through the same salt formation, the thickness, however, being only about 100 feet, indicating that the northern edge of the basin is being approached. Altogether, six drill holes have penetrated the salt so that a deposit of salt over 1 1/2 miles wide and four or more miles long is already indicated, the greatest thickness so far encountered being 1,500 feet. There are, therefore, many millions of tons of salt in this basin, available for future development. The possibility of developing this deposit for the production of salt is being seriously considered.

"Near Amherst, Cumberland county, Nova Scotia, a well drilled a number of years ago by Imperial Oil, Limited, in a search for oil and gas, penetrated 3,200 feet of alternating beds of salt, anhydrite, dolomite, limestone and shale, the salt constituting 45 per cent of the whole. Salt was first met at a depth of 920 feet, and one bed more than 480 feet in thickness contained over 90 per cent sodium chloride. The apparent great thickness of the salt may be due to the steep dip of the beds." (Bureau of Mines, Ottawa).

Table 5 - IMPORTS INTO CANADA AND EXPORTS OF SALT, 1939 and 1940

	1 9 3 9		1 9 4 0	
	Tons	Value \$	Tons	Value \$
IMPORTS -				
Salt, for use of the sea of gulf fisheries	34,682	125,838	34,646	97,598
Salt, in bulk, n.o.p.	53,401	202,454	54,659	193,233
Salt, n.o.p. in bags, barrels, etc. ...	24,422	229,194	28,313	216,171
Salt, table, made by an admixture of other ingredients, when containing not less than 90 per cent of pure salt ...	6	282	11	366
TOTAL	112,511	557,768	117,629	507,368
EXPORTS -				
TOTAL	6,349	61,922	10,656	76,287

Table 6 - TOTAL CANADIAN IMPORTS AND EXPORTS OF SALT, 1930 - 1940

Year	E X P O R T S		I M P O R T S	
	Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$
1930	38,788	74,397	128,385	660,903
1931	6,126	55,110	130,890	751,938
1932	5,627	36,248	102,033	595,954
1933	5,335	43,461	135,620	651,237
1934	6,597	48,097	138,794	586,033
1935	9,045	51,239	128,247	526,740
1936	5,549	46,601	108,925	460,938
1937	9,329	61,522	116,460	466,190
1938	11,844	68,293	108,131	453,765
1939	10,656	76,287	117,629	507,368
1940	6,349	61,922	112,511	557,768

World production of salt in 1938, the last year for which complete data are available, was computed at 32,000,000 long tons by the Imperial Institute, London. Of this quantity, the British Empire accounted for 5,200,000 long tons or 16.2 per cent. In the order of output, the United Kingdom, India and Canada were the largest Empire producers of the mineral. The leading producers among the foreign countries were the United States, Russia, China, Germany, France, Italy, Poland, Roumania, and Manchoukuo; the total figure for world output included rock salt, brine (wells) salt, and sea salt. In 1937 production in Germany totalled 3,312,128 long tons; in Great Britain 3,083,755 and in France 2,301,151.

Table 7 - AVAILABLE STATISTICS ON CONSUMPTION OF SALT, IN SPECIFIED CANADIAN INDUSTRIES, 1938 and 1939 (x)

Industries	1938		1939	
	Quantity	Cost at	Quantity	Cost at
	used Pounds	works \$	used Pounds	works \$
Fish canning and curing (factories only)	38,146,100	206,797	42,939,300	212,325
Slaughtering and meat packing	72,938,200	391,772	77,119,352	405,238
Acids, alkalies and salts - Brine (salt content) and dry salt	398,870,603	332,411	333,004,000	331,797
Soaps and cleaning preparations ..	3,833,557	14,015	4,215,720	17,386
Dyeing, cleaning and laundry work.	5,155,651	35,282	5,105,934	38,043
Dyeing and finishing of textiles ..	1,971,890	7,972	2,263,589	11,640
Artificial ice	1,435,067	6,212	1,782,233	7,685
Abrasives - artificial	406,000	1,784	520,000	2,265
Waterworks	2,700,000	(a)	3,888,000	(a)
Leather tanneries	10,868,261	40,280	12,514,496	55,389
Pulp and paper mills	20,686,000	68,485	25,652,000	87,385
Stock and poultry foods	4,150,000	27,016	5,428,000	42,439
Bread and other bakery products ..	11,076,372	140,230	15,730,960	144,129
Fruit and vegetable preparations..	10,108,280	59,102	9,900,963	68,956
Biscuits, confectionery, etc.	1,771,000	19,043	1,485,960	13,222
Foods, breakfast	1,655,734	10,768	1,528,023	10,207
Sausage and sausage casings	545,923	7,358	564,139	6,016
Ice cream industry (b)	1,200,000	9,561	1,680,340	12,154
Breweries	280,544	2,809	412,823	3,434
Malt and malt products	265,605	1,179	258,623	1,173
Coffee, tea and spices	237,863	2,371	387,470	2,949
Macaroni, vermicelli, etc.	94,940	770	109,337	1,074
Ice cream cones	4,279	33	9,010	91
Foods, miscellaneous	937,764	9,596	1,255,111	12,483
Butter and cheese .....	...	164,815	...	122,786
Starch and glucose	386,043	1,189	455,019	1,607
Animal oils and fats	(b)	(b)	180,000	760
Condensed milk	(b)	(b)	...	658
Woolen textiles	(b)	(b)	...	950

(x) In addition, large quantities of salt are used on highways.

(a) Value not compiled.

(b) Not available.

Table 8 - POTASH SALTS USED IN THE MANUFACTURE OF CANADIAN MIXED FERTILIZERS, 1938 and 1939

	1 9 3 8		1 9 3 9	
	Tons	Cost at works \$	Tons	Cost at works \$
Nitrate of potash	637	33,426	53	2,049
Kainite and potash manure salts ...	75	2,500	128	2,569
Muriate of potash	37,174	1,068,820	40,320	1,158,559
Sulphate of potash	5,866	220,512	4,452	166,322

NOTE: Data for 1940 not yet complete.

Table 9 - SALES OF POTASH SALTS FOR FERTILIZER PURPOSES, OTHER THAN FOR THE MANUFACTURE OF MIXED FERTILIZERS, Years ended June 30, 1939 and 1940

	1 9 3 9	1 9 4 0
	(short tons)	
Muriate of potash	8,643	7,808
Sulphate of potash	534	185

Table 10 -- IMPORTS INTO CANADA OF SPECIFIED POTASSIUM COMPOUNDS, 1939 and 1940

	1 9 4 0		1 9 3 9	
	Pounds	\$	Pounds	\$
Potash, bicarbonate	8,290	1,385	13,584	1,310
Kainite, or German potash salts and mineral	500,300	1,515	11,000	187
Cream of tartar (crystals)	518,815	135,498	727,852	143,032
Potash and pearl ash	230,438	16,142	276,227	17,341
Potash, caustic	1,547,608	990,772	1,348,568	77,004
Potash, chlorate of	103,641	10,421	302,518	16,357
Saltpetre or nitrate of potash.	1,048,606	65,964	1,486,526	55,512
Muriate of potash (fertilizer).	108,333,200	1,385,278	90,782,200	1,135,151
Potash, sulphate of, crude, (fertilizer)	8,691,900	147,926	12,795,300	193,652
Potash, bichromate, crude	203,573	19,862	188,479	16,819
Potash prussiate	3,801	991	50,859	10,881
Potash compounds, other	448,600	100,850	536,844	80,466

Complete statistics relating to world production of potash are not available for 1940 as publication of potash production statistics by European governments virtually ceased in the summer of 1939, and no adequate data are available since.

Natural potash salts are not yet mined or recovered on an extensive commercial scale in Canada. Potash occurs in small quantities in rock salt strata at Malagash, Cumberland County, Nova Scotia, and at Gautreau, Westmorland County, New Brunswick. Potassium chloride occurs at Malagash in a number of definite bands in the salt mass in the form of crystalline beds of pink and yellowish green sylvite in the matrix of halite. A 1940 annual report by the Bureau of Mines, Ottawa, refers to the Malagash occurrence as follows:

"In Nova Scotia, Malagash Salt Company produced slightly less in 1940 than in the previous year, owing to a fire which completely destroyed its power plant early in December, in consequence of which a complete shut down of underground development was necessary. Temporary power arrangements have been made until such time as a new and permanent plant can be erected. Definite zones in which indications of potash salts occur have been correlated from the second to the twenty-sixth level and there seems to be an increase in the potash content with depth. The study of these zones is being continued."

Table 11 - APPROXIMATE WORLD PRODUCTION OF POTASH IN MARKETABLE SALTS, 1937-1938

	1 9 3 8		1 9 3 7	
	Metric tons K ₂ O	Per cent of total	Metric tons K ₂ O	Per cent of total
Germany	1,860,000	59.9	1,689,500	60.6
France	581,815	18.7	489,800	17.6
United States	287,532	9.3	258,090	9.2
U.S.S.R.	275,000	8.8	266,000	9.5
Poland	72,139	2.3	62,489	2.2
Palestine	24,000	0.8	18,234	0.7
Other Countries	5,000	0.2	5,000	0.2

NOTE: Corresponding data for 1939 and 1940 not available.

Table 12 - IMPORTS INTO CANADA OF CHLORINE, BROMINE AND IODINE, ETC., 1939 and 1940

	1 9 3 9		1 9 4 0	
	Pounds	\$	Pounds	\$
Chlorine, liquid or gas	10,692,096	213,207	7,389,594	173,571
Bromine	72,883	16,199	146,510	27,218
Iodine, crude	79,982	90,340	76,043	98,562
Iodized mineral salts for animals	...	2,647	...	2,557
Tetraethyl lead compounds (✓) ...	6,373,494	2,927,449	8,946,573	4,077,687

(✓) In which tetraethyl lead is the preponderant constituent by weight; the entire imports came from the United States.

Caustic soda, chlorine and hydrochloric acid are now manufactured by Canadian Industries Limited from salt obtained from the Company's wells located at Sandwich. This Company operates chemical plants at Windsor, Cornwall, Shawinigan Falls and Quebec.

The Brunner, Mond Canada, Limited, located at Amherstburg, Ontario, manufactures soda ash from natural brine; calcium chloride is also recovered as a by-product by this Company.

The United States Bureau of Mines Minerals Year Book for 1940 states:

"The United States is the world's largest producer of bromine and, although figures are not available, exports are considerable. Germany and Palestine also are large producers, and appreciable amounts are produced in Japan, France, Tunisia, Italy, Russia, and the United Kingdom. Plants for recovering bromine from sea water are reported to be operating in France and in England.

"Fourteen plants reported production of bromine or bromine compounds from natural sources during 1940. The Ethyl-Dow Co. produced the largest quantity, recovering bromine from raw sea water near Wilmington, N.C. The second largest

producer was the Dow Chemical Co., which recovered bromine from natural brines in Michigan. This Company has also begun to produce bromine at its Freeport (Tex.) plant where magnesium compounds are recovered from raw sea water. The American Potash & Chemical Corporation--a newcomer into the bromine field--also supplied an important quantity of bromine during 1940, having recovered this element from some of the more concentrated process liquors derived from Searles Lake brines. Equipment for producing bromine compounds as well as liquid bromine was being installed early in 1941, and actual output of these compounds was expected to begin by early summer."

Table 13 - PRINCIPAL STATISTICS OF THE SALT INDUSTRY IN CANADA, 1938 - 1940

	1938	1939	1940
Number of firms (/)	9	9	9
Capital employed	\$ 4,270,795	4,447,204	4,993,914
Number of employees - On salary	115	113	120
On wages	447	434	466
Total ..	562	547	586
Salaries and wages .. Salaries	\$ 278,478	285,023	299,521
Wages	\$ 508,242	456,713	536,385
Total	\$ 786,720	741,736	836,506
Selling value of products (gross)	\$ 2,489,719	2,957,982	3,322,250
Cost of purchased process materials ...	\$ 30,369	37,161	40,198
Cost of fuel and electricity	\$ 278,711	276,267	321,589
Value of containers	\$ 576,806	471,350	498,981
Net value of sales	\$ 1,603,833	2,173,204	2,461,482

(/) 6 in Ontario; 1 in Nova Scotia; 1 in Manitoba; 1 in Alberta.

Table 14 - WAGE-EARNERS, BY MONTHS, 1936-1940 (On 15th or nearest representative date)

Month	1936	1937	1938	1939	1940		
					Male		Female
					Surface	Under-ground	Surface
January	340	348	411	440	353	50	28
February	301	370	446	426	361	52	26
March	362	376	441	407	365	51	26
April	379	401	452	424	387	49	27
May	380	429	448	439	402	55	33
June	396	427	423	459	394	53	30
July	413	452	439	460	415	51	27
August	413	444	438	416	427	49	27
September	418	451	477	431	407	53	30
October	423	437	487	458	395	53	35
November	427	456	474	449	407	52	33
December	356	371	426	408	367	1	28
AVERAGE	384	416	447	434	389	47	30

Table 15 - NUMBERS OF WAGE-EARNERS WHO WORKED THE NUMBER OF HOURS(x) SPECIFIED DURING ONE WEEK IN MONTH OF NORMAL EMPLOYMENT, 1940

Hours	Number		Hours	Number	
	Male	Female		Male	Female
30 or less	33	5	49 - 50 ...	5	...
31 - 43	18	11	51 - 54 ...	25	3
44	33	2	55	10	...
45 - 47	24	...	56 - 64 ...	71	6
48	207	3	65(✓)	59	4

(x) Grand total employees in week specified; male, 485; female, 34.

(✓) Total wages paid in week specified \$11,858.

Table 16 - FUEL AND ELECTRICITY USED IN THE CANADIAN SALT INDUSTRY, 1939 - 1940

Kind	Unit of measure	1 9 3 9		1 9 4 0	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Bituminous coal - Canadian ..	short ton	17,827	78,506	15,469	71,904
Imported ..	short ton	33,725	137,305	35,862	159,985
Anthracite coal	short ton	4,712	21,617	7,081	38,516
Lignite coal	short ton	5,180	17,754	6,616	22,812
Gasoline	Imp. gal.	5,575	955	25,844	5,926
Kerosene	Imp. gal.	88	22	57	16
Fuel oil	Imp. gal.	84,541	9,265	90,197	9,904
Gas, natural	M cu. ft.	47	25	45	24
Electricity purchased	K. W. H.	1,767,603	10,840	2,318,990	12,502
TOTAL .....	\$	...	276,267	...	321,569
Electricity generated for own use	K. W. H.	4,212,996	...	1,496,290	...

Table 17 - POWER INSTALLATION, 1940

Description	Ordinarily in use		In reserve or idle	
	Number of units	Total horse power	Number of units	Total horse power
Steam engines and steam turbines	25	2,828	6	190
Diesel engines	4	735	...	...
Gasoline, gas and oil engines, other than diesel engines	2	24	...	...
Hydraulic turbines or water wheels .....	...	...	...	...
Electric motors -				
(a) Operated by purchased power	132	940	1	1
Total	163	4,527	7	191
(b) Operated by power generated by the establishment	160	1,681	...	...
Stationary boilers	8	3,600	7	1,135

LIST OF FIRMS IN CANADIAN SALT INDUSTRY, 1940

<u>Name of Firm</u>	<u>Head Office</u>	<u>Location of Plant</u>
<u>NOVA SCOTIA -</u> Malagash Salt Co. Ltd.	196 Provost St., New Glasgow	Malagash
<u>ONTARIO -</u> Brunner, Mond Canada, Ltd.	Canadian Bank of Commerce Bldg., Toronto	Amherstburg
Canadian Industries Limited	P. O. Box 10, Montreal, Que.	Windsor
Goderich Salt Co. Ltd.	Goderich	Goderich
Sifto Salt Co. Ltd.	606 Cathcart St., Montreal, Que.	Sarnia
Warwick Pure Salt Co. Ltd.	R. R. 5, Watford	Lambton Co.
Western Canada Flour Mills Co. Ltd.	287 MacPherson Ave., Toronto	Goderich
<u>MANITOBA -</u> Neepawa Salt Ltd.	P. O. Box 10, Montreal, Que.	Neepawa
<u>ALBERTA -</u> Industrial Minerals Ltd.	423 Canada Cement Bldg., Montreal, Que.	Waterways

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