Salt Products in North America and Outlook for the Future

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ABSTRACT

The author proposes to trace the development of salt markets in the United States and Canada. Included will be an estimate of present salt use and projected salt use. The impact of the environmental movement as it affects the use of deicing salt will be traced. The question of the effect of sodium on health will be discussed as it affects the use of food grade salt, water conditioning salt and highway snow and ice control salt.

The Salt Institute has 31 member companies that are producers of salt in North America, Europe, South America and Australia. Though the Institute provides much of its service to its North American companies, we make our information and literature available to all our members. We exchange information on meetings and issues with our foreign members and salt associations. Experience has shown that issues in the U.S.A. soon become issues in Canada and in the countries of our overseas members. As a result we often benefit from the various approaches to similar issues.

In North America, our member companies produce 95 per cent of all the dry salt. There are five basic salt deposits in North America: one covers parts of Michigan, Ohio, New York and neighboring Canada; another is in the Kansas region; a third major deposit is in Texas and Louisiana; the fourth is in the so-called Williston basin (North Dakota and Saskatchewan); and the fifth is in the Maritime Provinces of Eastern Canada. In addition to dry mining and solution mining in these areas, solar salt is produced in the United States in the Great Salt Lake region, in California and in Mexico.

The total sales of all types of salt by our United States members in the year ending June 30, 1982 were:

$635,872,000 22,920,000 Tons.

Sales of salt by our members in Canada were:

$114,043,000 5,216,000 Tons.

Unfortunately, we do not have statistical information on the sales breakdown in Canada, but the figures for the five major uses, comprising about 80 per cent of the dollars and tons in the U.S., are shown in the table

U.S. Salt Sales, Major Uses

Use	Dollars (Thousands)	Percentage	Tons (Thousands)	Percentage
Food Grade	125,547.2	19.7	911.4	4.0
Chemical	52,872.9	8.3	3,825.3	16.7
Highway	103,623.8	16.3	9,787.3	42.7
Agriculture	101,838.4	16.0	1,868.5	8.1
Water Cond	108,995.5	15.7	1,930.0	8.4
Total	492,877.8	77.5	18.322.5	79.9

Salt use and sales have been affected by both the economy and several issues surrounding the largest single use —deicing for snow and ice control—and the best-known use—food flavoring and preserving.

Almost all industries are having problems with environmentalist and consumer groups. The salt industry is unique in that we are involved in so many areas.

For example, salt is a food product. There is really no satisfactory substitute for many of its uses in food processing. The iodization of salt more than 55 years ago was a major contributor to goiter prevention. Salt is used as a seasoning for everything from pretzels to caviar. There is a variety of food grade salt products in addition to regular table salt, and these include "Kosher" salt, smoked salt, pretzel salt, popcorn salt, flour salt and pickling or canning salt. Human beings need both sodium and chloride in their daily diet.

Salt is an important, indeed vital, mineral in the chemical processing industry. Most items that we come in con-

tact with daily could not be made without salt. It is the raw material from which chlorine, caustic soda and soda ash are produced and thus is involved in such widely used products as plastics, synthetic fibers, glass, paper, soaps and so forth.

Another widespread use of salt is as a deicing agent. Traffic demands have been responsible for a large increase in salt use in the last two decades. The advent of the U.S. Interstate highway system, urban sprawl and our general mobile society have created the demand for June driving conditions in January throughout the snow belt. However, we have been faced with problems—automobile corrosion and effects on the environment, such as pollution of some water supplies and scattered damage to roadside vegetation.

Salt is a vital nutrient to animals. Almost everyone is familiar with the salt block that is placed in pasture lands so that cattle can have free access to salt. Producers of salt also add essential trace elements to both salt blocks and loose salt products for adding to animal feed. The familiar salt block is an appetite governor in range feeding and is often used to distribute the grazing of livestock.

Another key use of this familiar product is in water softening. Two thirds of the United States has hard water, and water demands are becoming more severe. Salt is used to regenerate zeolite water softeners which remove the calcium and magnesium hardness ions from water. A variety of salt products are used in this important market, including rock salt, solar salt, special tabs and buttons (which may also be made from evaporated salt), in addition to salt blocks.

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In the early seventies the environmentalist movement began in earnest in the United States. This led to severe criticism of the use of salt on highways by various conservation organizations and others. It was in the early seventies that we first began hearing about possible damage to water supplies and the possible dangers to health from the consumption of sodium which inadvertently gets into drinking water from salt applied to streets and highways.

The salt industry was certainly not without blame at that time. Being a very low-cost product, salt was often stored outdoors without cover and was frequently applied in excessive amounts to snow- and ice-covered highways. The concern reached a point where there were actual bans on salt use in several Massachusetts communities and a few isolated communities in the Midwest. A young minister's wife named Carolyn Whittle formed a task force to investigate use of salt in Massachusetts and received widespread publicity in the public press and on radio and television. Legislation banning or restricting the use of salt was considered in Minnesota, Wisconsin and Massachusetts.

The first move of the salt industry was to develop a campaign to make sure that no salt producers were guilty of storing their salt outdoors, uncovered, where harm could result to the surrounding environment. We also began a national campaign that we call "Sensible Salting." This campaign focused on training the maintenance forces who use salt to not only store it properly but to control the rate of spread by improved control mechanisms, which were developed to make certain only the minimum amount of salt necessary to do the job would be applied. We went directly to the people who were concerned in various communities and got their support of the Sensible Salting approach.

Today we still conduct more than 130 Sensible Salting seminars each year throughout the snow belt of the U.S. and Canada. These are presented not only by the Salt Institute staff but by certain of our member company representatives who have been trained as Sensible Salting representatives.

As a result of all this, there are no bans on salt use today. Public works officials have been very pleased and supportive of our efforts. There are still occasional articles condemning salt for its part in automobile corrosion, damage to reinforced concrete bridge decks and, on a lesser scale, damage to water supplies and vegetation. However, our efforts have been successful in minimizing harmful side effects from salt use. Automobile manufacturers have improved their corrosion protection systems. Research has led to innovative methods in protecting concrete and the reinforcing steel imbedded in bridge decks. Damage to water supplies is generally limited only to an occasional roadside well. So, we have seen our active involvement in an issue that could have hurt our industry actually result in better salt use and a better understanding on the part of the public.

Addressing the second issue—sodium and its role in diet and health, many years ago the question of sodium's involvement in hypertension was studied. In general the medical profession recommended reduced sodium intake for patients being treated for hypertension, better known to the general public as high blood pressure.

Probably again motivated by consumer activists, the lay public and the medical profession both got around to focusing their attention on sodium. One activist was Ruth Winter, whose book, "Poisons in your Food," lists 55 preservatives, 28 antioxidants, 45 sequestrants, 111 surface active agents, 59 stabilizers, 24 blending and maturing agents, 60 buffer acids, 34 food colors, 4 non-nutritive sweetners, 1,610 flavoring synthetics and 157 miscellaneous additives. Cholesterol, nitrites and color additives had their day in court and then it became sodium and salt's turn.

The initial attack on salt as an additive to foods began at a White House Conference on Food and Nutrition in 1969. There was a demand that salt not be added to baby foods, and it was based on fears that such additions would result in life-long desires for salty foods. The Food and Drug Administration was asked to review the Generally Recognized As Safe (GRAS) list of food additives. Since the inception of the GRAS list, salt had been approved as a food additive.

In 1978 the Federation of American Societies for Experimental Biology (FASEB) began an evaluation of sodium chloride and potassium chloride as food ingredients. In 1979 they published their recommendations. Some time later, FDA acted on these recommendations and continued salt as a GRAS food additive. However, the Select Committee on GRAS Substances (SCOGS), made up of FASEB scientists, had concluded in a strangely worded statement, "The evidence on sodium chloride is insufficient to determine that the adverse effects reported are not deleterious to the health of a significant proportion of the public when it is used at levels that are now current and in the manner now practiced."

Because of this, and the interest developed on the part of several members of Congress, including then Senator George McGovern and present Congressman Albert Gore, a number of hearings were held and various legislation was proposed. In the last Congress a bill known as HR 4031 which would have made labeling of salt mandatory was introduced. It did not pass. However, in the current 98th Congress the same bill, now known as HR 17, is being considered. With all the attendant publicity, including a TIME magazine cover story headlined "Salt: A New Villain?", the public press continued to make sodium a major health issue.

As a result, a number of salt substitutes, mostly potassium chloride, are being widely promoted, and many major food processors have come out with a line of low-salt or no-salt-added products.

In an effort to get a more reasoned approach to the issue, the Salt Institute, along with the Water Quality Association, sponsored a monograph, "Sodium in Medicine and Health," which was widely distributed to the medical profession. The Salt Institute also developed a publication in cooperation with the Food and Drug Administration and the National High Blood Pressure Education Program called "Straight Talk About Salt," which also has been widely distributed to the general population.

In the last year a number of competent scientists and researchers have been looking more deeply into the relationship of sodium to hypertension and the role of other nutrients. What seems to be developing is not only new data, but a re-analysis of former studies that have been used to indict sodium. Today there is growing evidence that calcium, or lack of it, may be a key factor; further, that potassium and a proper sodium/potassium balance is another key factor. Obesity has long been recognized as playing a significant causal role. In the final analysis there may be very few people whose blood pressure is affected by the sodium in their diets, if these other factors are brought into play properly.

We are hopeful that as new evidence is developed the proper role of sodium in the diet will be defined better. The medical profession has changed its thinking in the past on the question of sodium intake during pregnancy. Where it was once felt that sodium intake should be restricted, it's now common practice to not restrict sodium intake.

As you can see, the salt industry has had, and continues to have, problems that have affected growth in our industry. During the last five years consumption of salt in the United States has grown very little, and sales of evaporated salt, including the round cans of table salt, actually declined.

Deicing salt sales have leveled off from the growth of the fifties and sixties when many new miles of roads were being added in North America and when more and more public works agencies were becoming aware of the merits of salt as a deicer.

We are hopeful that as more agencies develop Sensible Salting practices, and the medical profession continues to investigate and get into a more positive perspective the role of sodium in health, the salt industry will once again prosper.

There will be growth in the salt industry in North America between now and the year 2,000, but it will be slower than in the past, unless some dramatic new uses for salt are discovered.