



Delaware Health and Social Services



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

1999

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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 Amendments, EPA set national limits on contaminant levels in drinking water to ensure that the water is safe 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 States to seek EPA approval to administer their own PWSS programs. The authority to run a PWSS program is called primacy. The State of Delaware was granted primacy in 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 an 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 almost all the monitoring for PWSs in Delaware. A few of the larger water systems conduct their own monitoring and report the results to ODW. 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 the Lead and Copper Rule. 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 Rule monitoring.

In 1996 the SDWA was amended once more with several changes. One of these changes was the requirement for ODW 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, 1999. It is broken down into five parts: the introduction, a table listing of the number of violations, a general fact sheet on drinking water for the State of Delaware, a listing of the PWSs

which were in violation (included dates and types of contaminants), and a conclusion.

Information on Delaware's public water systems may be found on the internet in EPA's Envirofacts web page at the following address:

www.epa.gov/enviro/html/sdwis/sdwis_query.html

Please note that the data stored here may be slightly different than the data on this Annual report. This is due to errors, which the Office of Drinking Water is in the process of correcting.

| | |
|----------------------------|---------------------|
| State: | Delaware |
| Reporting Interval: | Jan-Dec 1999 |

| | MCL (mg/l) ¹ | 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 |
| Organic Contaminants | | | | | | | |
| 1,1,1-Trichloroethane | 0.2 | N/A | N/A | | | N/A | N/A |
| 1,1,2-Trichloroethane | .005 | N/A | N/A | | | N/A | N/A |
| 1,1-Dichloroethylene | 0.007 | N/A | N/A | | | N/A | N/A |
| 1,2,4-Trichlorobenzene | .07 | N/A | N/A | | | N/A | N/A |
| 1,2-Dibromo-3-chloropropane (DBCP) | 0.0002 | N/A | N/A | | | N/A | N/A |
| 1,2-Dichloroethane | 0.005 | N/A | N/A | | | N/A | N/A |
| 1,2-Dichloropropane | 0.005 | N/A | N/A | | | N/A | N/A |
| 2,3,7,8-TCDD (Dioxin) | 3x10⁻⁸ | N/A | N/A | | | N/A | N/A |
| 2,4,5-TP | 0.05 | N/A | N/A | | | N/A | N/A |
| 2,4-D | 0.07 | N/A | N/A | | | N/A | N/A |
| Acrylamide | | | | N/A | N/A | | |
| Alachlor | 0.002 | 1 | 1 | | | N/A | N/A |
| Atrazine | 0.003 | N/A | N/A | | | N/A | N/A |
| Benzene | 0.005 | N/A | N/A | | | N/A | N/A |
| Benzo[a]pyrene | 0.0002 | N/A | N/A | | | N/A | N/A |
| Carbofuran | 0.04 | N/A | N/A | | | N/A | N/A |

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

| | |
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|------------------------------|----------------------------|----------------------------|---|-------------------------|--|-------------------------------------|--|
| | | Number of Violations | Number of Systems With Violations | Number of Violations | Number of Systems With Violations | Number of Violations | Number of Systems With Violations |
| Carbon tetrachloride | 0.005 | N/A | N/A | | | N/A | N/A |
| Chlordane | 0.002 | N/A | N/A | | | N/A | N/A |
| cis-1,2- Dichloroethylene | 0.07 | N/A | N/A | | | N/A | N/A |
| Dalapon | 0.2 | N/A | N/A | | | N/A | N/A |
| Di(2-ethylhexyl)adipate | 0.4 | N/A | N/A | | | N/A | N/A |
| Di(2-ethylhexyl)phthalate | 0.006 | N/A | N/A | | | N/A | N/A |
| Dichloromethane | 0.005 | N/A | N/A | | | N/A | N/A |
| Dinoseb | 0.007 | N/A | N/A | | | N/A | N/A |
| Diquat | 0.02 | N/A | N/A | | | N/A | N/A |
| Endothall | 0.1 | N/A | N/A | | | N/A | N/A |
| Endrin | 0.002 | N/A | N/A | | | N/A | N/A |
| Epichlorohydrin | | | | N/A | N/A | | |
| Ethylbenzene | 0.7 | N/A | N/A | | | N/A | N/A |
| Ethylene dibromide | 0.00005 | N/A | N/A | | | N/A | N/A |
| Glyphosate | 0.7 | N/A | N/A | | | N/A | N/A |
| Heptachlor | 0.0004 | N/A | N/A | | | N/A | N/A |
| Heptachlor epoxide | 0.0002 | N/A | N/A | | | N/A | N/A |

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|------------------------------------|----------------------------|----------------------------|---|-------------------------|--|-------------------------------------|--|
| | | Number of Violations | Number of Systems With Violations | Number of Violations | Number of Systems With Violations | Number of Violations | Number of Systems With Violations |
| Hexachlorobenzene | 0.001 | N/A | N/A | | | N/A | N/A |
| Hexachlorocyclopentadiene | 0.05 | N/A | N/A | | | N/A | N/A |
| Lindane | 0.0002 | 1 | 1 | | | N/A | N/A |
| Methoxychlor | 0.04 | N/A | N/A | | | N/A | N/A |
| Monochlorobenzene | 0.1 | N/A | N/A | | | N/A | N/A |
| o-Dichlorobenzene | 0.6 | N/A | N/A | | | N/A | N/A |
| Oxamyl (Vydate) | 0.2 | N/A | N/A | | | N/A | N/A |
| para-Dichlorobenzene | 0.075 | N/A | N/A | | | N/A | N/A |
| Pentachlorophenol | 0.001 | N/A | N/A | | | N/A | N/A |
| Picloram | 0.5 | N/A | N/A | | | N/A | N/A |
| Simazine | 0.004 | N/A | N/A | | | N/A | N/A |
| Styrene | 0.1 | N/A | N/A | | | N/A | N/A |
| Tetrachloroethylene | 0.005 | N/A | N/A | | | N/A | N/A |
| Toluene | 1 | N/A | N/A | | | N/A | N/A |
| Total polychlorinated biphenyls | 0.0005 | N/A | N/A | | | N/A | N/A |
| Toxaphene | 0.003 | N/A | N/A | | | N/A | N/A |
| trans-1,2-Dichloroethylene | 0.1 | N/A | N/A | | | N/A | N/A |

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|-----------------------|----------------------------|----------------------------|---|-------------------------|--|-------------------------------------|--|
| | | Number of Violations | Number of Systems With Violations | Number of Violations | Number of Systems With Violations | Number of Violations | Number of Systems With Violations |
| Trichloroethylene | 0.005 | N/A | N/A | | | N/A | N/A |
| Vinyl chloride | 0.002 | N/A | N/A | | | N/A | N/A |
| Xylenes (total) | 10 | N/A | N/A | | | N/A | N/A |
| | | | | | | | |
| Total trihalomethanes | 0.10 | N/A | N/A | | | N/A | N/A |
| | | | | | | | |
| Subtotal | | 2 | 2 | | | N/A | N/A |

| | |
|----------------------------|---------------------|
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|--------------------------------------|--|----------------------------|---|-------------------------|--|-------------------------------------|--|
| | | Number of Violations | Number of Systems With Violations | Number of Violations | Number of Systems With Violations | Number of Violations | Number of Systems With Violations |
| Inorganic Contaminants | | | | | | | |
| Antimony | 0.006 | N/A | N/A | | | N/A | N/A |
| Arsenic | 0.05 | N/A | N/A | | | N/A | N/A |
| Asbestos | 7 million fibers/l ≤ 10 μm long | N/A | N/A | | | N/A | N/A |
| Barium | 2 | N/A | N/A | | | N/A | N/A |
| Beryllium | 0.004 | N/A | N/A | | | N/A | N/A |
| Cadmium | 0.005 | N/A | N/A | | | N/A | N/A |
| Chromium | 0.1 | N/A | N/A | | | N/A | N/A |
| Cyanide (as free cyanide) | 0.2 | N/A | N/A | | | N/A | N/A |
| Fluoride | 4.0 | N/A | N/A | | | N/A | N/A |
| Mercury | 0.002 | N/A | N/A | | | N/A | N/A |
| Nitrate | 10 (as Nitrogen) | 21 | 12 | | | 1 | 1 |
| Nitrite | 1 (as Nitrogen) | N/A | N/A | | | N/A | N/A |

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|--|----------------------------|----------------------------|---|-------------------------|--|-------------------------------------|--|
| | | Number of Violations | Number of Systems With Violations | Number of Violations | Number of Systems With Violations | Number of Violations | Number of Systems With Violations |

| | | | | | | | |
|----------------------------------|-----------------------------|------------|------------|------------|------------|------------|------------|
| Selenium | 0.05 | N/A | N/A | | | N/A | N/A |
| Thallium | 0.002 | N/A | N/A | | | N/A | N/A |
| Total nitrate and nitrite | 10 (as Nitrogen) | N/A | N/A | | | N/A | N/A |
| | | | | | | | |
| Subtotal | | 22 | 12 | N/A | N/A | 1 | 1 |

| | |
|----------------------------|---------------------|
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| | MCL (mg/l) ¹ | 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 |

| Radionuclide MCLs | | | | | | | |
|------------------------------|--------------|-----|-----|--|--|-----|-----|
| Gross alpha | 15 pCi/l | N/A | N/A | | | N/A | N/A |
| Radium-226 and radium-228 | 5 pCi/l | N/A | N/A | | | N/A | N/A |
| Gross beta | 4 mrem/yr | N/A | N/A | | | N/A | N/A |
| | | | | | | | |
| Subtotal | | N/A | N/A | | | N/A | N/A |

| | |
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|--|----------------------------|----------------------------|---|-------------------------|--|-------------------------------------|--|
| | | Number of Violations | Number of Systems With Violations | Number of Violations | Number of Systems With Violations | Number of Violations | Number of Systems With Violations |

| | | | | | | | |
|---|-----------------|-----------|-----------|--|--|------------|------------|
| Total Coliform Rule | | | | | | | |
| Acute MCL violation | Presence | 3 | 3 | | | | |
| Non-acute MCL violation | Presence | 37 | 32 | | | | |
| Major routine and follow up monitoring | | | | | | | |
| Sanitary survey² | | | | | | N/A | N/A |
| | | | | | | | |
| Subtotal | | 40 | 35 | | | 1 | 1 |

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

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|--|----------------------------|----------------------------|---|-------------------------|--|-------------------------------------|--|
| | | Number of Violations | Number of Systems With Violations | Number of Violations | Number of Systems With Violations | Number of Violations | Number of Systems With Violations |

| | | | | | | | |
|---|--|--|--|------------|------------|------------|------------|
| Surface Water Treatment Rule | | | | | | | |
| Filtered systems | | | | | | | |
| Monitoring, routine/repeat | | | | | | N/A | N/A |
| Treatment techniques | | | | N/A | N/A | | |
| Unfiltered systems | | | | | | | |
| Monitoring, routine/repeat | | | | | | N/A | N/A |
| Failure to filter | | | | N/A | N/A | | |
| | | | | | | | |
| Subtotal | | | | N/A | N/A | N/A | N/A |

| | |
|----------------------------|---------------------|
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| | MCL (mg/l) ¹ | 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 |

| | | | | | | | |
|---|--|--|--|------------|------------|------------|------------|
| Lead and Copper Rule | | | | | | | |
| Initial lead and copper tap M/R | | | | | | 8 | 8 |
| Follow-up or routine lead and copper tap M/R | | | | | | N/A | N/A |
| Treatment installation | | | | N/A | N/A | | |
| Public education | | | | N/A | N/A | | |
| | | | | | | | |
| Subtotal | | | | N/A | N/A | 8 | 8 |
| | | | | | | | |

Definitions for Summary of Violations Table

The following definitions apply to the Summary of Violations table.

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

Inorganic Contaminants: 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 M/R: 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 M/R: 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 which would reduce lead and copper levels in water at the tap. [One number is to be reported for the sum of violations in both categories].

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 (parts 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 and 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].

Radionuclides: Radioactive particles which can occur naturally in water or result from human activity. EPA has set legal limits on four types of radionuclides: radium-226, radium-228, gross alpha, and beta particle/photon radioactivity [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.

Reporting Interval: The reporting interval for violations to be included in this PWS Annual Compliance Report, which is to be submitted to EPA by July 1, 2000, is from January 1, 1999 through December 31, 1999.

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. [One number is to be reported for the sum of violations in these two categories.]

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

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].

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

Public Drinking Water Summary - Delaware 1999

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 breakdown of the number of violations that occurred during 1999. 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) 739-5410.

General Information

| | | | |
|-----------------------------|----------------------------------|---|----------------------|
| Total land area of Delaware | 1,592,960 ¹ acres | Population of Delaware | 720,386 ² |
| Forest | 398,000 ¹ acres (25%) | Percent served by individual wells | 16% |
| Agriculture | 557,550 ³ acres (35%) | Percent served by public water supplies | 84% |
| Developed | 318,600 ³ acres (20%) | Primacy Granted to State by EPA | 1978 |
| Wetland/Barren | 318,600 ³ acres (20%) | | |

* * * * *

Delaware's Drinking Water

Major Sources of Surface Water
Brandywine River Basin

Christina River Basin
Red Clay/White Clay Creeks

Major Sources of Ground Water

Columbia Aquifer
Cheswold Aquifer
Piney Point Aquifer

Number of gallons of Public Water Used
in Delaware each day: 97 mgd⁴

Public Water Systems

Residents served by public water systems 604,157

Residents served by surface water systems 267,100

Residents served by ground water systems 337,057

Number of public water systems 566

Community systems 236

Non-transient systems 100

Transient systems 230

Number using surface water 4

Number using ground water 562

1 1996 World Almanac.
2 Estimate using 1999 Census.
3 Estimate using 1991 Delaware Geological Survey map.
4 Estimate using population.

Delaware's Public Drinking Water Program

Many services are provided to the public consumers and the water supply systems. Funding comes from State and Federal monies allotted to the public drinking water program for the State of Delaware. Two components of the Division of Public Health, the Office of Drinking Water and the Division of Public Health Laboratory provide the services for the public drinking water program with these allotted monies.

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 improved water treatment systems and/or new or improve distribution systems. ODW also conducts all the monitoring for 98% of the public water systems (ten systems conduct their own monitoring and forward the results to ODW). ODW staff also inspect water systems, provide technical assistance, respond and handle emergencies, review monitoring results to ensure compliance with the SDWA and take enforcement actions when necessary. Additionally, ODW provides some training to water system operators and owners regarding system operation and compliance with rules and regulations.

The State Laboratory performs water analyses for water quality parameters as outlined in the SDWA. The Laboratory also provides ODW with sampling supplies in order to ensure that samples are collected in approved containers. Additionally, the Laboratory conducts testing on private well water samples from throughout the State.

| <i>Operations</i> | |
|---------------------------------|-----|
| Inspections | 22 |
| Plans & Specifications Reviewed | 84 |
| Pre-Approval Review Funding | N/A |
| Infrastructure Investment | N/A |

| <i>Budget Information</i> | |
|---------------------------|------------|
| Total Budget | \$ 943,815 |
| Federal Budget | \$ 513,200 |
| State Budget | \$ 430,615 |
| Number of Staff | 10 |

| <i>Training Provided</i> | |
|------------------------------|------------------|
| | People Trained |
| Operator Training | 30 |
| Management | 0 |
| Lead & Copper | 0 |
| Wellhead Protection Training | N/A ⁵ |

⁵ Implemented by Department of Natural Resources and Environmental Control, Water Resources Division.

Enforcement Actions

Enforcement actions are taken when a public water system violates a maximum contaminant level (MCL) as specified in regulations or fails to conduct proper monitoring and/or reporting (MR) 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) which the owner/operator is required to 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 to all consumers informing them on how to make their water safe for consumption.

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 continuous chlorination or the abandonment of a well with persistent violations, for example. An AO is time sensitive, usually with 30 days in which the owner/operator must submit plans. A BCA is a written contract between the system and ODW in which the violations are outlined and the steps the system is going to take to correct the violation are outlined. The BCA is also time sensitive, but generally more time is granted for the system to correct the violation. Examples of a BCA include the installation of new wells or the re-piping of a water system in order to correct a violation.

| <i>Enforcement Actions</i> | |
|----------------------------------|---------------|
| Notice of Violations | 66 MCL / 1 MR |
| Public Notices | 66 MCL / 1 MR |
| Administrative Orders | 0 |
| Boil Water Orders | 3 |
| Bi-Lateral Compliance Agreements | 0 |

Data Management

The Office of Drinking Water uses a d-Base 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. MCL compliance for the Phase II and V and Lead and Copper data is tracked on a Microsoft® Excel program.

Compliance Highlights

| | Number of Samples Collected in 1999 | Systems Given Waivers in 1999 | Systems In Compliance in 1999 | % of State Served by Compliant Systems ⁶ | Number of Systems not in Compliance during 1999 |
|--|-------------------------------------|-------------------------------|-------------------------------|---|---|
| Bacteriological | 14,460 | N/A | 531 | 94.5% (93.8%) | 35 |
| Surface Water Treat. Rule⁷ | N/A | N/A | 4 | 100% (100%) | 0 |
| Nitrates | 1,548 | N/A | 554 | 99.6% (97.9%) | 12 |
| Routine Chemicals | 2,130 | N/A | 566 | 100% (100%) | 0 |
| Inorganics | 369 | 0 | 566 | 100% (100%) | 0 |
| Volatile Organic Chemicals (VOC) | 382 | 0 | 334 ⁸ | 99.9% (99.4%) | 2 |
| Synthetic Organic Chemicals (SOC) | 435 | 0 | 336 | 100% (100%) | 0 |
| Lead and Copper^{7,8} | 388 | 3 | 328 | 99.6% (97.6%) | 8 |
| | | | | | |

EPA Program Goals and Measures

| | # of Water Systems | Population Served |
|--|--------------------|-------------------|
| Required to install corrosion control treatment | 66 | 60,125 |

⁶ First percentage based on population served, second percentage based on total number of public water systems.

⁷ Systems performed own sampling.

⁸ Includes sampling on Community and Non-Transient Non-Community water systems only.

Violation Resolution

| Contaminant Type | Health Level Violations Occurring In 1999 | Violations Reconciled By the End of 1999 | State Investment | People Benefited |
|--|---|--|------------------|------------------|
| Bacteriological | 40 | 21 | N/A | 2,350 |
| Surface Water Treatment Rule | 0 | N/A | N/A | N/A |
| Nitrates | 21 | 2 | N/A | 938 |
| Inorganics | 0 | N/A | N/A | N/A |
| Volatile Organic Chemicals (VOC) | 2 | 1 | N/A | 72 |
| Synthetic Organic Chemicals (SOC) | 0 | N/A | N/A | N/A |
| Lead and Copper | 1 | 9 | N/A | 745 |
| System Viability | N/A | N/A | N/A | N/ A |
| | | | | |

The Office of Drinking Water sincerely thanks the Water Quality Division of the Oklahoma Department of Environmental Quality for their assistance in the formatting of this document

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Division of Public Health
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List of Systems in Violation

The following list is the names, population served and dates of violations for all the systems which were in violation during the calendar year 1999. This list is broken down into the various types of violations and is in alphabetical order for your convenience.

| Bacteria Violations | | |
|---------------------------------|-------------------|-------------------------|
| System Name | Population Served | Date Violation Occurred |
| Bethany Club Tennis | 100 | 6/11/99 |
| Broadkilm Beach | 1000-sum, 225-win | 12/28/99 |
| Camp Wright | 100 | 3/26/99 |
| Country Acres M.H.P. | 52 | 10/4/99 |
| Del. Adolescence Program, Inc. | 61 | 8/19/99 |
| Delaware State Fair, Inc. | 100 | 9/23/99 |
| De-Lux Dairy Market (Ellendale) | 150 | 3/18/99 |
| Dover Indoor Tennis | 80 | 10/5/99 |
| Dover Water Department | 27,500 | 10/4/99 |
| Eagle's Nest Fellowship Church | 40 | 8/31/99 |
| Ed's Mobile Home Park | 62 | 9/22/99 |
| Greenwood Water Dept. | 630 | 8/6/99 |
| Greenwood Water Dept. | N/A | 10/6/99 |
| Holiday Acres | 138 | 1/29/99 |
| Hy-Point Dairy Farms | 26 | 1/12/99 |
| Hy-Point Dairy Farms | N/A | 11/7/99 |
| Imperial Shopping Center | 50 | 6/21/99 |
| Kimothy's Place | 50 | 10/27/99 |
| Market Place at Odessa | 200 | 10/26/99 |
| Mason Dixon Court | 79 | 6/24/99 |
| Mason Dixon Court | N/A | 10/1/99 |
| McNicol Place M.H.P. | 282 | 8/6/99 |
| Milford Christian School | 55 | 9/30/99 |
| NVF Co. Sys. #1 | 28 | 10/15/99 |
| NVF Co. Sys. #3 | 40 | 12/28/99 |
| Oak Grove Mobile Home Park | 91 | 2/2/99 |
| Oak Grove Mobile Home Park | N/A | 8/10/99 |
| Old Mill Crab House | 250 | 6/2/99 |
| Pine Ridge M.H.P. | 74 | 10/4/99 |
| Polytech High School | 800 | 10/7/99 |
| Reichold Chemical | 225 | 10/15/99 |
| Rising Sun Plaza | 100 | 4/21/99 |

Bacteria Violations (continued)

| Bacteria Violations (continued) | | |
|--|-------------------|-------------------------|
| System Name | Population Served | Date Violation Occurred |
| Rising Sun Plaza | N/A | 4/27/99 |
| Rising Sun Plaza | N/A | 10/8/99 |
| Sail Inn | 250 | 11/1/99 |
| Summit Aviation | 85 | 3/11/99 |
| Trappe Packing Corp | 25 | 9/7/99 |
| U.L. Harman | 35 | 10/14/99 |
| Wawa #830 | 100 | 2/9/99 |
| Woods Edge M.H.P. | 69 | 10/15/99 |
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Total # of Violations: 40
 # of Systems Affected: 34
 # of Repeat Violators (Systems): 5
 Total Population At Risk: 32,927

| Bacteria Monitoring Violations | | |
|--|--------------------------|--------------------------------|
| Systems which failed to collect the required number of samples during any monitoring period in 1999 | | |
| System Name | Population Served | Date Violation Occurred |
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Total # of Violations: 0
 # of Systems Affected: 0
 # of Repeat Violators (Systems): 0
 Total Population At Risk: 0

| Nitrate Violations (maximum contaminant level of 10 mg/l) | | | |
|--|--------------------------|--------------------------------|-----------------------------|
| System Name | Population Served | Date Violation Occurred | Nitrate Level (mg/l) |
| Big T Family Restaurant | 100 | 1/25/99 | 10.9 |
| Big T Family Restaurant | N/A | 4/21/99 | 11.0 |
| Big T Family Restaurant | N/A | 9/14/99 | 10.5 |
| Briarwood Manor, Inc. | 45 | 1/25/99 | 10.7 |
| Briarwood Manor, Inc. | N/A | 4/21/99 | 10.7 |
| Briarwood Manor, Inc. | N/A | 9/14/99 | 10.8 |
| Dillard's Restaurant | 800 | 3/1/99 | 10.6 |
| Fish Hook M.H.P. | 40 | 4/21/99 | 12.7 |
| Fish Hook M.H.P. | N/A | 9/14/99 | 11.8 |
| Granada Mobile Home Court | 90 | 4/21/99 | 10.8 |
| Granada Mobile Home Court | N/A | 9/14/99 | 10.8 |
| Holiday Acres | 138 | 4/26/99 | 12.0 |
| Holiday Park - System II | 237 | 9/14/99 | 12.0 |
| Lowes T.P. & Rec. Camp - System II | 90 | 9/14/99 | 22.5 |
| Magnolia's Restaurant & Lounge | 150 | 9/14/99 | 11.3 |
| Pit, The | 25 | 4/21/99 | 12.0 |
| Pit, The | N/A | 9/14/99 | 13.3 |
| Sweet Briar M.H.P. | 435 | 4/21/99 | 17.0 |
| Sweet Briar M.H.P. | N/A | 9/14/99 | 17.2 |
| Thomas England House | 200 | 3/2/99 | 11.5 |
| Thomas England House | N/A | 9/14/99 | 11.4 |
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Total # of Violations: 21
of Systems Affected: 12
of Repeat Violators (Systems): 7
Total Population At Risk: 2,350

| Lead and Copper Rule | | |
|--|-------------------|-------------------------|
| Systems Which Have Failed to Conduct Monitoring | | |
| System Name | Population Served | Date Violation Occurred |
| Beach Babies Day Care | 30 | New Water System |
| Bear Early Learning Center | 50 | New Water System |
| Cea Dag Apartments | 180 | New Water System |
| Central Christian School | 67 | 7/24/95 |
| Children's Place | 55 | 7/24/95 |
| Delaware State University | 250 | New Water System |
| Great Scott Broadcasting | 29 | New Water System |
| Hy-Point Dairy Farms | 26 | New Water System |
| Kenton Day Care Center | 35 | New Water System |
| Layton's Riviera | 66 | 7/24/95 |
| Little Angels Day Care Center | 44 | New Water System |
| Little Hearts Learning Center | 50 | New Water System |
| Long Neck Village | 120 | 7/24/95 |
| Love Creek Park | 120 | 7/24/95 |
| Lynn Lee Village | 25 | New Water System |
| Maranatha Court | 99 | 7/24/95 |
| Meadows at Cabbage Pond | 201 | 7/24/95 |
| Mount Vernon Estates | 60 | New Water System |
| Point Farm | 54 | New Water System |
| Seafarer Village | 45 | New Water System |
| Slaughter Neck Comm. Action Agency | 90 | New Water System |
| South Shores | 51 | New Water System |
| Village Square Child Care, Inc. | 50 | 7/24/95 |
| Vines Creek M.H.P. | 51 | New Water System |

Total # of Violations: 24
 # of Systems Affected: 24
 # of Repeat Violators (Systems): N/A
 Total Population At Risk: 2,297

**Lead and Copper Rule
Systems Which Are Required to Install Corrosion Control Treatment**

| System Name | Population Served | Date Violation Occurred |
|---|-------------------|-------------------------|
| Angola Beach | 200 | 10/21/94 |
| Angola By The Bay | 600 | 4/12/94 |
| Arrow Safety Device Co. | 52 | 6/29/94 |
| Aspen Meadows | 150 | 9/27/95 |
| Bay Colony | 50 | 9/5/95 |
| Bethany Bay | 90 | 9/5/95 |
| Blades, Town of | 960 | 1/28/94 |
| Bowerset | 72 | 9/5/95 |
| Broadkiln Water Department | 100 | Jan-94 |
| Camden District | 1,520 | 5/22/95 |
| Center for the Creative Arts | 40 | 6/27/94 |
| Cherry Creek Valley | 55 | 1/13/94 |
| Colonial Estates M.H.P. | 168 | 2/7/96 |
| Country Rest Home | 37 | 1/13/94 |
| D P & L Co. | 178 | 1/17/95 |
| Del. State Police, Troop 4 (Georgetown) | 40 | 10/4/95 |
| Del. State Police, Troop 9 (Odessa) | 60 | Jan-94 |
| Delaware Adolescent Program, Inc. | 41 | 5/8/97 |
| Delaware State Fair, Inc. | 100 | Dec-93 |
| Delmar Water Department | 2,392 | Dec-93 |
| Denton Mills | 66 | 9/5/95 |
| Dept. of Hwys & Trans (Ellendale) | 25 | Oct-93 |
| Enchanted Meadows | 108 | 6/17/96 |
| Fairwinds M.H.P. | 280 | 2/7/96 |
| Forest Park | 80 | 7/7/94 |
| Frederica Water Department | 850 | 3/11/96 |
| Garrison Lake | 500 | 6/26/96 |
| Glade, The | 150 | 6/26/96 |
| Gov. Bacon Health Center | 600 | 5/7/97 |
| Greenwood Water Department | 630 | 6/27/94 |
| Hedgerow Hollow Trailer Park | 145 | Dec-93 |
| Homestead Park | 230 | 6/5/98 |
| Hunter Mill Estates | 60 | 9/5/95 |
| Lewes Water Department | 2,200 | 11/23/94 |
| Lochwood | 150 | 4/3/97 |
| Millpond Acres | 220 | 10/21/94 |
| Millsboro Water Department | 2,877 | 1/13/94 |
| Mount Pleasant Trailer Court | 114 | 2/16/94 |

**Lead and Copper Rule
Systems Which Are Required to Install Corrosion Control Treatment (continued)**

| System Name | Population Served | Date Violation Occurred |
|---------------------------------------|-------------------|-------------------------|
| Newark Water Department | 32,800 | 1/14/94 |
| O.A. Newton & Sons, Inc. | 25 | 3/4/94 |
| Once Upon A Time | 55 | 10/21/94 |
| Pepper Ridge Park | 300 | 12/1/93 |
| Polytech High School | 800 | 10/21/94 |
| Pyle State Service Center | 250 | 8/2/94 |
| Rehoboth Bay M.H.P. | 554 | 10/21/94 |
| Rehoboth District | 2,173 | 10/21/94 |
| Sand Hill Trailer Park | 60 | 7/7/94 |
| Savannah Place | 44 | 6/5/98 |
| Shady Park – Sys. I | 35 | 6/5/98 |
| Stockley Center | 1,000 | Oct-93 |
| Sussex Manor M.H.P. | 270 | 6/17/96 |
| Sussex Technical High School | 1,800 | 1/13/94 |
| Tall Pines Resort Community – Sys. I | 150 | 10/4/95 |
| Tall Pines Resort Community – Sys. II | 50 | 1/28/94 |
| West Bay Park | 100 | 4/6/94 |
| Whispering Pines | 592 | 3/30/95 |
| Wild Quail Golf & Country Club | 45 | 6/26/96 |
| Willow Tree Trailer & M.H.P. | 135 | 1/28/94 |
| Wilmington Jr. Academy | 100 | 11/23/94 |
| Woods Edge M.H.P. | 69 | Jan-94 |

of Systems Affected: 69
 # of Repeat Violators (Systems): N/A
 Total Population At Risk: 57,597

Trace Metal Violations

| Trace Metal Violations | | | | | |
|-------------------------------|-------------------|-------------------------|-------------|--|------------------------|
| System Name | Population Served | Date Violation Occurred | Contaminant | MCL ¹ In mg/l ² | Level Found In mg/l |
| None | | | | | |

¹MCL means Maximum Contaminant Level

²mg/l means milligrams per liter

Total # of Violations: 0

of Systems Affected: 0

of Repeat Violators (Systems): N/A

Total Population At Risk: N/A

Volatile Organic Compound (VOC) Violations

| System Name | Population Served | Date Violation Occurred | Contaminant | MCL ¹ In mg/l ² | Level Found In mg/l |
|----------------|-------------------|-------------------------|-------------|--|------------------------|
| Camelot M.H.P. | 305 | 1/14/99 | Lindane | 0.0002 | 0.0005 |
| Bowerset | 72 | 6/7/99 | Alachlor | 0.002 | 0.003 |

¹MCL means
Maximum
Contaminant Level
²mg/l means
milligrams per liter

Total # of Violations: 2
 # of Systems Affected: 2
 # of Repeat Violators (Systems): 0
 Total Population At Risk: 377

Conclusion

In the preceding pages several numbers and statistics were presented, but what does it mean? Is my water safe to drink? During calendar year 1999, out of a population of over 604,000 persons who consumed public drinking water in the State of Delaware, only 95,548 persons (15.8%) were exposed to harmful (health related) contaminants¹. This means that 84.2% of the population was provided drinking water that met or exceeded the standards as set by the Safe Drinking Water Act, Federal and State Regulations. Out of 566 public water systems, 142, or 25.1%, had a violation and only 12 systems (2.1%) were repeat violators. Given these numbers it would be safe to say that the overall status of Delaware's public drinking water is very good.

The Office of Drinking Water, in cooperation with the Environmental Protection Agency and other State Agencies, is 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) 739-5410.

¹ Includes public water systems which did not perform Lead and Copper Rule monitoring and systems which are required to install corrosion control treatment in accordance with the Lead and Copper Rule