Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Drinking Water Program

December 1997 - Updated October 2006

Sodium Guideline

The Massachusetts Department of Environmental Protection (MassDEP), Drinking Water Program (DWP), has established a sodium guideline of 20 mg/L. This concentration is in line with the limit applied to bottled water by the United States Food and Drug Administration (USFDA) for low sodium water.

Sodium Monitoring/Sampling

Public water systems (PWS) must sample for sodium at the entry point to the distribution system or a sampling point representative of each source in accordance with Massachusetts Drinking Water Regulations 310 CMR 22.06A(1) and (2) and the latest PWS sampling schedule which was provided by MassDEP. See attached 310 CMR 22.06A(3), sampling protocol, for the specific sampling requirement. PWSs and their contracted certified analytical laboratories are not allowed to composite samples to be analyzed for sodium.

Sodium Reporting and Notification

PWSs must report all results "within the first ten days of the month following the month in which the sample results were received or within the first ten days following the end of the required monitoring period, whichever comes first." Two copies of the report must be submitted on the appropriate MassDEP required form and sent to your MassDEP regional office.

PWSs must also send copies of all results that show a detection of sodium to their local Board of Health (BOH) and the Massachusetts Department of Public Health (DPH) by direct mail within 30 days after the PWS first learns of the analytical result that indicates a level of sodium. (Note: if sodium is not detected, there is no need to notify the local BOH or DPH.) See the attached 310 CMR 22.06A(5) Sodium Notification for the specific requirement.

The DPH can be contacted as follows:

Massachusetts Department of Public Health
Bureau of Environmental Health Assessment
250 Washington Street
Boston, MA 02108-4619
Attention: Sodium Notification

Please use the attached "Sodium Notification" form to forward your results to the BOH and DPH. PWSs who do not collect and analyze samples for sodium will be in violation of the Drinking Water Regulations and will be requested to notify their BOH of their non-compliance.

MassDEP recommends that each PWS should contact its BOH or health agent to ensure that they understand the program and have copies of the MassDEP Public Information Notice on sodium for distribution to consumers upon request.

Waivers from Sodium Monitoring

There are currently no waivers for sodium. All PWS in the Commonwealth must sample for sodium and report as required.

Enforcement

PWSs exceeding the sodium guideline will not be required to treat or initiate additional monitoring (unless specifically requested to do so by MassDEP). MassDEP expects PWSs who exceed the guideline to evaluate their system operations to determine the cause and possible remediation measures. In addition, the PWS is required to respond to its consumers by providing appropriate information, e.g., the attached Public Information Notice and/or referring the customer to their BOH or health professional for further discussion on health effects. (PWSs that currently use posting as a form of notification may post the attached notice for general information.) In addition, PWSs may refer customers to DPH, Bureau of Environmental Health Assessment, which will provide information on the health effects of elevated levels of sodium in drinking water upon request. As part of its Physicians Education Program, the Bureau also provides this information to physicians.

PWSs who do not collect and analyze samples will be in violation of the Drinking Water Regulations and will be required to notify their BOH of their noncompliance.

MassDEP will continue to monitor the sodium levels of all PWSs and may require additional specific actions as necessary. Please contact MassDEP, Drinking Water Program at 617- 292-5770 if you have any questions on this issue or email Program.Director-DWP@state.ma.us .

310 CMR Section 22.06A , Sodium Regulations:

Special Monitoring for Sodium Reporting and Analytical Methods and Frequency

(1) Monitoring: All public water systems (community and non-transient, non-community and non-community;) shall monitor for the determination of sodium concentration levels.
(2) Initial Sampling Frequency: Each community and non-transient, non-community and transient community water system is required to monitor for sodium during the first three-year compliance period of each nine-year compliance cycle beginning in the compliance period starting January 1, 1993.
(a) GW Sampling Frequency: Groundwater systems shall take one sample at each sampling point during each compliance period beginning in the compliance period starting January 1, 1993. (once every three years)
(b) SW Sampling Frequency: Surface water systems (or combined surface/ground) shall take one sample annually at each sampling point beginning January 1, 1993.
(3) Sampling Protocol: Monitoring shall be conducted as follows:
(a) Ground Water Sampling Points: Groundwater systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point) beginning in the compliance period starting January 1, 1993. The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.
(b) Surface Water Sampling Points: Surface water systems [Note: For purposes of 310 CMR 22.06A(3)(b), surface water systems include systems with a combination of surface and ground sources.] shall take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point which is representative of each source after treatment (hereafter called a sampling point) beginning in the compliance period beginning January 1, 1993. The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.
(c) Multiple Sources: If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water is representative of all sources being used).
(4) Sodium Reporting: The supplier of water shall report to the Department the results of the analyses for sodium within the first ten days of the month following the month in which the sample results were received or within the first ten days following the end of the required monitoring period, whichever comes first.
(5) Sodium Notification: The supplier of water shall report the level of sodium for each source to the local Boards of Health and Massachusetts Department of Public Health by written notice by direct mail within 30 days after the supplier of water first learns of the analytic results which indicate a level of sodium.
(6) Sampling Schedules: Each public water system shall monitor at the time designated by the Department during each compliance period.
(7) Sodium Analysis Analytical Methods: Analysis for sodium shall be conducted using the following method:

SODIUM ANALYTICAL METHODS
Reference (Method Number)

Contaminant	Methodology[4]	EPA[1]	ASTM[2]	SM[3]	Other
Sodium	Atomic Absorption Direct Aspiration	273.1	-	-	-
	Atomic Absorption, Graphite Furnace	273.2	-	-	-
	Flame Photometric Method	-	-	320-A	-
	Other	-	D1428-64(a)	-	-

1 - Methods of Chemical Analysis of Water and Wastes," EPA Environmental Monitoring and Support Laboratory, Cincinnati, OH 45268 (EPA-600/4-79-020), March 1983. Available from ORD Publications, CERI, EPA, Cincinnati, OH 45268.
2 - Annual Book of ASTM Standards, Vol. 11.01 American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.
3 - "Standard Methods for the Examination of Water and Wastewater," 16th edition, American Public Health Association, American Water Works Association, Water Pollution Control Federation, 1985.
4 - For approved analytical procedures for metals, the technique applicable to total metals must be used.

The Massachusetts Department of Environmental Protection
and The Department of Public Health Public

SODIUM

(For distribution to consumers upon request)

The principal source of exposure to sodium is from the diet. The average American diet can contain anywhere from 2,000 mg/d to 24,000 mg/d depending on the amount of table salt added to food. Fruits, vegetables, and meats naturally contain sodium. Many foods such as dairy products and processed food products contain higher concentrations of sodium. For example, 2 slices of white bread could contain close to 300 mg of sodium, 1 frankfurter 400- 800 mg, and diet cola 20 mg of sodium. Sodium is often added during food preparation and at the table to food. Drinking water contributes only a small fraction (less than 10%) to the overall sodium intake.

Sodium is a naturally occurring common element found in soil and water. It is necessary for the normal functioning of human systems. Sodium is part of a complex physiological mechanism involved in regulating fluids in human systems. The normally functioning kidney compensates for moderate changes in sodium intake by increasing or decreasing sodium and fluid excretion in the urine. Small changes in the sodium intake do not adversely affect plasma sodium concentrations in the majority of the population. The natural mechanisms of fluid regulation maintain a relatively constant concentration of plasma sodium. Adequate daily total sodium intakes have been estimated to range from 115 to 750 milligrams per day (mg/d) for infants, 325 to 2700 mg/d for children and 1100 to 3300 mg/d for adults.

Some people, however, have difficulty regulating fluid volume as a result of several diseases, including congestive heart failure, kidney failure, and hypertension. Some individuals are genetically susceptible to hypertension, a condition that may be enhanced by elevated plasma sodium levels. Monitoring sodium intake in these individuals is important in the management of their particular malady.

The Massachusetts Department of Environmental Protection (MassDEP) is requiring all water suppliers to notify their local Boards of Health, Massachusetts Department of Public Health, and MassDEP of the detected concentrations of sodium in drinking water. Notification is required so that individuals who are on sodium restricted diets or who wish to monitor their sodium intake for other reasons will be able to take the amount of sodium in their water into account.

The guideline of 20 milligrams per liter for sodium when exceeded does not require treatment of the water to reduce the levels to prevent adverse health effects on public health. Rather the guideline represents a level of sodium in water that physicians and sodium sensitive individuals should be aware of in cases where sodium exposures are being carefully controlled.