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ASSOCIATION

# SOURCES OF DIETARY SODIUM

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# SOURCES OF DI

## SODIUM IN NATURE

The sodium ion, being the sixth most abundant metallic ion in the earth's crust, is a natural constituent of both food and water.

In nature we find sodium in water from several sources. These are:

- Underground sodium salt deposits which are dissolved by water
- Sea water
- Natural ion exchange in soils where calcium ions in the water are replaced with sodium ions.

Sodium occurs naturally in foods because plants take up sodium from the soil water, and animals ingest plants and water containing sodium.

convenience foods such as frozen dinners and packaged mixes. These two products are also added by the homemaker in home food preparation.

Sodium compounds are also used to improve the texture of some foods.

Sodium bicarbonate in baking soda and baking powder makes baked goods rise.

Sodium alginate is used in chocolate milk and ice creams to improve their texture.

Sodium hydroxide is used to soften the skins of olives, certain fruits and grains.

Sodium compounds are used to preserve some foods. Sodium benzoate is used in jellies, relishes, and salad dressings.

Sodium propionate is used to inhibit mold growth in cheeses and bread.

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## SODIUM ADDED BY MAN ... TO WATER

Man adds sodium to food and water in various ways. Sodium is added to water during the following processes:

- Water purification and bacterial control in water supplies are accomplished by adding sodium hypochlorite.
- The lime-soda method of softening water in municipal water treatment plants requires the addition of compounds such as sodium carbonate.
- Home water softeners exchange calcium ions for sodium ions by using cation exchange resins.

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## ... TO MEDICATION

Sodium compounds are also used in many common medications such as:

Baking soda (home remedy for indigestion), and sodium compounds are used in many alkalizers and antacids as well as many headache remedies, sedatives, and cathartics.

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## ... TO FOOD

Man adds sodium to food for a variety of reasons. Sodium compounds are added to improve the flavor of many foods. For example:

Sodium chloride (salt) and monosodium glutamate (MSG, Accent, etc.) are used by commercial food processors in bacon, salted crackers, olives, soups, sauces, and almost all

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## NORMAL SODIUM CONSUMPTION

It is estimated that the average person consumes the equivalent of 2 to 3 teaspoons of salt per day from all sources. This is about 8 to 15 grams. Some of this salt is in the food naturally, but most of it is added in processing, preservation, cooking, and at the table. A salt (sodium chloride) intake of 8 to 15 grams is equal to about 3 to 6 grams (3,000 to 6,000 milligrams) of sodium.

# DIETARY SODIUM

An example of this daily intake might be as follows:

FOOD	APPROXIMATE SODIUM CONTENT IN MILLIGRAMS
<b>Breakfast</b>	
½ cup canned tomato juice	439
1 egg (no salt added)	59
2 slices bacon	274
2 biscuits	350
2 teaspoons margarine	140
<b>Lunch</b>	
Sliced ham (3 oz.)	1,114
Processed cheddar cheese (1 oz.)	406
2 slices white bread	228
1 cup milk	122
1 large olive	80
1 dill pickle	930
1 teaspoon mustard	65
Potato chips, about 10	200
<b>Dinner</b>	
Steak, 6 oz., no salt added	110
Green salad with 1 ounce French Dressing	450
Baked potato, salt added	270
Two pats margarine	140
Bread, 2 slices or equivalent (rye)	278
<b>TOTAL SODIUM . . . . . 5,605 (milligrams)</b>	

## SODIUM IN SOFTENED WATER

Since sodium is added to water softened by the cation exchange process (mechanical water softening), the level of sodium in softened water may be of interest to persons on sodium restricted diets.

Table 1 shows the amount of sodium added to softened water of varying original hardness. The harder the water originally, the more sodium that is added.

**TABLE 1 – Sodium Added to Water from Cation Exchange Softening**

Initial Water Hardness	Sodium added by Cation Exchange Softening of Water	
Grains per Gallon	Milligrams Na+/gal.	Milligrams Na+/qt.
1	30	7.4
5	148	37
6	180	45
7	208	52
8	240	60
9	268	67
10	298	74
15	448	112
20	596	149
30	892	223
40	1,192	298

## CONTRIBUTION OF SODIUM FROM WATER SOFTENING TO TOTAL SODIUM INTAKE

Assuming a daily intake of 5 grams (5,000 milligrams) of sodium in food and the consumption of 3 quarts of water (used for coffee, tea, food preparation, and drinking) the contribution of the sodium (Na+) in the water from the home water softening process compared to the total daily intake can be seen in the following table.

**NOTE:** When a person is on a sodium-restricted diet, all possible sources of sodium should be evaluated in relation to the limit set by the physician.

**TABLE 2 – Sodium Intake from Softened Water Compared to Total Sodium Intake**

Initial Water Hardness/Grains per Gallons	Milligrams Na+ Per 3 qts. Softened Water	Milligrams Na+ from Food	Total Na+ Consumed Milligrams	% of Total from Softened Water
1	22	5,000	5,022	0.4%
5	111	5,000	5,111	2.2%
10	222	5,000	5,222	4.3%
15	336	5,000	5,336	6.3%
20	447	5,000	5,447	8.2%
30	669	5,000	5,669	11.8%