



*DELAWARE HEALTH  
AND SOCIAL SERVICES*

Division of Public Health

**Public Drinking Water  
Annual Compliance Report  
and Summary**

**2009**

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## **The Office of Drinking Water Program: An Overview**

In 1974 Congress adopted the Safe Drinking Water Act (SDWA). The United States Environmental Protection Agency (EPA) established the Public Water System Supervision (PWSS) Program under the authority of the SDWA to regulate the drinking water provided by public water systems. Under the SDWA and the 1986 and 1996 Amendments, EPA set national limits on contaminant levels in drinking water to ensure safe water for human consumption. These limits are known as Maximum Contaminant Levels or MCLs. The State of Delaware has adopted these limits for use in state regulations governing drinking water.

The SDWA allows a state to seek EPA approval to administer its own PWSS program. The authority to run a PWSS program is called primacy. The State of Delaware was granted primacy in April 1978. In order for Delaware to receive primacy, it had to meet certain requirements laid out in the SDWA, including the adoption of drinking water regulations that are at least as stringent as the Federal Regulations and a demonstration that it could enforce the program requirements.

The SDWA, EPA regulations and State regulations require that all public water systems (PWSs) monitor the drinking water for contaminants. Generally the larger the population served by the water system, the more frequent the monitoring must occur. In addition, if a PWS violates a MCL, or fails to conduct monitoring, the system must notify the public of the violation. This is known as public notification. Due to the small size of Delaware, the Division of Public Health, Office of Drinking Water (ODW) has traditionally conducted most of the monitoring for PWSs in Delaware. A few of the larger water systems conduct their own monitoring and report the results to ODW. Due to the increase in monitoring requirements in recent years the Office of Drinking Water has required community water systems that serve more than 1,000 people to collect their own total coliform, nitrate and monthly fluoride compliance samples and submit those samples to the Public Health Laboratory for analysis. All of the Community water systems (cities, towns, mobile home parks, etc.) and the Non-Transient, Non-Community water systems (schools, day cares, factories, etc.) are required to collect samples for compliance with national lead and copper rule standards. These samples are to be analyzed by a certified laboratory and the results submitted to ODW. Transient, Non-Community water systems (restaurants, parks, rest stops, etc.) are not required to conduct lead and copper monitoring.

The 1996 amendments to the SDWA included a requirement for states to prepare an annual compliance report as stated in the SDWA, Section 1414(c)(3)(A)(i) and distribute the report as specified in Section 1414(c)(3)(A)(ii). The purpose of this report is to provide a total annual representation of the number of violations in each of the following categories: MCLs, treatment techniques, variances and exemptions, and significant monitoring violations.

This annual report covers the time period of January 1 - December 31, 2009. It is broken down into five parts: the introduction, a general fact sheet on drinking water for the State of Delaware, a table listing of the number of violations and enforcement actions taken by the Division of Public Health, Office of Drinking Water, and a listing of the PWSs that were in violation and a conclusion. The data in this report was generated by Office of Drinking Water staff. Violation information was received from the US EPA and comes from the federal reporting that Delaware sends to the EPA quarterly.

Information on Delaware's public water systems may be found on the internet in EPA's Envirofacts webpage at the following address: [www.epa.gov/enviro/html/sdwis/sdwis\\_query.html](http://www.epa.gov/enviro/html/sdwis/sdwis_query.html). In addition, the Office of Drinking Water has a web page at the following address: <http://www.dhss.delaware.gov/dhss/dph/hsp/odw.html>.

# Public Drinking Water Summary

## Delaware 2009

The quality of drinking water in the State of Delaware is a concern for everyone. This document is a brief overview of the State's public drinking water. Included is everything from general information to a listing of the number of violations by contaminant and by water system that occurred during 2009. If further information is needed or questions arise concerning how these numbers were obtained, please contact the Division of Public Health, Office of Drinking Water at (302) 741-8630.

### General Information

Total land area of Delaware	1,252,459 <sup>1</sup> acres	Population of Delaware	891,495 <sup>2</sup>
Forest	179,144 acres (14%)	Percent served by individual wells	16.4 %
Agriculture	501,712 acres (40%)	Percent served by public water supplies	83.6 %
Developed	276,844 acres (22%)	Primacy Granted to State by EPA	1978
Wetland/Barren	294,759 acres (24%)		

\* \* \* \* \*

### Delaware's Drinking Water

### Public Water Systems

<b>Major Sources of Surface Water</b>	*	<b>Residents served by public water systems<sup>3</sup></b>	745,016
Brandywine River Basin	*		
Christina River Basin	*	Residents served by surface water systems	285,130
Red Clay/White Clay Creeks	*	Residents served by ground water systems	459,886
<b>Major Sources of Ground Water</b>	*	<b>Number of public water systems</b>	486
Columbia Aquifer	*	Community systems	214
Cheswold Aquifer	*	Non-transient systems	84
Piney Point Aquifer	*	Transient systems	188
Number of gallons of Public Water Used in Delaware each day: 101 mgd <sup>4</sup>	*	Number using surface water	3
	*	Number using ground water	483

The Office of Drinking Water provides many services to consumers and the public water supply systems. Funding comes from both State and Federal monies allotted to the public drinking water program for the State of Delaware. Two components within the Division of Public Health utilize these funds to provide the services for the drinking water program, the Office of Drinking Water and the Division of Public Health Laboratory.

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1 Source: State Planning Office  
2 Source: Delaware Population Consortium  
3 Source: Safe Drinking Water Information System/State Version (SDWIS/State)  
4 Source: Department of Natural Resources and Environmental Control

The Office of Drinking Water (ODW) works to ensure that the drinking water in Delaware meets or exceeds the requirements of the Safe Drinking Water Act (SDWA). This is accomplished through the review and approval of plans for new or existing water treatment systems and/or new or upgraded distribution systems. ODW staff also inspects water systems, provides technical assistance, responds to and handles emergencies, reviews monitoring results to ensure compliance with the SDWA and takes enforcement actions when necessary. Additionally, ODW provides training to water system operators and owners regarding system operation and compliance with rules and regulations. The Office of Drinking Water also contracts with the Environmental Training Center at Delaware Technical and Community College and the Delaware Rural Water Association to provide training and technical assistance to water system operators.

The Division of Public Health Laboratory performs water analyses for water quality parameters as outlined in the SDWA. The Office of Drinking Water also contracts with private laboratories for analysis of some regulated parameters.

<i>Operations</i>		<i>Budget Information</i>	
Inspections	151	Total Budget	\$902,898
Plans & Specifications Reviewed	211	Federal Budget	\$543,200
Projects requesting DWSRF funding	9*	State Budget	\$359,698
Infrastructure Investment Money Available	\$45,253,138*	Number of Staff Authorized	23.80

\*Includes American Recovery and Reinvestment Act (Stimulus) funded projects

<i>Training Provided</i>	
	Number
Certified Operators	724
Approved Sampler/Testers	271
Training classes offered	200
Operators Trained	1,082
Systems Represented	302

## Summary of Violations

	MCL (mg/L) <sup>1</sup>	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
		Number of Violations	Number of Systems with Violations	Number of Violations	Number of Systems with Violations	Number of Violations	Number of Systems with Violations
<b>Organic Contaminants</b>							
<b>1,1,1- Trichloroethane</b>	<b>0.2</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>1,1,2- Trichloroethane</b>	<b>.005</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>1,1- Dichloroethylene</b>	<b>0.007</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>1,2,4- Trichlorobenzene</b>	<b>.07</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>1,2-Dibromo-3- chloropropane (DBCP)</b>	<b>0.0002</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>1,2- Dichloroethane</b>	<b>0.005</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>1,2- Dichloropropane</b>	<b>0.005</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>2,3,7,8-TCDD (Dioxin)</b>	<b>3x10<sup>-8</sup></b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>2,4,5-TP</b>	<b>0.05</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>2,4-D</b>	<b>0.07</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Acrylamide</b>				<b>0</b>	<b>0</b>		
<b>Alachlor</b>	<b>0.002</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Atrazine</b>	<b>0.003</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Benzene</b>	<b>0.005</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Benzo[a]pyrene</b>	<b>0.0002</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Carbofuran</b>	<b>0.04</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Carbon tetrachloride</b>	<b>0.005</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>

<sup>1</sup> Values are in milligrams per liter (mg/l), unless otherwise specified.

	MCL (mg/L) <sup>1</sup>	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
		Number of Violations	Number of Systems with Violations	Number of Violations	Number of Systems with Violations	Number of Violations	Number of Systems with Violations
<b>Chlordane</b>	<b>0.002</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>cis-1,2-Dichloroethylene</b>	<b>0.07</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Dalapon</b>	<b>0.2</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Di(2-ethylhexyl)adipate</b>	<b>0.4</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Di(2-ethylhexyl)phthalate</b>	<b>0.006</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Dichloromethane</b>	<b>0.005</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Dinoseb</b>	<b>0.007</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Diquat</b>	<b>0.02</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Endothall</b>	<b>0.1</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Endrin</b>	<b>0.002</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Epichlorohydrin</b>				<b>0</b>	<b>0</b>		
<b>Ethylbenzene</b>	<b>0.7</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Ethylene dibromide</b>	<b>0.00005</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Glyphosate</b>	<b>0.7</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Heptachlor</b>	<b>0.0004</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Heptachlor epoxide</b>	<b>0.0002</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Hexachlorobenzene</b>	<b>0.001</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Hexachlorocyclopentadiene</b>	<b>0.05</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Lindane</b>	<b>0.0002</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Methoxychlor</b>	<b>0.04</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Methyl tert Butyl Ether (MTBE)</b>	<b>0.01</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Monochlorobenzene</b>	<b>0.1</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>o-Dichlorobenzene</b>	<b>0.6</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Oxamyl (Vydate)</b>	<b>0.2</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>para-Dichlorobenzene</b>	<b>0.075</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Pentachlorophenol</b>	<b>0.001</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Picloram</b>	<b>0.5</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>

<sup>1</sup> Values are in milligrams per liter (mg/l), unless otherwise specified.

	MCL (mg/L) <sup>1</sup>	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
		Number of Violations	Number of Systems with Violations	Number of Violations	Number of Systems with Violations	Number of Violations	Number of Systems with Violations
<b>Simazine</b>	<b>0.004</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Styrene</b>	<b>0.1</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Tetrachloroethylene</b>	<b>0.005</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Toluene</b>	<b>1</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Total polychlorinated biphenyls (PCBs)</b>	<b>0.0005</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Toxaphene</b>	<b>0.003</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>trans-1,2-Dichloroethylene</b>	<b>0.1</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Trichloroethylene</b>	<b>0.005</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Vinyl chloride</b>	<b>0.002</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Xylenes (total)</b>	<b>10</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Subtotal</b>		<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Disinfection Byproducts</b>							
<b>Total trihalomethanes</b>	<b>0.08</b>	<b>2</b>	<b>2</b>			<b>0</b>	<b>0</b>
<b>Haloacetic Acid 5</b>	<b>0.06</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Maximum Residual Disinfection Level</b>	<b>4.0</b>	<b>1</b>	<b>1</b>			<b>0</b>	<b>0</b>
<b>Subtotal</b>		<b>3</b>	<b>3</b>			<b>0</b>	<b>0</b>
<b>Inorganic Contaminants</b>							
<b>Antimony</b>	<b>0.006</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Arsenic</b>	<b>0.05</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Asbestos</b>	<b>7 million fibers/l ≤ 10 μm long</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Barium</b>	<b>2</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Beryllium</b>	<b>0.004</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Cadmium</b>	<b>0.005</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Chromium</b>	<b>0.1</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Cyanide (as free cyanide)</b>	<b>0.2</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>

<sup>1</sup> Values are in milligrams per liter (mg/l), unless otherwise specified.



	MCL (mg/L) <sup>1</sup>	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
		Number of Violations	Number of Systems with Violations	Number of Violations	Number of Systems with Violations	Number of Violations	Number of Systems with Violations
<b>Fluoride</b>	<b>4.0</b>	<b>2</b>	<b>2</b>			<b>0</b>	<b>0</b>
<b>Mercury</b>	<b>0.002</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Nitrate</b>	<b>10 (as Nitrogen)</b>	<b>23</b>	<b>15</b>			<b>0</b>	<b>0</b>
<b>Nitrite</b>	<b>1 (as Nitrogen)</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Selenium</b>	<b>0.05</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Thallium</b>	<b>0.002</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Total nitrate and nitrite</b>	<b>10 (as Nitrogen)</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Subtotal</b>		<b>25</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Radionuclide MCLs</b>							
<b>Gross alpha</b>	<b>15 pCi/l</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Radium-226 and radium-228</b>	<b>5 pCi/l</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Gross beta</b>	<b>4 mrem/yr</b>	<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Subtotal</b>		<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Total Coliform Rule</b>							
<b>Acute MCL violation</b>	<b>Presence</b>	<b>1</b>	<b>1</b>			<b>0</b>	<b>0</b>
<b>Non-acute MCL violation</b>	<b>Presence</b>	<b>42</b>	<b>40</b>			<b>0</b>	<b>0</b>
<b>Major routine and follow up monitoring</b>		<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>
<b>Sanitary survey<sup>2</sup></b>						<b>0</b>	<b>0</b>
<b>Subtotal</b>		<b>43</b>	<b>41</b>			<b>0</b>	<b>0</b>

1 Values are in milligrams per liter (mg/l), unless otherwise specified.

2 Number of major monitoring violations for sanitary survey under the Total Coliform Rule

	MCL (mg/L) <sup>1</sup>	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
		Number of Violations	Number of Systems with Violations	Number of Violations	Number of Systems with Violations	Number of Violations	Number of Systems with Violations
<b>Surface Water Treatment Rule</b>				<b>0</b>	<b>0</b>		
<b>Filtered systems</b>				<b>0</b>	<b>0</b>		
<b>Monitoring, routine/repeat</b>						<b>0</b>	<b>0</b>
<b>Treatment techniques</b>				<b>0</b>	<b>0</b>		
<b>Unfiltered systems</b>							
<b>Monitoring, routine/repeat</b>						<b>0</b>	<b>0</b>
<b>Failure to filter</b>				<b>0</b>	<b>0</b>		
<b>Subtotal</b>				<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Lead and Copper Rule</b>							
<b>Lead and copper tap M/R</b>		<b>0</b>	<b>0</b>			<b>16</b>	<b>16</b>
<b>Lead and copper Water Quality Parameter M/R</b>		<b>0</b>	<b>0</b>			<b>6</b>	<b>6</b>
<b>Lead and copper Source Water M/R</b>						<b>6</b>	<b>6</b>
<b>Treatment installation</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		
<b>Public education</b>				<b>0</b>	<b>0</b>		
<b>Subtotal</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28</b>	<b>28</b>
<b>Public Notification</b>		<b>Number of Violations</b>				<b>Number of Systems with Violations</b>	
<b>Consumer Confidence Reports Violations</b>		<b>5</b>				<b>5</b>	
<b>Public Notification</b>		<b>3</b>				<b>3</b>	
<b>Subtotal</b>		<b>8</b>				<b>8</b>	

<sup>1</sup> Values are in milligrams per liter (mg/l), unless otherwise specified.

## Definitions for Summary of Violations Table

The following definitions apply to the Summary of Violations table.

**Filtered Systems:** Surface water systems that have installed filtration treatment [40 CFR 141, Subpart H].

**Inorganic Contaminants (IOC):** Non-carbon-based compounds such as metals, nitrates, and asbestos. These contaminants are naturally-occurring in some water, but can get into water through farming, chemical manufacturing, and other human activities. EPA has established MCLs for 15 inorganic contaminants [40 CFR 141.62].

**Lead and Copper Rule:** This rule established national limits on lead and copper in drinking water [40 CFR 141.80-91]. Lead and copper corrosion pose various health risks when ingested at any level, and can enter drinking water from household pipes and plumbing fixtures. States report violations of the Lead and Copper Rule in the following six categories:

*Initial lead and copper tap monitoring/reporting:* A violation where a system did not meet initial lead and copper testing requirements, or failed to report the results of those tests to the State.

*Follow-up or routine lead and copper tap monitoring/reporting:* A violation where a system did not meet follow-up or routine lead and copper tap testing requirements, or failed to report the results.

*Treatment installation:* Violations for a failure to install optimal corrosion control treatment system or source water treatment system that would reduce lead and copper levels in water at the tap.

*Lead service line replacement:* A violation for a system's failure to replace lead service lines on the schedule required by the regulation.

*Public education:* A violation where a system did not provide required public education about reducing or avoiding lead intake from water.

**Maximum Contaminant Level (MCL):** The highest amount of a contaminant that EPA allows in drinking water. MCLs ensure that drinking water does not pose either a short-term or long-term health risk. MCLs are defined in milligrams per liter (mg/L; 1 mg/L = 1 part per million) unless otherwise specified.

**Monitoring:** EPA specifies which water testing methods the water systems must use, and sets schedules for the frequency of testing. A water system that does not follow EPA's schedule or methodology is in violation [40 CFR 141].

States must report monitoring violations that are significant as determined by the EPA Administrator in consultation with the States. For purposes of this report, significant monitoring violations are major violations and they occur when no samples are taken or no results are reported during a compliance period. A major monitoring violation for the surface water treatment rule occurs when at least 90% of the required samples are not taken or results are not reported during the compliance period.

**Organic Contaminants:** Carbon-based compounds, such as industrial solvents and pesticides. These contaminants generally get into water through runoff from cropland or discharge from factories. EPA has set legal limits on 54 organic contaminants that are to be reported [40 CFR 141.61].

**Public Notification:** Failure to issue a public notice and/or certify to the Division of Public Health that the notice was delivered.

**Radionuclides:** Radioactive particles which can occur naturally in water or result from human activity. EPA has set legal limits on five types of radionuclides: radium-226, radium-228, gross alpha, beta particle/photon radioactivity, and uranium [40 CFR 141]. Violations for these contaminants are to be reported using the following three categories:

*Gross alpha:* A violation for alpha radiation above MCL of 15 picocuries/liter. Gross alpha includes radium-226 but excludes radon and uranium.

*Combined radium-226 and radium-228:* A violation for combined radiation from these two isotopes above MCL of 5 pCi/L.

*Gross beta:* A violation for beta particle and photon radioactivity from man-made radionuclides above 4 millirem/year.

*Uranium:* A violation for uranium is above 30 Micrograms/Liter (ug/L; 1 ug/L = 1 part per billion)

**Reporting Interval:** The reporting interval for violations to be included in this PWS Annual Compliance Report is from January 1, 2007 through December 31, 2007.

**Surface Water Treatment Rule:** The Surface Water Treatment Rule establishes criteria under which water systems supplied by surface water sources, or ground water sources under the direct influence of surface water, must filter and disinfect their water [40 CFR 141, Subpart H]. Violations of the “Surface Water Treatment Rule” are to be reported for the following four categories:

*Monitoring, routine/repeat (for filtered systems):* A violation for a system’s failure to carry out required tests, or to report the results of those tests.

*Treatment techniques (for filtered systems):* A violation for a system’s failure to properly treat its water.

*Monitoring, routine/repeat (for unfiltered systems):* A violation for a system’s failure to carry out required water tests, or to report the results of those tests.

*Failure to filter (for unfiltered systems):* A violation for a system’s failure to properly treat its water. Data for this violation code will be supplied to the States by EPA.

**Total Coliform Rule (TCR):** The Total Coliform Rule establishes regulations for microbiological contaminants in drinking water. These contaminants can cause short-term health problems. If no samples are collected during the one-month compliance period, a significant monitoring violation occurs. States are to report four categories of violations:

*Acute MCL violation:* A violation where the system found fecal coliform or E. coli, potentially harmful bacteria, in its water, thereby violating the rule.

*Non-acute MCL violation:* A violation where the system found total coliform in samples of its water at a frequency or at a level that violates the rule. For systems collecting fewer than 40 samples per month, more than one positive sample for total coliform is a violation. For systems collecting 40 or more samples per month, more than 5% of the samples positive for total coliform is a violation.

*Major routine and follow-up monitoring:* A violation where a system did not perform any monitoring.

*Sanitary Survey:* A major monitoring violation if a system fails to collect 5 routine monthly samples if sanitary survey is not performed.

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**Treatment Techniques:** A water disinfection process that EPA requires instead of an MCL for contaminants that laboratories cannot adequately measure. Failure to meet other operational and system requirements under the Surface Water Treatment and the Lead and Copper Rules have also been included in this category of violation for purposes of this report.

**Unfiltered Systems:** Water systems that do not need to filter their water before disinfecting it because the source is very clean [40 CFR, Subpart H]. There are no unfiltered systems in Delaware.

**Violation:** A failure to meet any state or federal drinking water regulation.

## Enforcement Actions

Enforcement actions are taken when a public water system violates a maximum contaminant level (MCL) or treatment technique (TT) as specified in Delaware regulations governing public drinking water systems or fails to conduct proper monitoring and/or reporting (M/R) for a particular contaminant. A Notice of Violation (NOV) is the first action taken. This notifies the owner/operator of a public water system that there has been a violation. The next action taken is the issuance of a Public Notice (PN) that the owner/operator is required to mail, hand-deliver or post in a conspicuous place. This notifies the consumers of the water that there was a violation, what the violation was, possible related health effects and preventative measures the consumer can take until the violation is corrected. A Boil Water Notice is issued when a water system violates the bacteria standard and the presence of *E. coli* or fecal coliform is detected. This requires immediate notice within 24 hours of being notified of the violation to all consumers informing them on what actions to take to make their water safe for consumption or if they should use an alternate source such as bottled water.

The two remaining enforcement actions, an Administrative Order (AO) and a Bi-Lateral Compliance Agreement (BCA) are used when a water system repeatedly violates an MCL or when a history of violations is present. The AO can mandate the installation of treatment or the abandonment of a well with persistent violations, for example. A BCA is a written agreement between the system and ODW in which the violations are outlined and the steps the system is going to take to correct the violation and the timeframe for completing the work are outlined. Examples of a BCA include the installation of new wells or the re-piping of a water system in order to correct a violation.

If a public water system fails to correct the violation or continues to ignore Division of Public Health requirements a notice of Administrative Penalty may be issued. The Administrative Penalty can range from \$100 to \$10,000/day per violation.

<i>Enforcement Actions</i>	
Notices of Violation	79 MCL/37 MR
Public Notices	79 MCL/37 MR
Consumer Confidence Report Violations	0
Administrative Orders	5
Boil Water Orders	1
Bi-Lateral Compliance Agreements	0
Notices of Administrative Penalty	0

**Data Management**

The Office of Drinking Water uses an Oracle® based system to inventory water supplies, record sampling results and track compliance with monitoring and MCL requirements. The database includes information about: water supply facilities, water sources, treatment used, and sampling results.

<b>Compliance Highlights</b>	<b>Number of Samples Collected in 2009</b>	<b>Systems Granted Reduced Monitoring in 2009</b>	<b>Systems In Compliance in 2009</b>	<b>% of State Served by Compliant Systems<sup>1</sup></b>	<b>Number of Systems not in Compliance during 2009</b>
<b>Bacteriological</b>	12,046	N/A	445	95.9% (91.6%)	41
<b>Surface Water Treat. Rule<sup>2</sup></b>	0	N/A	3	100% (100%)	0
<b>Nitrates</b>	6,027	N/A	471	99.6% (96.9%)	15
<b>Fluoride</b>	1,758	N/A	484	99.5% (99.6%)	2
<b>Inorganic (IOC)</b>	354	0	485	100% (99.8%)	1
<b>Volatile Organic Chemicals (VOC)</b>	482	0	486	100% (100%)	0
<b>Synthetic Organic Chemicals (SOC)</b>	1,263	0	486	100% (100%)	0
<b>Lead and Copper<sup>2</sup></b>	1,207	N/A	486	100% (100%)	0
<b>Lead and Copper/ M&amp;R Violations</b>	N/A	N/A	458	99.3% (93.9%)	28
<b>Consumer Confidence Rule</b>	N/A	N/A	481	99.9% (94.2%)	5
<b>Disinfection Byproducts (DBPs)</b>	279	N/A	484	99.9% (99.6%)	2
<b>Maximum Residual Disinfection Level (MRDL)</b>	12,046	N/A	485	100% (99.8%)	1
<b>Radiological</b>	486	0	486	100% (100%)	0

<sup>1</sup> First percentage based on population served, second percentage based on total number of public water systems.

<sup>2</sup> Systems performed own sampling.

## List of Systems in Violation

The following list is the name and population served for all the systems that were in violation during the calendar year 2009. This list is broken down into types of violations with a summary at the end of each table.

<b>Bacteria Violations</b>	
System Name	Population Served
After School Club of Hearts	60
Angola Crest II	159
Bayshore Mobile Home Park	1,608
Broadkilm Beach Water Company	1,440
Buckley's Tavern	200
Camden-Wyoming Moose Lodge	70
Centreville School (2) <sup>1</sup>	170
Cherry Creek Valley	78
Delaware State Fire School	200
Delaware State Police, Troop #3	39
Dewey Beach Water Department	400
Dover Indoor Tennis	80
Ed's Mobile Home Park	66
Glasgow Deli	25
The Green Stinger	145
Historic Odessa Foundation	100
La Quetzalteca Mexican Restaurant	74
Long Neck Village	345
Lynch's Mobile Home Park	54
Noah's Ark Day Care Center	36
Middletown Water Department	16,000
Panda Early Education Center	82
Playtex Products	700
Royal Farms #114 – Laurel	198
Shawn's Hideaway System 4	60
Shore Stop #227 Townsend	800
Shore Stop # 256 Milford	150
Signals/ Rt. 13 Operations (2)	100
Slaughter Beach Water Company	250
South Bethany	40
St. Andrews School II	50
Sussex Tech School District	1,850
Trap Pond State Park <sup>2</sup>	1,500
Treasure Beach Camp Ground	3,000
Valeries Bar and Grill	25
White Clay Creek State Park	100



<b>Bacteria Violations Continued</b>	
System Name	Population Served
Wilmington Jr. Academy	150
Woodland Manor Estates	110
Woodside Goose Creek	100
Woodside Inn	60
Woodside Trailer Park	26

Total Number of Violations:43

Number of Systems Affected: 41

Number of Repeat Violators (Systems): 2

Total Population At Risk: 30,700

<sup>1</sup> Number in parentheses equals number of separate violations.

<sup>2</sup> Acute violation including Boil Water Notice

<b>Nitrate Violations</b>	
System Name	Population Served
After School Club of Hearts (3)	60
Bargain Bills Market Place, LLC	25
Bayshore Mobile Home Park	1,608
Briarwood Manor	296
Country Club Village	72
First Step Preschool (2)	50
Forest Park (3)	46
Panda Early Education Center (2)	82
Papen Farms	55
Perdue Feed Mill	37
Savannah Place Homeowners Association (3)	81
Signals/ Rt. 13 Operations	100
Tastee Freez	100
Teal Point	96
Williamsville Country Village	50

Total Number of Violations: 23

Number of Systems Affected: 15

Number of Repeat Violators (Systems): 5

Total Population At Risk: 2,758

**Inorganic Compounds Violations**

System Name	Population Served	Contaminant	MCL <sup>1</sup> In mg/l <sup>2</sup>	Level Found In mg/l
Delmar Utility Commission	3,266	Fluoride	2.0	2.8
Pepper Ridge Park	180	Fluoride	2.0	2.2
Tall Pines Resort Community	79	Iron	0.3	16.3

Total Number of Violations: 3  
 Number of Systems Affected: 3  
 Number of Repeat Violators (Systems): 0  
 Total Population At Risk: 3,525

<sup>1</sup>MCL means Maximum Contaminant Level

<sup>2</sup>mg/l means milligrams per liter

**Volatile/Synthetic Organic Compound (VOC/SOC) Violations**

System Name	Population Served	Contaminant	MCL <sup>1</sup> In mg/l <sup>2</sup>	Level Found In mg/l

Total Number of Violations: 0  
 Number of Systems Affected: 0  
 Number of Repeat Violators (Systems): 0  
 Total Population At Risk: 0

<sup>1</sup>MCL means Maximum Contaminant Level

<sup>2</sup>mg/l means milligrams per liter

### Disinfection Byproducts (DPB) Violations

System Name	Population Served	Contaminant	MCL <sup>1</sup> In mg/l <sup>2</sup>	Level Found In mg/l
Frankford Water Department	900	Total Trihalomethanes	0.080	0.124
Pepper Ridge Park	180	Total Trihalomethanes	0.080	0.082

Total Number of Violations: 2  
 Number of Systems Affected: 2  
 Number of Repeat Violators (Systems): 0  
 Total Population At Risk: 1,080

<sup>1</sup>MCL means Maximum Contaminant Level

<sup>2</sup>mg/l means milligrams per liter

### Maximum Residual Disinfection Level (MRDL) Violations

System Name	Population Served	Contaminant	MRDL <sup>1</sup> In mg/l <sup>2</sup>	Level Found In mg/l
Cedar Shores Condo Association	300	Chlorine	4.0	10.2

Total Number of Violations: 1  
 Number of Systems Affected: 1  
 Number of Repeat Violators (Systems): 0  
 Total Population At Risk: 300

<sup>1</sup>MCL means Maximum Contaminant Level

<sup>2</sup>mg/l means milligrams per liter

### Ground Water Rule Violations<sup>1</sup>

System Name	Population Served
Shore Stop #256 Milford	150

Total Number of Violations: 1  
 Number of Systems Affected: 1  
 Number of Repeat Violators (Systems): 0  
 Total Population At Risk: 150

<sup>1</sup> Failure to have raw water sample tap

### Lead/Copper Rule (LCR) Action Level Exceedences

System Name	Population Served	Contaminant	AL <sup>1</sup> In mg/l <sup>2</sup>	90 <sup>th</sup> percentile In mg/l

Total Number of Exceedences: 0

Number of Systems Affected: 0

Number of Repeat Violators (Systems): 0

Total Population At Risk: 0

<sup>1</sup>AL means Action Level

<sup>2</sup>mg/l means milligrams per liter

### Lead and Copper Tap Monitoring Violations

Systems that failed to collect the required number of samples during any monitoring period in 2009

System Name	Population
Cherry Creek Valley	78
County Seat Gardens	297
Dagsboro Water Department	500
Donovan/Smith Mobile Home Park	369
Enchanted Acres	225
Great Scott Broadcasting	33
Hocker's Super Center	75
Little Hearts Learning Center	50
Nanticoke Business Park	50
O. A. Newton and Sons, Inc.	75
Odessa Woods	40
Peddler's Village	165
Pleasant Acres	60
Shawn's Hideaway System 2	140
Shawn's Hideaway System 3	222
Upcountry Manufactured Home Community	65

Total Number of Violations: 16

Number of Systems Affected: 16

Number of Repeat Violators Systems): 0

Total Population At Risk: 2,444

**Lead and Copper Water Quality Parameter Monitoring and Reporting Violations**

<b>Lead and Copper Water Quality Parameter Monitoring and Reporting Violations</b>	
Cherry Creek Valley	78
Croda Uniqema	500
Dagsboro Water Department	500
Holiday Pines	60
Mt. Pleasant Trailer Park	117
Shells Childcare Center II	35

Total Number of Violations: 6  
 Number of Systems Affected: 6  
 Number of Repeat Violators (Systems): 0  
 Total Population At Risk: 1,290

**Lead and Copper Source Water Monitoring and Reporting Violations**

<b>Lead and Copper Source Water Monitoring and Reporting Violations</b>	
Cherry Creek Valley	78
County Seat Garden	297
Croda Uniqema	500
Dagsboro Water Department	500
Donovan/Smith Mobile Home Park	369
Hocker's Super Center	75

Total Number of Violations: 6  
 Number of Systems Affected: 6  
 Number of Repeat Violators (Systems):  
 Total Population At Risk: 1,819

**Consumer Confidence Report (CCR) Violations**

<b>Consumer Confidence Report (CCR) Violations</b>	
System Name	Population served
Mt. Pleasant Trailer Park	117
Savannah Place Homeowners Association	81
Holiday Estates	75
Holiday Pines	210
Pine Ridge Mobile Home Park	222

Total Number of Violations: 5  
 Number of Systems Affected: 5  
 Number of Repeat Violators (Systems): 0  
 Total Population Affected: 705

**Public Notice (PN) Violations**

<b>Public Notice (PN) Violations</b>	
System Name	Population served
Briarwood Manor Mobile Home Park	296
Savannah Place	81
Woodland Manor	110

Total Number of Violations: 3

Number of Systems Affected: 3

Number of Repeat Violators (Systems): 0

Total Population Affected: 487

## Conclusion

In the preceding pages several numbers and statistics were presented. During calendar year 2009, out of a population of 745,016 persons in the State of Delaware receiving their water from community water supplies, 38,063 persons (5.1%) were exposed to harmful (health related) contaminants. Out of 486 public water systems, 72, or 14.8%, had a violation and 7 systems (1.4%) were repeat violators for health-based contaminants. Eighteen water systems (3.7%) reported monitoring and reporting (M/R) violations and no systems were repeat violators for monitoring or reporting violations. There were two violations for disinfection byproducts. The Town of Frankford and Pepper Ridge Park exceeded the standard for Total Trihalomethanes (TTHMs). Frankford is completing work on a new treatment plant that will remove disinfection byproduct precursors that will help to reduce the levels of TTHMs in the finished water. Pepper Ridge Park purchases all of its water from the Town of Selbyville and the Office of Drinking Water is working with the town to reduce disinfection byproduct precursors in its water treatment processes. In 2007 the Division of Public Health began requiring water systems that serve 1,000 people or more to collect their own bacteriological samples. We also had several small systems volunteer to collect their own samples. Beginning in January of 2006 the Division began requiring any one who collected compliance samples or who conducted daily monitoring of a public water system be certified as an Approved Sampler/Tester. This requirement has ensured that individuals doing daily testing or sampling know what they are doing and why they are doing it.

The drop in the compliance rate over last year can be attributed to one larger system, Middletown, incurring a total coliform rule violation. There is still a need to maintain vigilance over the drinking water supplies for Delaware residents. We are beginning to implement and must continue to work with our partners to ensure the provision of safe drinking water for all Delawareans.

The Office of Drinking Water, the Environmental Protection Agency, other State Agencies and Non-Governmental Organizations are working with Delaware's public drinking water systems to ensure that violations have been corrected or are in the process of being corrected. The end result of this cooperative action is ensuring that all residents of and visitors to the State of Delaware receive a safe and potable source of drinking water.

Any questions or comments concerning this report and summary can be directed to the Division of Public Health, Office of Drinking Water at (302) 741-8630.

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