490 E. Industrial Park Drive
Manchester, NH 03109
603-622-0200

NELSON ANALYTICAL LAB

120 York Street
Kennebunk, ME 04043
207-467-3478

www.nelsonanalytical.com

Environmental Fact Sheet

(Information compiled from New Hampshire Department of Environmental Services Literature)

Sodium and Chloride in Drinking Water

Many people use the word “salt” when they intend to refer to sodium or to sodium chloride. When a salt such as sodium chloride dissolves in water it breaks up into positively- and negatively-charged ions. Sodium chloride breaks up into sodium and chloride ions in water. Every water supply contains some sodium and chloride.

Occurrence of Sodium and Chloride

Typical background levels of sodium and chloride for pristine locations in New Hampshire are less than 20 milligrams per liter (mg/L) and 30 mg/L, respectively. A milligram per liter is the same as a part per million (ppm). In the immediate seacoast area, elevated levels of sodium and chloride occur naturally due to the proximity to sea water and wind-blown sea spray. Concentrations in groundwater in the seacoast area typically range up to 75 mg/L sodium and 150 mg/L chloride, respectively. Substantially higher levels of sodium and chloride tend to imply contamination by human activities, including road salt storage, use of road salt, discharges from water softeners, human or animal waste disposal, leachate from landfills, and other activities.

Normally the chloride concentration of well water exceeds that of sodium by approximately 50 percent due to the difference in their atomic weights. Any judgment relative to water’s salt concentration should be made only after reviewing the results of several samples that have been taken at different times of the year.

Health Concerns

At present there are no health-based standards for sodium or chloride under the Federal Safe Drinking Water Act. In the mid-1980s, USEPA had listed sodium in a group of contaminants called the Drinking Water Priority List, for which official maximum contaminant levels (MCLs) would be developed. MCLs are health-based standards that must be met by public water systems. A subsequent review of scientific evidence by EPA showed that the vast majority of sodium ingestion was from food rather than drinking water, and that the linkage between sodium and hypertension (high blood pressure) was still not well documented. Consequently in 1988, EPA removed sodium from the Drinking Water Priority List. In March 1998, EPA reissued the list, now known as the Drinking Water Contaminant Candidate List (DWCCL). That list included sodium. In September 2009, the final version of the third edition of the list was published, and sodium was again off the list.

When considering the health importance of sodium and chloride, EPA assumed that water users consume two liters of water per day, and found that 10 percent or less of a person’s daily sodium intake comes from drinking water. The rest is usually from food. Persons on a sodium-restricted diet should evaluate all sources of sodium when attempting to reduce overall sodium intake. It is often much easier, and less expensive, to make a dietary change than to excessively purify drinking water.

EPA has recommended that sodium levels not exceed 20 mg/L for those persons on a physician prescribed "no salt diet." This is the same level recommended by the American Heart Association. This is a very stringent level. For comparison purposes, regular milk has a sodium concentration of approximately 500 mg/L. The sodium levels of certain other major foods are listed below.

Food Product Sodium (mg)
Tomato sauce, 1 cup 1,482
Ham, 2 oz. 810
Bacon, 3 slices 303
Cottage cheese, 1 cup 851
Red or white wine, 3.5oz. 5
Club soda, 12 oz. 75

Secondary (Aesthetic) Drinking Water Standards

EPA has identified 250 mg/L as a concentration at which chloride can be expected to cause a salty taste in drinking water. Water users typically notice the presence of high chloride before an equal amount of sodium. The secondary level of 250 mg/L is based on aesthetic concerns, and is only advisory in the Federal Safe Drinking Water program. Normally, the best method to control sodium and chloride in drinking water is to better manage those activities that add salt in the recharge area of the water supply source(s). Sodium and chloride levels are most often elevated in drinking water due to road salt getting into the well, or from the use of a water softener.

For More Information

Please contact Nelson Analytical Lab regarding testing your drinking water for sodium and or chloride. We can mail you a water test kit with the necessary test bottle and water sampling instructions. Results will be emailed upon completion within 1 to 2 business days. Nelson Analytical Lab will discuss your test results with you should you have any questions or concerns, or would like to be directed to speak with a water treatment company regarding treatment options for your water supply.