

Cancer Association of South Africa (CANSA)



Fact Sheet on Salt and Permissible Sodium Content in Certain Foodstuffs

Introduction

Salt, also known as table salt or rock salt (halite), is a crystalline mineral that is composed primarily of sodium chloride (NaCl), a chemical compound belonging to the larger class of ionic salts. It is absolutely essential for human and animal life, but can be harmful to humans, animals and plants in excess. Salt is one of the oldest, most ubiquitous food seasonings and salting is an important method of food preservation. The taste of salt (saltiness) is one of the basic human tastes.



[Picture Credit: Salt]

Chloride and sodium ions, the two major components of salt, are needed by all known living creatures in small quantities. Salt is involved in regulating the water content (fluid balance) of the body. The sodium ion itself is used for electrical signalling in the nervous system. Because of its importance to survival, salt has often been considered a valuable commodity during human history.

[Picture Credit: Halite]

However, as salt consumption has increased during modern times, scientists have become aware of the health risks associated with high salt intake, including high blood pressure in sensitive individuals. Because of this, some health authorities have recommended limitations of dietary sodium intake, although others state the risk is minimal for typical western diets. The United States Department of Health and Human Services recommends that individuals



consume no more than 1500–2300 mg of sodium (3 750 to 5 750 mg of salt) per day depending on age (this is the equivalent of one teaspoon of salt per day) (Wikipedia: Salt; Life is Beautiful).

Halite, the natural form of salt, is a very common and well-known mineral. It is found in solid masses, and as a dissolved solution in the oceans and in salt lakes. The inland lakes that are rich in salt exist in arid regions, and may also be below sea level without an outlet. These lakes evaporate during dry seasons, causing a recession in the water level and an increase of salinity content. When this happens, salt forms on the evaporated shores of the lake. Although the colour range of Halite can be caused by impurities, the deep blue and violet colours are actually caused by defects within the crystal lattice, and the pink and peach colours of many dry lake Halite specimens are caused by bacteria from various algae. (The mineral and gemstone kingdom)

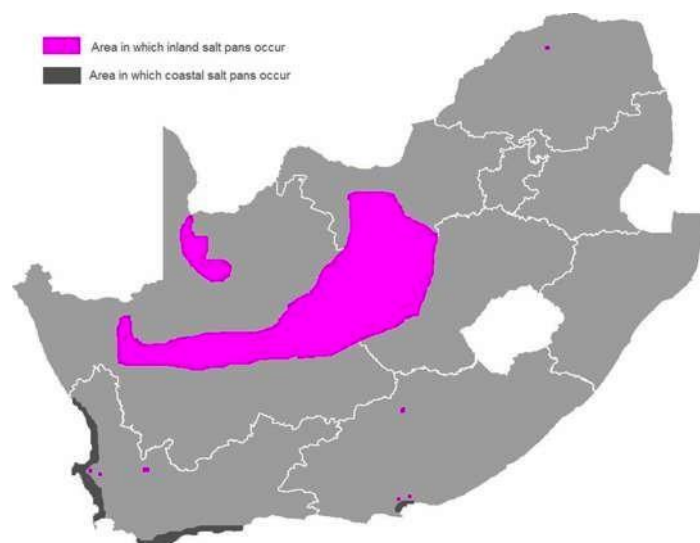
Intake of Too much Salt can be Fatal

Consumption of too much salt can be deadly – one only need take about 1 gram of salt per kilogram of weight to die and this was used as a method of ritual suicide in China – especially amongst the nobility as salt was so expensive. (Listverse)

Salt Pans in South Africa

South Africa's salt resources are confined to underground brines associated with inland salt pans, coastal salt pans and seawater. Sea salt is produced in Port Elizabeth. Production is based primarily on the evaporation of seawater, which usually contains 3,5 percent of dissolved solids, of this 74,8 percent is sodium chloride. At the saltworks, the seawater is concentrated by solar evaporation in artificial ponds until a relative density of 1,204 is attained. The brine is then fed into crystallisation pans for eventual harvesting.

There are two salt companies based around Port Elizabeth, the one is situated in Coega which supplies branded salt to the major retailers and another situated in Swartkops that supplies the wholesale market, particularly the Free State, Eastern Cape and KZN regions.



South Africa's production of salt from 1974 – 2006 is estimated at 17 Mt, including production from coastal pans. South Africa has 18 operating salt companies, of varying size, including one co-operative operation with more than forty small-scale producer members. Production has been on the increase from 2004 and reached 465 kt in 2006. The trend seems to be in line with strong performance of the economy. The top six companies contributed 82 percent to local salt production.

Because local production cannot supply all of South Africa's salt, imports are necessary. Imported salt is sourced mainly from Botswana and Namibia. The plant in Coega produces approximately 32 000 tons of salt on an annual basis and supplies South Africa, Botswana and Lesotho with salt.
(Department of Transport, South Africa : Salt).

Different Types of Salt

Salt, one of the world's most abundant natural resources, is a natural mineral made up of two elements on the periodic table – sodium and chloride. Salt occurs naturally in the sea, but can also be mined from salt mines on land. There are a variety of different kinds of salt that can be bought in a grocery store:

Iodated table salt: This is probably the most common type of salt and the kind one would generally use to fill one's saltshakers at home. The reason it is called "iodated" is because today, most salt manufacturers fortify the salt with the mineral 'iodine', which is an essential mineral for fighting off certain iodine-related diseases like hypothyroidism. But if one needs to limit one's salt intake, there is another natural way to get this important mineral into one's system — eat more seaweed, which is rich in iodine.

Sea salt: This is salt that is made using evaporated seawater. It generally has larger and coarser crystals than ordinary table salt. It is harvested in a number of places in the world, but there are a few standouts. Celtic sea salt is a type of sea salt harvested using a 2 000-year-old method from the water of the Celtic Sea in Brittany, France.

Another type of sea salt is *fleur de sel* (which literally translates to "flower of salt") which is harvested in the same region of France by manually scraping the top layer off the salt before it sinks to the bottom of a large salt pan. *Fleur de sel* is considered to be the cream of the crop when it comes to types of sea salts, and one of the most expensive.

Pickling salt: This salt has no additives and is generally used in brines to pickle foods. Because it does not have any additives (regular iodated table salt has anti-caking agents and iodine added), it keeps the liquid from clouding up.

Kosher salt: This salt got its name because it is commonly used when preparing kosher meat. Because it has larger, irregular-shaped, and coarser crystals than regular salt, it does a better job of drawing out the blood of the animal, which is required of kosher meat before cooking. This salt is preferred by many cooks because of its milder flavour and lack of additives.

Himalayan pink salt: This salt is harvested in the foothills of the Himalayan mountain range and is basically fossilised sea salt. It gets its characteristic pink colour from the amount of minerals it contains, particularly iron. It is generally more expensive than regular salt, but is also considered healthier and more pure.

Black salt: Also known as Kala Namak, black salt is actually a pinkish-grey colour. It is mined in India and has a strong sulphuric smell. It is commonly used to spice food in Southeast Asia and has recently become more popular in the US among vegan chefs who use it for its 'egg flavour'.

Too much sodium can lead to a host of health problems, but that is because most of the sodium that is generally consumed comes from processed food.

Both sea salt and table salt contain about 40 per cent sodium. Sea salt is obtained directly through the evaporation of seawater. It is usually not processed, or undergoes minimal processing and, therefore, retains trace levels of minerals like magnesium, potassium, calcium and other nutrients. Table salt, on the other hand, is mined from salt deposits and then processed to give it a fine texture so it is easier to mix and use in recipes. Processing strips table salt of any minerals it may have contained and additives are usually incorporated to prevent clumping or caking. While these attributes may make sea salt more attractive from a marketing standpoint, there are no real health advantages of sea salt. (American Heart Association; Mother Nature Network).

Maintaining a Balance Between Sodium and Potassium Intake

The World Health Organization recommends that a sufficient amount of potassium should be consumed. The ratio between sodium (Na) to potassium (K) intake should be 1:1. (World Health Organization; Life is Beautiful).

Human Salt Requirements

Sodium maintains the body's fluid and electrolyte balance, acid-base balance, muscle contractions, and nerve transmission. There is no recommended daily allowance (RDA) for sodium because the human diet has never lacked it. An adequate amount of sodium for adults is between 250 and 500 mg/day. The Tolerable Upper Intake Level (UL) for healthy adults is 2300 mg/day. The 2005 Dietary Guidelines for Americans recommends an upper limit of 1500 mg/day for people over 50 and 1200 mg/day for those over 70.

For 'salt-sensitive' people, blood pressure will increase in direct proportion to increases in sodium intake. About 60% of adults with high blood pressure are salt sensitive. Blood pressure above 120mmHg systolic over 80mmHg diastolic is high. In countries where sodium intake is low, there is less hypertension, cardiovascular disease and stroke. Excess sodium may also weaken the bones by promoting calcium excretion.

Sodium deficiency is extremely rare. The kidneys conserve and release sodium as needed to maintain fluid balance. The amount of sodium lost in a day, as urine and sweat, equals the amount of sodium eaten in the diet (Calorie Count).

Iodated Salt

Iodine deficiency is the main cause of preventable brain damage and reduced IQ in children worldwide. It also negatively affects women's health, as well as economic productivity and quality of life.

Most people need an additional source of iodine as it is found in relatively small amounts in the diet. The World Health Organization (WHO) recommends universal salt iodisation – the fortification with iodine of all salt used for human and animal consumption – as the main strategy for eliminating iodine deficiency.

The public health goals of reducing salt and increasing iodine intake through salt iodisation are compatible as the concentration of iodine in salt can be adjusted as needed. Monitoring the levels of iodine in salt and the iodine status of the population are critical for ensuring that the population's needs are met and not exceeded.
(World Health Organization).

The iodisation of salt in South Africa is regulated by the Regulations Relating to Salt (Published under Government Notice No. R.239 of 16/3 /2001 - as corrected by: Government Notice No. R. 1102 of 9 /11/2001 - as amended by: Government Notice No. R. 1368 of 21/12/2001) under the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972).

Intention of The National Department of Health to Reduce the Total Sodium Content of Certain Foodstuffs

The Minister of Health, Dr Aaron Motsoaledi, published Regulations Relating to the Reduction of Sodium in Certain Foodstuffs and Related Matters in the *Government Gazette* (No 41164) on 06 October 2017 under the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No 54 of 1972).

The Timeline for the reduction of total sodium (Na) content of certain foodstuffs is as follows:

	Foodstuff Category	Maximum total Sodium per 100g Foodstuff	Date on which total Sodium (NA) reduction becomes effective
1	Bread	400mg Na 380mg Na	30 June 2016 30 June 2019
2	All breakfast cereals and porridges, whether ready-to-eat, instant or cook up, hot or cold	500mg Na 400mg Na	30 June 2016 30 June 2019
3	All fat spreads and butter spreads	550mg Na 450mg Na	30 June 2016 30 June 2019
4	Ready-to-eat savoury snacks, excluding salt-and-vinegar flavoured savoury sacks	800mg Na 700mg Na	30 June 2016 30 June 2019
5	Flavoured potato crisps, excluding salt-and-vinegar flavoured potato crisps	1 000mg Na 850mg Na	30 June 2016 30 June 2019
6	Flavoured, ready-to-eat, savoury snacks and potato crisps – salted and salt-and-vinegar only	650mg Na 550mg Na	30 June 2016 30 June 2019
7	Processed meats (classes 1, 4 and 5, where products in category 5 relates to cured as per Annexure 1)	1 300mg Na 1 150mg Na	31 March 2017 30 June 2018
8	Processed meat (classes 2, 3 and 5, where products in category 5 relates to uncured as per Annexure 1)	850mg Na 650mg Na	30 June 2016 30 June 2019
9	Raw-processed meat sausages (all types) and similar products	800mg Na 600mg Na	30 June 2016 30 June 2019
10	Dry savoury powders (not the instant type) Includes dry soup/stew powders intended to be reconstituted, cooked up and consumed as a soup/stew and/or used to thicken and/or add flavour to any type of savoury dish, where a thickener is a significant ingoing ingredient	5 500mg Na 3 500mg Na	30 June 2016 30 June 2019

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11	Dry gravy powders and savoury sauce powders, including all dry savoury gravy/sauce powders that require cooking or which are of the instant type, used as an accompaniment to a meal	3 500mg Na 2 000mg Na	30 June 2016 30 June 2019
12	Dry savoury powders with dry instant noodles to be mixed with a liquid Includes quick cooking Asian style noodles composed primarily of dry noodles with a seasoning sachet	1 500mg Na 800mg Na	30 June 2016 30 June 2019
13	Stock cubes, stock powders, stock granules, stock emulsions, stock pastes or stock jellies Includes concentrated stocks/stew products in various formats used primarily to flavour savoury dishes	15 000mgNa	30 June 2019

In response, the Department of Health has softened its targets for sodium reduction in processed food and gave industry an extra year to comply with its new regulations signed into law by Health Minister Aaron Motsoaledi recently.

Methodology for Testing of Total Sodium

- (1) For all foodstuff categories, suitable sodium potentiometric method or elemental analysis, with either AA (flame atomic absorption spectroscopy) or ICP (inductively coupled plasma), for determining typical total sodium content which shall be applied for monitoring and law-enforcement purposes; provided that these methods shall also be used for routine testing or for the purpose of nutritional information labelling of the typical total sodium content by manufacturers. The samples shall be digested with a microwave digester and not ashing.
- (2) The permitted tolerance for nutrient declaration in the nutrition labelling of sodium where not claim with a nutrition or health message is made, shall be in accordance with the Regulations Relating to the Advertising and Labelling of Foodstuffs; Provided that where a claim with any nutrition or health message is made, the sodium value shall be at or below the sodium targets set out in these Regulations.

Effective Dates

These Regulations, for the purposes of Sodium content monitoring and the law enforcement thereof come into effect on the dates listed in column IV of Table 1 when these foodstuffs are offered for sale on or after the mentioned dates: Provided that in categories 10, 11, 12 and 13 the target date shall be the date of manufacture

Salt and Cancer

Research has shown that rates of nasopharyngeal cancer are high in areas where Chinese-style salted fish is very common. Other studies have linked eating large amounts of foods preserved by salting and pickling with an increased risk of stomach cancer. The incidence of stomach cancer is greater in parts of the world (such as Japan) where diets traditionally include foods that are salt-preserved (Canadian Cancer Encyclopedia; Cancer Council NSW; Strumvlaite, *et al.*; Harvard School of Public Health).

Risk factors in the general population for small intestine cancer includes consumption of salted or smoked meats and fish (eMedicineHealth).

Salt and Other Non-Communicable Diseases

Many lines of investigation provide evidence for the causal relationship between sodium (salt) intake and cardiovascular disease (CVD), which is the leading cause of death and disability worldwide. Raised blood pressure, cholesterol and smoking, are the major risk factors for CVD. Among these, raised blood pressure is the most important cause, accounting for 62% of strokes and 49% of coronary heart disease (WPRO).

Foods Rich in Sodium

Foods in their natural state contain very little sodium. Fast foods and processed foods are highest in sodium. Processed foods include snack foods, deli items, bakery products, canned foods and prepared foods like salad dressings and spaghetti sauce. Table salt, soy sauce and other condiments are high in sodium. Ordinary salt (table salt) is 40% sodium and 60% chloride.

More than 40% of the sodium comes from the following foods:

- Breads and rolls
- Cold cuts and cured meats (such as deli or packaged ham or turkey)
- Processed meats (such as sausages, bacon and ham)
- Pizza
- Fresh and processed poultry
- Soups
- Sandwiches and similar foods (such as hot dogs and hamburgers)
- Cheese (natural and processed)
- Mixed pasta dishes (such as lasagne, spaghetti with meat sauce, and pasta salad)
- Mixed meat dishes (such as meat loaf with tomato sauce, beef stew and chili)
- Snacks (such as chips (crisps), pretzels, popcorn, and crackers)

Sodium content can vary significantly within food categories – it is, therefore, necessary to make use of the Nutrition Facts Labels on products to compare the amount of sodium in different products of similar volume or weight. Always select products with the lowest sodium content.

(Food and Drug Administration)

Steps to Cut Down on Sodium Intake

Learning about the sodium in foods and new ways to prepare foods will help to achieve the desired sodium reducing goal.

- Read the Nutrition Facts Label to see how much sodium is in the food
- Check the Nutrition Fact Label for lower sodium choices and compare sodium in different brands of foods — like frozen meals, packaged soups, breads, dressings/sauces and snack foods — and select those products with the lowest sodium content
- Prepare own food whenever possible. Do not salt foods before or during cooking and limit salt shaker use at the table
- Add flavour without adding sodium. Use herbs and spices instead of salt to add flavour to foods. Try rosemary, oregano, basil, curry powder, cayenne pepper,

ginger, fresh garlic or garlic powder (not garlic salt), black or red pepper, vinegar or lemon juice, and no-salt seasoning blends

- Buy fresh or frozen (not processed) lean meat rather than canned, smoked or processed meats like luncheon meats, sausages, bacon and corned beef. Check the package on fresh meat and poultry to see if salt water or saline has been added
- Buy fresh, frozen (without sauce), or low sodium or no-salt-added canned vegetables
- Rinse sodium-containing canned foods, such as tuna, vegetables, and beans before using. This removes some of the sodium
- Choose fat-free or low-fat milk and milk products, such as milk, yogurt, cheese and fortified soy beverages (often called soymilk) in place of processed cheese products and spreads, which are higher in sodium
- Choose unsalted nuts and seeds, as well as snack products such as chips and pretzels, that are marked 'low sodium' or 'no-salt-added' – or rather have a carrot or celery stick instead
- Sodium in soy sauce, ketchup, salad dressings, and seasoning packets can add up. Choose 'lite' or 'reduced sodium' soy sauce and 'no-salt-added' ketchup/tomato sauce, add oil and vinegar to a salad rather than bottled salad dressings and use only a small amount of seasoning from flavouring packets instead of the entire packet
- Ask to see the nutrition information in restaurants and choose a lower-sodium option. Ask for the meal to be prepared without salt and request that sauces and salad dressings be served 'on the side', to ensure less usage.

(Food and Drug Administration).

Medical Disclaimer

This Fact Sheet is intended to provide general information only and, as such, should not be considered as a substitute for advice, medically or otherwise, covering any specific situation. Users should seek appropriate advice before taking or refraining from taking any action in reliance on any information contained in this Fact Sheet. So far as permissible by law, the Cancer Association of South Africa (CANSAs) does not accept any liability to any person (or his/her dependants/estate/heirs) relating to the use of any information contained in this Fact Sheet.

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