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TECHNICAL BULLETIN

HEALTH EFFECTS INFORMATION

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SODIUM CARBONATE
"Soda Ash"

For More Information Contact:

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SYNONYMS:
Soda ash, sodium salt of carbonic acid, soda, trona, disodium carbonate, sal soda, washing soda,Solvay soda, crystal carbonate, natrium carbonicum, Snowlite

CHEMICAL AND PHYSICAL PROPERTIES:

- Molecular formula: Na_2CO3
- White powder, crystal or solid; will draw moisture from air and become damp
- No odor, flat, sweetish flavor
- Concentrated powder, crystal or solids are irritating to skin, eyes and respiratory system

WHERE DOES SODIUM CARBONATE COME FROM?

Sodium carbonate is mined from the earth in solid form and it is also extracted from various brines and industrial recovery processes.

WHAT ARE THE PRINCIPLE USES OF SODIUM CARBONATE?

Sodium carbonate is an important ingredient in many household products, especially cleaning and disinfecting products. It is used in cosmetic products ranging from tooth paste to skin care products and lotions; and in food and beverage production for the adjustment of acidity and as a stabilizer. It is also used in many industries including manufacturing of glass, paper, and in mining processes. It is an important component of over-the-counter and prescription medications such as antacids. Sodium carbonate may also be used in spas and swimming pools to adjust acidity of the water, as well as in the treatment of aggressive drinking water.

IS SODIUM CARBONATE NATURALLY PRESENT IN DRINKING WATER?

Yes, because sodium and carbonates are very common natural mineral substances, they are present in many natural soils, in many sources of surface water and groundwater, and in plants and animal tissues. Water supplies in limestone areas have high levels of sodium carbonate, and sometimes excessive amounts must be removed. Water supplies from acidic formations contain significant amounts of sodium, but much lower levels of carbonate.

IS SODIUM CARBONATE IN DRINKING WATER HAZARDOUS TO HEALTH?

Only in very concentrated solution or in solid form is sodium carbonate potentially harmful. Direct skin or eye contact, or inhalation of powder or crystals can produce irritation, rash and sometimes burns. Household cleaning and laundry solutions contain sodium carbonate at levels of 10% (100,000 ppm) or greater, and are moderately irritating to bare skin after prolonged contact. Undiluted cleaning products having 50% (500,000 ppm) or greater concentrations of sodium carbonate can react chemically with and burn skin and mucous membranes.

Ingestion of the concentrated salt or of strong cleaning solutions can cause nausea, vomiting, stomach ache, diarrhea and burns to the mouth and throat. Solutions of concentration at or below 10% (100,000 ppm) are safe for skin contact. Carbonated beverages having carbonate ion levels as high as 10,000 ppm are commonly ingested without adverse effects.

WHAT ARE TYPICAL LEVELS OF SODIUM AND CARBONATE IN FOODS AND BEVERAGES?

Sodium levels in foods vary enormously. High-sodium foods such as pickles, cured meats, potato chips and other salted foods contain sodium levels ranging from 600 ppm to several thousand ppm. Bottled soft drinks contain from 80 to about 250 ppm of sodium.

Carbonate levels in food and drink are also highly variable. Carbonated soft drinks contain from 2700 to more than 10,000 ppm carbonate ion. Commercial bottled water products contain from about 10 ppm to 3000 ppm carbonate. Water exposed to air will absorb carbon dioxide from the air and may form carbonate levels somewhere between 10 ppm and 250 ppm. Persons who take calcium carbonate supplements to prevent osteoporosis consume 250 to 900 miligrams of carbonate per tablet or 1000 to 2000 miligrams of carbonate per day from the supplement alone.

HOW MUCH SODIUM CARBONATE IS ADDED TO DRINKING WATER FOR CORROSION CONTROL?

Generally, somewhere between 1 ppm and 40 ppm of sodium carbonate is added to water in the process of adjusting pH and alkalinity for corrosion control. These additions are very small compared to naturally-occuring sodium and carbonate found naturally in food, beverages and natural waters, or quantities added to foods and beverages for special effects.