REPORT
TO THE
NEW JERSEY LEGISLATURE
SENATE ENVIRONMENT & ASSEMBLY ENVIRONMENT COMMITTEES

SUMMARIZING LABORATORY TEST RESULTS ON THE QUALITY OF BOTTLED DRINKING WATER FOR THE PERIOD JANUARY 1, 2005 THROUGH DECEMBER 31, 2005

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New Jersey Department of Health and Senior Services
Public Health Services
Consumer and Environmental Health Services
Food and Drug Safety Program

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INTRODUCTION

The Department of Health and Senior Services (DHSS) is required by Public Law 1994, Chapter 79 (N.J.S.A. 24:12-11), enacted on July 24, 1994, to prepare and submit a report annually on the quality of bottled water to the Senate Environment and Assembly Environment Committees or their successors. The Legislation calls for the DHSS to summarize test data submitted by water bottlers, both imported and domestic, and any analytical spot checks conducted by the DHSS. In addition to summarizing the bottled water test data, the report provides information on the ongoing bottled water inspectional activities and consumer services provided by the DHSS. The report delineates the major activities associated with the certification of bottlers selling water in New Jersey and enforcement actions taken by the DHSS.

The bottled water industry has maintained a continuous growth rate averaging 9.7 percent in 2005. Growth of New Jersey bottled water sales was comparable to the national bottled water sales trend. According to the Beverage Marketing Corporation, this trend will continue.

New Jersey continues to rank eleventh nationwide in the consumption of bottled water with an estimated 171,900,000 gallons of water consumed in 2005. The per capita consumption of bottled water in New Jersey increased from 18.9 gallons to 20.3 gallons.

Nationally, the majority of bottled water sold continues to be non-sparkling product in one, two, five, and six-gallon containers. Imported water sales have risen since 2002, with an increase of approximately 10 percent in the North American region.

PUBLIC HEALTH ASPECTS

With the continued increase in bottled water use, there has been a greater awareness and interest in the safety and quality of these products. Bottled water source supplies are subject to the same types of contaminants that can impact public drinking supplies. Bottled water producers primarily rely on springs and wells for their water supplies and these sources can be influenced by contaminants entering the water bearing strata. While chemical contaminants are seldom found in bottled or public drinking water supplies at high enough levels to cause acute health affects, small amounts over a long period of time could lead to chronic or long-term adverse health effects.

Specific standards have been developed for impurities that have been detected in ground and surface water supplies. Except for arsenic, lead, copper, and coliform bacteria, bottled water sources must meet the same water safety standards that have been developed under the State's Safe Drinking Water Act and the regulations establishing New Jersey Maximum Contaminant Levels (MCLs) for public drinking water supplies. These standards are developed by examining the toxicological data for the contaminants of concern through animal studies or epidemiological human health studies. This information is used to develop an estimate of the concentration of the contaminant that may be toxic and the concentration determined, if any, that would not cause an adverse health affect. A MCL is the highest amount of a specific contaminant allowed in drinking water, including bottled water products. MCLs are set for carcinogens to expect no more than one cancer case to occur in one million persons ingesting the chemical contaminant in a lifetime. The MCLs are based on a daily consumption of two liters of water. The New Jersey Drinking Water Quality Institute reviews ongoing scientific studies on the effects of chemicals detected in drinking water and recommends MCLs for each chemical contaminant of concern. The Institute is made up of representatives from the New Jersey Department of Environmental Protection (DEP), the Department of Health and Senior Services (DHSS), the academic scientific community, water suppliers, and the general public.

In 2005, the United States Food and Drug Administration (FDA) published the Revised Arsenic Rule to further protect the consumer from exposure to arsenic, a naturally-occurring element which is toxic and carcinogenic in humans. The MCL for arsenic in bottled water was lowered from 50 parts per billion (ppb) to 10 ppb. The United States Food and Drug Administration (FDA) Revised Arsenic Rule became effective for bottled water products on January 23, 2006. This rule pre-empts the New Jersey Primary Drinking Water Standard of 5 ppb, which is therefore only applicable to public and individual water supply systems. The bottled water industry is monitoring for this naturally occurring element through required test submissions submitted to DHSS.

The DHSS bottled water oversight activities are in place to ensure that bottled water products sold in the State:

- Meet the established MCLs for chemical, radiological, and microbiological contaminants;

- Are derived from an approved source;

- Are bottled in a safe and sanitary manner; and are properly labeled.

In addition to the potential for chemical contamination, source water supplies can also be subject to microbiological contamination. Spring water supplies can be vulnerable to the infiltration of surface water and pathogenic microorganisms including protozoa, such as *Giardia lamblia* and *Cryptosporidium parvum*. These pathogens may enter the ground water strata from which a bottler draws their supply. While pathogenic bacteria are readily eliminated through disinfection, protozoan cysts are not eliminated through standard disinfection techniques employed by water bottlers such as ozonation and ultra-violet light (UV) treatment. In order to address this potential problem, the DHSS established rules that require water bottlers to evaluate their source of supply for direct surface water influences. Microscopic particulate analysis or other hydrologic evaluations are conducted and the bottlers must certify that their water is not under the direct influence of surface water or employ additional treatment, which includes submicron filtration to eliminate the potential for the presence of protozoa.

STATUTORY AND REGULATORY PROVISIONS

The Department of Health and Senior Services (DHSS) is responsible for enforcing the laws and regulations governing bottled water. The DHSS's Public Health Services Branch, Consumer and Environmental Health Services, Food and Drug Safety Program administers the Bottled Water Project.

Title 24 - Food and Drugs

Bottled water manufactured or sold in the State must comply with the laws governing bottled water under N.J.S.A. 24:12-8 et seq.

On January 12, 2006, Senate Bill No. 1311 was signed into law, by then Acting Governor Richard J. Codey, as Public Law 2005, Chapter 325. This law eliminated the State's requirement that all bottles, packages or containers of bottled water sold, offered for sale or bottled in New Jersey, bear a clear and prominent label indicating the specific location at which the water was obtained, including the address of a water purveyor, artesian or driven well, spring, or other point of origin; classifying the bottled water as demineralized water, distilled water, purified water, drinking water, light mineral water, mineral water, or spring water; and containing an expiration date of two years from the date on which the water was bottled. In so doing, the law recognized that the regulations of the federal Food and Drug Administration (FDA), which were promulgated after the 1987 State law amendments, provide ample protection to consumers as to the bottled water products they purchase.

The following delineates the major provisions of the law enforced by the DHSS:

- Bottled water sold in the State must meet the water quality standards adopted by the Department of Environmental Protection for drinking water, pursuant to the New Jersey Safe Drinking Water Act (N.J.S.A. 58:12A-1). Exceptions to this include arsenic (the federal standard supersedes the New Jersey Safe Drinking Water Act), lead (the Food and Drug Rule N.J.A.C. 8:21-5.1 et seq. requires 5 ppb vs. the New Jersey Safe Drinking Water Act standard of 15 ppb), copper (the Food and Drug Rule requires 1000 ppb vs. the New Jersey Safe Drinking Water Act standard of 1300 ppb), and coliform bacteria (the Food and Drug Rule requires the absence of coliforms vs. the New Jersey Safe Drinking Water Act standard of <5% of all set of samples).

- Plant operators must test bottled water for microbiological and hazardous chemical contaminants at prescribed frequencies. Product testing must be conducted in a laboratory certified by the Department of Environmental

Protection (N.J.S.A. 24:12-10).

- Test results must be forwarded to the DHSS at prescribed frequencies (N.J.S.A. 24:12-11).

- The DHSS shall prepare and submit an annual report to the Senate Environment and Assembly Environment Committees, or their successors summarizing the test results submitted to the DHSS and any spot checks conducted by the DHSS (N.J.S.A. 24:12-11).

- The law provides specific penalty provisions and actions the Commissioner of Health and Senior Services can take when bottled water may present an imminent and substantial endangerment of health (N.J.S.A. 24:12-14).

- Requires the Commissioner of Health and Senior Services to adopt and implement rules for (1) monitoring, sampling, and inspection procedures for source and finished product bottling, (2) maintenance and retention of required records, (3) submission of monitoring and sampling reports to the DHSS, and (4) other information that the Commissioner deems necessary to determine compliance with the law (N.J.S.A. 24:12-12).

Rules Governing Manufacture, Storage, Distribution, and Handling of Bottled Water:

The rules governing bottled water adopted by the Department of Health and Senior Services are found in the administrative code at N.J.A.C. 8:21-5.1. The major provisions of the rules enforced by the DHSS relate to the standards and testing criteria for bottled water and are as follows:

- Delineates the good manufacturing practices and sanitary controls for water bottling plants operating in the State.

- Requires bottlers to address the potential for ground water contaminants impacting their source of supply, and require adequate treatment systems in place when ground water influences are identified.

- Sets the specific water quality standards and testing frequencies. (The microbiological, physical, chemical, and radiological standards, including testing frequencies, are listed in the Water Quality Standards section of the report.)

- Adopts by reference the DEP Safe Drinking Water Act Water Quality Standards. This will ensure that the water quality standards are kept current

without formal rule changes each time the DEP amends or adds new water quality standards.

- Establishes the procedures for submission of required test results by laboratories certified by the DEP. A list of certified laboratories is available from DEP.

- Adopts federal labeling standards and nomenclature requirements promulgated by the U.S. Food and Drug Administration for bottled water products.

- Requires certification of in-state, out-of-state, and foreign bottling plants selling water in New Jersey.

- Requires certification fees to support inspections of water bottlers, conduct expanded spot checks of bottled water products, and administer bottled water project activities.

NEW JERSEY BOTTLED DRINKING WATER STANDARDS

All in-state and out-of-state certified bottled water firms must submit water analysis test results to the DHSS on both source water and each finished bottled water type; (i.e. spring, distilled, mineral or well water). Sampling frequencies and bottled drinking water standards are listed as follows:

SAMPLING FREQUENCIES

Frequency of Sampling		
Type of Analysis	**Source Water***	**Finished Bottled Water**
Volatile Organics	**Annually**	**Annually**
Inorganics	**Annually**	**Annually**
Synthetic Organics	**Annually**	**Annually**
Secondary Standards	**Annually**	**Annually**
Radiological	**Every 4 years**	**Every 4 years**
Microbiological	**Weekly**	**Weekly**

* Source water is water from an approved source, which has not been treated or disinfected.

Note: If an approved Community Water System (municipal water supply) is used as a water supply for bottled water, the results from the water utility may be used to prevent duplication in testing.

New Jersey Bottled Drinking Water Standards

VOLATILE ORGANIC COMPOUNDS		INORGANIC COMPOUNDS	
CONTAMINANTS	MCL (ug/l or ppb)	CONTAMINANTS	MCL (ug/l or ppb)
Benzene	1.0	Antimony	6.0
Carbon Tetrachloride	2.0	Arsenic	10.0
Meta-Dichlorobenzene	600.0	Asbestos	$7x10^6$ fibers/l >10 um
Ortho-Dichlorobenzene	600.0	Barium	2000.0
Para-Dichlorobenzene	75.0	Beryllium	4.0
1,1-Dichloroethane	50.0	Cadmium	5.0
1,2-Dichloroethane	2.0	Chromium	100.0
1,1-Dichloroethylene	2.0	Copper	1000.0
Cis-1,2-Dichloroethylene	70.0	Cyanide	200.0
Trans-1,2-Dichloroethylene	100.0	Fluoride	2400.0
1,2-Dichloropropane	5.0	Lead	5.0
Ethylbenzene	700.0	Mercury	2.0
Methyl tertiary Butyl Ether	70.0	Nitrate (as nitrogen)	10000.0
Methylene Chloride	3.0	Nitrite (as nitrogen)	1000.0
Monochlorobenzene	50.0	Nitrate/Nitrite combined	10000.0
Napthalene	300.0	Selenium	50.0
Styrene	100.0	Thallium	2.0
1,1,2,2-Tetrachloroethane	1.0	Turbidity	0.5 Nephelometric Turbidity Units
Tetrachloroethylene	1.0		
Toluene	1,000.0	**TOTAL TRIHALOMETHANES (THMs) INCLUDES:**	
1,2,4-Trichlorobenzene	9.0	Bromoform	
1,1,1-Trichloroethane	30.0	Dibromochloromethane	
1,1,2-Trichloroethane	3.0	Chloroform	
Trichloroethylene	1.0	Dichlorobromomethane	
Vinyl Chloride	2.0	Sum of the four compounds:	80.0
Xylenes (total)	1,000.0		
Disinfectant/Disinfectant By-Products			
Chlorine	4,000.0		
Chloramine	4,000.0		
Chlorine Dioxide	800.0		
Haloacetic Acids	60.0		
Chlorite	1,000.0		
Bromate	10.0		

KEY: One microgram per liter (ug/l) is equal to one part per billion (ppb).

New Jersey Bottled Drinking Water Standards (continued)

SYNTHETIC ORGANIC COMPOUNDS		SECONDARY STANDARDS	
CONTAMINANTS	**MCL (ug/l or ppb)**	**PHYSICAL & CHEMICAL CHARACTERISTICS**	**RECOMMENDED UPPER LIMIT**
Alachlor	2.0	Color	10 color units
Atrazine	3.0	Odor	3 threshold odor units
Benzo [a] pyrene	0.2	PH	6.5 to 8.5 (optimum range)
Carbofuran	40.0	Taste	No objectionable taste
Chlordane	0.5	MBAS (foaming agents)	0.5 ppm
Dalapon	200.0	Aluminum	0.2 ppm
Dibromochloropropane	0.2	Chloride	250.0 ppm
Di[2-ethylhexyl] adipate	400.0	Fluoride	2.0 ppm
Di[2-ethylhexyl] phthalate	6.0	Hardness as $CaCO^3$	250.0 ppm
Dinosep	7.0	Iron	0.3 ppm
Diquat	20.0	Manganese	0.05 ppm
Endothall	100.0	Silver	0.1 ppm
Endrin	2.0	Sodium	50.0 ppm
Ethylene dibromide (ED)	0.05	Sulfate	250.0 ppm
Glyphosate	700.0	Total dissolved solids	500.0 ppm
Heptachlor	0.4	Zinc	5.0 ppm
Heptachlor Epoxide	0.2	**MICROBIOLOGICAL**	**STANDARDS**
Hexachlorobenzene	1.0	Total Coliform	Membrane Filter Method <1 colony forming unit/100 ml
Hexachlorocyclopentadiene	50.0	Total Coliform	Absent by Presence/Absence Method
Lindane	0.2	**RADIONUCLIDES**	**STANDARDS**
Methoxychlor	40.0		**MCL in pCi/l (picocuries per liter)**
Oxamyl	200.0	Gross Alpha	15
PCBs (Polychlorinated Biphenyls)	0.5	Combined Radium 226 and 228	5
Pentachlorophenol	1.0		
Picloram	500.0		
Simazine	4.0		
Toxaphene	3.0		
2,3,7,8-TCCD (Dioxin)	$3x10^{-5}$		
2,4-D (2,4 - Dichlorophenoxyacetic Acid)	70.0		
2,4,5-TP (Silvex)	50.0		

KEY: One microgram per liter (ug/l) is equal to one part per billion (ppb)

Microbiological methodology is established in the most recent edition of *Standard Methods for the Examination of Water and Waste Water.*

BOTTLED WATER PROJECT ACTIVITIES

The Food and Drug Safety Program certifies out-of-state firms marketing products in the State as well as New Jersey bottled water plants. The project reviews all test results that are required to be submitted to the DHSS and takes regulatory action to gain compliance, when necessary. As part of the DHSS's regulatory responsibilities and consumer health service activities, the project responds to consumer inquiries and complaints, collects samples for analysis by the DHSS's Public Health and Environmental Laboratory (PHEL), and conducts sanitary inspections of water bottling plants. Product labels are also reviewed before approval is given to market a product in the State. The following is a summary of the DHSS's major activities during the 2005 reporting period to regulate the bottled water industry and respond to consumer's requests for information concerning these products:

As a means of expanding our food defense initiatives, the Bottled Water Project established a partnership with the U.S. Food and Drug Administration Imports Branch to notify the Project of unlicensed imported bottled water entries whenever an importer files a Prior Notice of Importation with FDA. This is due, in part, by the fact that imported water sales saw an increase in 2004 from 123 million to 134.1 million gallons nationwide.

In previous years, DHSS has not aggressively examined the significant volume of imported bottled water products which enter New Jersey's various cargo terminals. Investigations of these bottled water imports revealed that much of these products were intended for distribution into New Jersey. The procedure involves notification by FDA Imports of a Prior Notice Entry, filed by the importer, of a bottled water product that is not on the list of certified sources in New Jersey. The Program then investigates the matter at the receiving facility and places an embargo on the products for adulteration due to uncertified source. The importer is notified that it is the bottler's responsibility to obtain licensure and is provided the option of either applying for licensure, voluntarily destroying the product and ceasing further importation, or re-exportation out of the United States and ceasing further importation. The Project believes that it is important to certify the source and license the foreign bottling facility since some countries requirements are not as strict as New Jersey's water quality standards.

- Licensed 201 companies to sell bottled water in New Jersey with 21 new out-of-state water bottlers licensed in 2005, with 11 of the 21 new licenses as foreign water bottlers. This compares to 19 newly licensed during the previous reporting period.

- Conducted investigations with three foreign bottling firms that refused to obtain licensure. All three chose to voluntarily destroy the products and

cease importation and distribution in New Jersey.

- Assisted in preparations for the Strategic Partnership Program Agroterrorism Initiative held January 17-19, 2006. The Department of Homeland Security (DHS), U.S. Department of Agriculture (USDA), Food and Drug Administration (FDA), and the Federal Bureau of Investigation (FBI) collaborated with private industry and New Jersey representatives to validate the assessment of the bottled water industry using the CARVER + Shock method to identify gaps, mitigation strategies, research needs, and lessons learned. The exercise began with a site visit to a bottled water plant in Warren County on January 17, 2006 followed by the tabletop discussion of scenarios on January 18 and 19, 2006 at the Shawnee Inn in Delaware, PA.

- Responded to 37 consumer requests for information concerning bottled water. This number is a slight reduction compared to the 41 inquiries handled during the 2005 reporting period. The Consumer Information section of this report discusses a DHSS initiative to respond to consumer inquiries and requests for information.

- Handled 94 requests for information from individuals or firms concerning New Jersey's regulatory requirements, such as test result submission requirements, labeling requirements, and information on obtaining New Jersey bottled water certification.

- Investigated three consumer complaints during the last year compared to five complaints received during the previous reporting period. The most common complaints continue to be off odor or taste and particulate matter reported by consumers. One complaint about a solvent-like odor was investigated and confirmed positive, in both the index bottled water sample and control, by PHEL. The producer, located in Pennsylvania, was notified as well as the Pennsylvania Department of Agriculture, Food Safety Section which regulates the firm.

- Conducted sanitary inspections of eight New Jersey water bottlers. Of the eight bottlers, all eight were issued satisfactory inspection ratings and found to be in substantial compliance with the good manufacturing practice rules enforced by the DHSS.

- Closed two bottling firms.

- Conducted 50 spot checks of bottled water products to confirm test results submitted to the DHSS. This is 10 more or 25 percent greater than previous years' spot checks. Of significance, 1 spot check of a European bottled

mineral water revealed gross alpha radioactivity of 120 picocuries/liter, 7 times greater than the MCL permitted by New Jersey standards. The bottler was unwilling to treat the product to reduce the radioactivity to acceptable levels and was therefore barred from distribution and/or sale into New Jersey. FDA was also apprised and proceeded to alert other state bottled water regulators about this product.

SUMMARY OF TEST SUBMISSION RESULTS

Bottled water test submission results for 2005 continue to follow the same pattern as the findings reported during the 1995 through 2004 reporting periods. The findings indicate that the vast majority of bottled water sold in the State continues to meet the water quality standards. The mineral waters continue to be high in sodium and other inorganic compounds. Most exceedences occurred in Secondary Water Quality Standards and were aesthetic rather than public health concerns. The pH accidences are examples of this. The following summarizes the test data provided to the DHSS required under N.J.S.A. 24:12-11.

Inorganic Compounds:

The following table is a summary of all the Inorganic Water Quality test results. Values are listed in ug/l (parts per billion).

INORGANIC CHEMICALS					
Compound	**MCL (ug/l)**	**Exceedances**	**High Value**	**# Detected**	**Mean**
Antimony	6.00	0	6.000	15	3.000
Arsenic	50.000	0	10.000	16	7.813
Beryllium	4.000	0	1.000	15	0.933
Barium	2000.000	0	100.000	15	11.600
Chromium	100.00	0	50.000	16	19.375
Cadmium	5.000	0	3.000	15	1.267
Copper	1000.000	0	50.000	16	23.125
Cyanide	200.000	0	100.000	15	8.533
Fluoride	4000.000	0	86.000	12	20.533
Mercury	2.000	0	2.000	14	1.214
Lead	5.000	0	2.000	14	1.143
Asbestos	$7x10^6$ fibers /l > 10 um	0	1.000	2	0.509
Selenium	50.000	0	50.000	16	8.938
Thallium	2.000	0	2.000	16	1.125
Nitrate	10000.000	0	97.000	15	31.667
Nitrite	1000.000	0	50.000	14	23.875
Combined Nitrate/Nitrite	10000.000	0	97.000	15	31.667

Secondary Standards:

The following table is a summary of all the Secondary (aesthetic) Water Quality test results. Values are listed in mg/l (parts per million).

SECONDARY WATER QUALITY RESULTS (Aesthetic)					
COMPOUND	**MCL (mg/l)**	**Exceedances**	**High value**	**# Detected**	**Mean**
Foaming Agents	0.500	0	0.200	8	0.125
Aluminum	0.200	0	0.200	12	0.104
Chloride	250.000	0	58.000	9	20.219
Hardness	250.000	0	62.000	4	36.050
Iron	0.300	0	0.200	10	0.080
pH ** (ideal range)	6.5 to 8.5	**2**	(lowest) 4.4 to (highest) 8.1	15	6.885
Silver	0.100	0	0.100	9	0055
Sulfate	250.000	0	66.000	8	32.975
Total Dissolved Solids TDS*	500.000	**2**	590.000	11	149.909
Manganese	0.050	0	0.050	11	0.038
Zinc	5.000	0	2.000	9	1.858

Data is based on 360 bottled water samples
*TDS = Total Dissolved Solids. All bottled waters with a TDS of 500 mg/l or greater are considered mineral water due to the high mineral content.
**pH is expressed in pH units from 0 to 14.

The ideal range for pH, 6.5 to 8.5 units, was exceeded twice in bottled water test submissions. Most of these excesses were below 6.5 with the lowest pH detected at 4.4. Most of these low pH reports are the result of sampling purified water products, which have been treated by distillation, deionization or reverse osmosis which remove most of the mineral salts resulting in a very low pH. Bottled water, at the exceedance levels observed, is not a health or safety problem but may be of concern to the bottling plant operator. Water with excessively low or high pH may be corrosive or scale forming and cause problems with bottled water processing equipment.

Physical Characteristic Results:

The following table is a summary of the Physical Water Characteristic test results.

PHYSICAL BOTTLED WATER RESULTS					
Parameter	**MCL**	**Exceedences**	**High Value**	**# Detected**	**Mean**
Color	10 color units	0	5.000	13	5.000
Odor	3 Threshold Units	0	1.000	13	1.000
Turbidity	.5 NTU**	0	1.000	15	0.913

***Data is based on 360 bottled water analyses for each of these parameters.**
****NTU = Nephelometric Turbidity Unit**

Synthetic Organic Compound Results:

No elevated synthetic organic compounds (pesticides and herbicides) were detected in the 2005 test data reviewed by the DHSS. These results are consistent

with data for the previous five years reviewed for bottled water products.

Trihalomethanes and Organic Compound Results:

Three hundred and sixty bottled water samples were tested for trihalomethanes and organic compounds. All sample results were below the MCL values.

Microbiological Results:

The DHSS reviewed over 9,360 microbiological tests for total coliform. There were no exceedances of the total coliform standard for finished products. Total coliform must be less than 1 colony forming unit per 100 ml or the absence of any total coliform bacteria. In all cases, the finished products produced from these sources were reported to be free of coliform bacteria. Coliform bacteria are indicator organisms of potentially pathogenic microbiological contamination of water supplies, and if present, the treatment processes in place by the bottler must be capable of eliminating microbiological contaminants in the finished product.

Sodium Results:

Sodium levels in bottled waters, excluding mineral water, is insignificant as a source of dietary sodium when compared with the daily sodium intake from other dietary sources. Individuals on a sodium restricted diet should be aware that some bottled waters may contain elevated levels of sodium and pay attention to the sodium declaration on bottled water product labels.

Under FDA labeling requirements enforced by the DHSS, bottled water products containing levels of sodium greater than 50 mg/l require a nutritional labeling statement and a sodium declaration on the label. Many of the bottled water manufacturers make low sodium or sodium free claims, and the sodium content appears on the product label. The mineral water products that exceeded the sodium standard reflect this excess with a sodium labeling declaration.

SPOT CHECK SUMMARY TESTING

The DHSS conducts 50 spot checks of bottled water products annually to determine if these results are in conformity with those submitted to the DHSS by bottled water manufacturers as required. The samples are representative of popular and imported brands being sold in the State.

The spot check samples collected were analyzed for: Microbiology, Volatile Organics, Synthetic Organics, (Pesticides & Herbicides), Inorganics, Secondary Standards, Radiological, Physical Characteristics, and Trihalomethanes, in contrast

to last years limited sampling due to the relocation of the State Environmental Chemistry Laboratory.

The results of the spot check sampling showed no exceedances in the total coliform standard. The standard plate count ranged from <1ml up to 59,000 ml. There is currently no upper limit set for standard plate count in the regulations.

The majority of exceedances were found in the Secondary aesthetic standard parameters and included: Aluminum, pH, Iron, Manganese, Sodium, and Zinc. The one exceedance in the Inorganic compounds category was for Beryllium. The secondary standards are not based on adverse health consequences, and are not considered to be of public health significance.

The MCL for Aluminum was exceeded 44 times with a high value of 62.70 ug/l. Aluminum at the levels observed is not a public health concern and is associated with color, forming scale, and sedimentation.

The pH test submissions exceeded the recommended range of 6.5 to 8.5 pH units in 14 of the bottled waters tested. All of the 14 bottled waters recorded low pH ranges with the lowest pH detected at 5.06. Bottled water outside the recommended pH range is not a health or safety issue, but one of concern to the bottling plant operator. Water with low or high pH may be corrosive or scale forming and cause problems to the bottled water processing equipment.

The MCL for iron was exceeded in 39 instances with a high value of 20.70 ug/l. Iron at the levels observed is not a public health concern and is associated with taste and discoloration of plumbing fixtures.

There were 10 exceedances of the manganese standard with a high value of 243.00 ug/l. This metal resembles iron in its chemical activity in water and like iron causes problems related to taste and staining of clothing and plumbing fixtures. In some deep wells, it is not unusual to find manganese at levels as high as 3,000 ug/l. Manganese can be removed or reduced in concentration by the same methods used for iron.

The MCL for zinc was exceeded in 3 instances with a high value of 18.20 ug/l. A high level of zinc is associated with an off color and taste.

The MCL for sodium was exceeded in 2 instances with a high value of 624.0 ug/l.

INORGANIC COMPOUNDS

Beryllium

Beryllium is a metal found in natural deposits as ores containing other elements, and in some precious stones such as emeralds and aquamarine. The greatest use of beryllium is in making metal alloys for nuclear reactors and the aerospace industry.

The MCL for beryllium has been set at 4 ppb by the EPA. The beryllium level was found in exceedance in 1 instance with a high level of 17.20 ug/l. The company was contacted and follow up action instituted.

The long term effects of beryllium have the potential to cause the following effects from a lifetime exposure at levels above the MCL: damage to bones and lungs; cancer.

CONCLUSION

For 2005, bottled water in New Jersey generally met regulatory standards that ensure a safe, wholesome, and truthfully labeled product. Over the past nine years, bottled water quality has continually improved in meeting or exceeding regulatory standards. The DHSS will continue to closely monitor bottled water quality and safety through spot check sampling, with a significant emphasis on imported products, and review of the required laboratory test submissions.

Although bottled water is not considered a "high risk food," continued regulatory oversight is necessary in part due to the explosive growth in the bottled water industry. This growth, for more than a decade, has placed bottled water in nearly every supermarket, and vending machine, where dozens of brands compete for consumer dollars. In the coming years, industry experts anticipate that bottled water will be second only to soda as the United States beverage of choice.

The DHSS is also partnering with the International Bottled Water Association and the 13 licensed bulk/bottled water firms in New Jersey to bolster food defense initiatives. Based upon vulnerability assessments, food defense experts are in consensus that bottled water is one of the most likely targeted food products by potential terrorists. The primary goal of this partnership is to target-harden the 13 facilities so as to foil or deter potential tampering or terrorism.

New firms are continually entering the market and require additional focused surveillance. Potential contamination of source waters require on-going monitoring and the subsequent removal of any pollutants must be ensured. As new water standards are introduced, systems are needed to ensure compliance. With continued surveillance, the quality and safety of the bottled water market in New Jersey can continue to meet all regulatory and industry standards.

APPENDIX 1

TYPES OF BOTTLED WATER

The Department has adopted the Federal Standards of Identity and all bottled water products must conform to the nomenclature established in 21 CFR 165.110(a) (identity). Bottled waters can have differing characteristics that affect the taste, odor, and chemical composition. These characteristics are due to the exposure of the water to underground strata from which they are drawn and also to the treatments applied by the manufacturer prior to bottling. The treatments may result in either the addition or removal of minerals to achieve a desired taste. The standards of identity for all regulated bottled water products that are sold are described as follows:

Artesian Water or Artesian Well Water: Artesian Water is obtained from a well that is under natural pressure due to the water source being confined by layers of clay or rock. The water rises naturally to a height above the top of the aquifer. Artesian or artesian well water may be collected with the assistance of external force (pumps) to enhance the natural underground pressure.

Mineral Water: Mineral water contains very large amounts of mineral salts in excess of 250 mg/l (milligrams per liter). Mineral waters usually contain such salts as calcium, sodium, chloride, sulfate, carbonates, and bicarbonates. All other waters described here also contain these mineral salts but at much lower concentrations.

Distilled Water: Distilled water is processed by heating it to produce water vapor, condensing, and collecting the water. This process leaves most of the minerals behind producing a very flat and tasteless water. This type of water is used for batteries, clothing irons, and other domestic uses. This water treatment is also effective in removing microorganisms including bacteria and other larger parasites.

Purified Water or Demineralized Water: Purified Water is processed by either (1) distillation described above, (2) reverse osmosis, a process that filters the water through a filter membrane, or (3) deionization, a process in which the minerals are attracted to particles of the opposite electrical charge and removed. All three processes must result in water that meets the established definition of Purified Water in "The United States Pharmacopoeia, (U.S.P.), 23rd revision."

Sparkling Bottled Water: Sparkling bottled water is water that has naturally occurring carbon dioxide or effervescence.

Spring Water: Spring water is derived from an underground or subsurface formation and the water flows naturally to the surface and continues as a current of flowing water into a brook, stream, or river. Spring water is collected at the point of discharge or through a borehole tapping the underground formation feeding the spring.

Ground Water: Ground water is derived from a subsurface-saturated zone under pressure equal to or greater than atmospheric pressure. The term ground water would include such types of water as well, artesian well, spring, and mineral water.

Well Water: Well water is derived from a hole that is bored or drilled into an aquifer or underground water source to extract water. This is accomplished by the installation of a well casing, pumps, and a sanitary seal to extract a safe supply.

APPENDIX 2

BOTTLED WATER RESOURCE INFORMATION

NJ Department of Health & Senior Services **Consumer & Environmental Health Services** P.O. Box 369 Trenton, NJ 08625-0369 609-588-3123	General information on bottled water, bottled water inspections, and registration requirements Web Site Address: http://www.state.nj.us/health/eoh/foodweb
U.S. Environmental Protection Agency **Office of Ground Water and Drinking Water** Ariel Rios Building 1200 Pennsylvania Avenue NW Washington, DC 20460-0003 202-564-3750	Safe Drinking Water Hotline 1-800-426-4791 Drinking and bottled water standards http://www.epa.gov
U.S. Food & Drug Administration 200 C Street, S.W. Building # FB-8 Washington, DC 20204 888-INFO-FDA	Federal bottled water standards, good manufacturing practices, procedures, and product labeling http://www.fda.gov
National Sanitation Foundation International P.O. Box 130140 Ann Arbor, MI 48113-0140 800-673-6275 734-769-8010	Information on bottled water treatment systems, bottled water dispensing equipment standards, and bottled water plant voluntary inspection http://www.nsf.org
International Bottled Water Association 1700 Diagonal Road, Suite 650 Alexandria, VA 22314 703-683-5213 800-WATER-11	General information on bottled water statistics, processing equipment, and bottled water products and free consumer brochures http:/www.bottledwater.org