



**Report to EPA**

**SAFE DRINKING WATER ACT  
ANNUAL COMPLIANCE REPORT  
FOR CALENDAR YEAR 2022**

**July 2023**



**Department of the Environment  
Water Supply Program**

*Wes Moore, Governor*

*Serena McIlwain, Secretary*

*Aruna Miller, Lt. Governor*

# Table of Contents

<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>BACKGROUND .....</b>	<b>3</b>
<b>MARYLAND’S WATER SUPPLY PROGRAM.....</b>	<b>4</b>
<b>Program Activities .....</b>	<b>6</b>
<b>ANNUAL COMPLIANCE INFORMATION .....</b>	<b>9</b>
<b>Maximum Contaminant Level (MCL) Compliance.....</b>	<b>9</b>
<b>Monitoring Compliance .....</b>	<b>10</b>
<b>Treatment Technique Compliance.....</b>	<b>16</b>
<b>Variances .....</b>	<b>19</b>
<b>Exemptions .....</b>	<b>19</b>
<b>Consumer Confidence Report (CCR) Rule Compliance .....</b>	<b>20</b>
<b>Conclusion .....</b>	<b>20</b>
<b>ATTACHMENTS .....</b>	<b>21</b>
<b>Attachment 1: Definitions</b>	
<b>Attachment 2: 2022 Violation and Enforcement Summary</b>	

## *EXECUTIVE SUMMARY*

The Safe Drinking Water Act (SDWA) reauthorization of 1996 requires states to submit annual reports of the drinking water violations that occurred within their state to the U.S. Environmental Protection Agency (EPA). This report constitutes Maryland's annual compliance report for CY22. This report provides information on drinking water quality standards, summarizes public water system violations that occurred during 2022 or were ongoing from prior years, and describes some initiatives that were undertaken in 2022. The report covers the period from January 1, through December 31, 2022.

The Maryland Department of the Environment (MDE) is charged with ensuring that the water quality and quantity at all public water systems meet the needs of the public and are in compliance with federal and State regulations. This report describes the activities that are undertaken on a routine basis by MDE to ensure that public drinking water systems provide safe water to their consumers. Routine activities include regular on-site inspections of water systems to identify any sanitary defects in the systems, technical assistance, and a permitting process that helps ensure that systems obtain the best possible source of water. In addition, MDE works with private contractors and local health departments to identify potential sources of contamination in close proximity to groundwater and surface water supplies so that the systems can protect their water sources before contamination occurs. Maryland regulates 3,236 public water systems (468 community water systems, 540 non-transient non-community water systems, and 2,228 transient non-community water systems).

Public water systems are required to sample for a variety of contaminants on a routine basis depending on the population served, source type, and historical monitoring data of the water system. When contaminants are found at levels exceeding the federally established Maximum Contaminant Level (MCL), it is considered a violation of federal and State standards. MCL violations are rare in Maryland for most types of chemical contaminants. In 2022, no systems exceeded the MCL for an organic (volatile or synthetic) contaminant at the water treatment plant. Fourteen systems exceeded the MCL for nitrate in 2022 or had ongoing nitrate MCL violations beginning prior to 2022, and two systems exceeded the MCL for arsenic in 2022 or had an ongoing arsenic MCL violation beginning prior to 2022. No systems exceeded the MCL for haloacetic acids or had ongoing violations prior to 2022, and two systems exceeded the MCL for trihalomethanes or had ongoing violations prior to 2022. Under the Revised Total Coliform Rule, four systems had an acute MCL violation.

Violations are also incurred for failure to monitor and/or report as required, failure to use required treatment techniques, or failure to notify the public under certain circumstances. During 2022, 233 water systems had new or ongoing monitoring/reporting violations for inorganic contaminants (178 of 233 for nitrate), no systems had monitoring/reporting violations for organic (volatile or synthetic) contaminants, 64 systems had new or ongoing monitoring/reporting violations for lead and copper, four systems had new or ongoing treatment technique violations

under the Lead and Copper Rule, and 401 systems had new or ongoing monitoring/reporting violations under the Revised Total Coliform Rule. No systems had treatment technique violations and two systems had a monitoring violation under the Surface Water Treatment Rules.

MDE addresses violations through progressive enforcement based on the federal Drinking Water Enforcement Response Policy (ERP). The strategy prioritizes water systems for enforcement, and under this approach, those violations with the potential to affect children, such as at schools and daycare centers, are prioritized. As of June 2023, 38 of the 43 public water systems that were identified in July 2022 for enforcement under the ERP have returned to compliance, are no longer active, or have been addressed by formal enforcement action.

Overall, Maryland public water systems maintain a high level of compliance with all SDWA requirements.

## ***BACKGROUND***

The U.S. Environmental Protection Agency (EPA) established the Public Water System Supervision (PWSS) Program under the authority of the 1974 Safe Drinking Water Act (SDWA). Under the SDWA and its 1986 and 1996 amendments, EPA sets 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 (MCLs) and Maximum Residual Disinfection Levels (MRDLs). For some regulations, EPA establishes Treatment Techniques (TTs) in lieu of an MCL to control unacceptable levels of contaminants in water. EPA also regulates how often public water systems (PWSs) monitor their water for contaminants and report the monitoring results to the States or EPA. Generally, the larger the population served by a water system, the more frequent the monitoring and reporting (M/R) requirements. In addition, EPA requires PWSs that serve more than 10,000 persons to monitor for unregulated contaminants to provide data for future regulatory development. Effective January 2022, PWSs that serve more than 3,300 persons are required to monitor for unregulated contaminants as well. Finally, EPA requires PWSs to notify the public when they have violated these regulations. Public notification must include a clear and understandable explanation of the nature of the violation, its potential adverse health effects, steps that the PWS is undertaking to correct the violation, and the possibility of alternative water supplies during the violation.

The SDWA applies to the 50 states, the District of Columbia, Indian Lands, Puerto Rico, the Virgin Islands, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands.

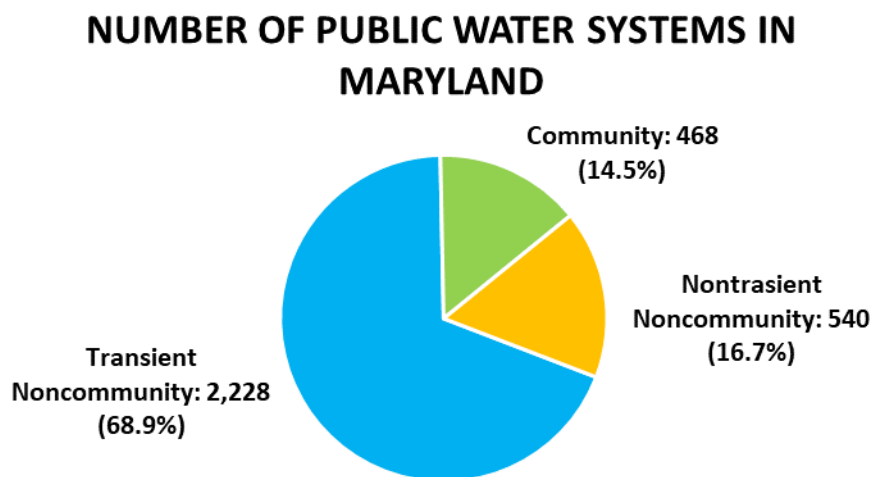
The SDWA allows states, tribes, and territories to seek EPA approval to administer their own PWSS Programs. The authority to run a PWSS Program is called primacy. For a state to receive primacy, EPA must determine that the state meets certain requirements laid out in the SDWA and the federal regulations, including the adoption of drinking water regulations that are at least as stringent as the federal regulations and a demonstration that they can enforce the Program requirements. Of the 50 States and six US territories, all but Wyoming and the District of Columbia have primacy. The EPA Regional Offices administer the PWSS Programs within these two jurisdictions, and all Indian Lands, but the Navajo Nation which was granted primacy in 2000. Maryland received primacy for the PWSS program in 1977.

Each quarter, primacy states submit data to the federal Safe Drinking Water Information System, Operational Data System (SDWIS/ODS), an automated database maintained by EPA. The data submitted include, but are not limited to, PWS inventory information; site visits; sample results for specific contaminants (i.e., lead and copper); the incidence of MCL exceedances; monitoring, reporting, and TT violations; and information on enforcement activities related to these violations. Section 1414(c)(3) of the SDWA requires states to provide EPA with an annual report of violations of the primary drinking water standards. This report provides an overview of violations in each of six categories: MCLs, TTs, variances, exemptions, significant monitoring violations, and significant consumer notification violations. Maryland's SDWIS/State database is the source of data for this report.

# MARYLAND'S WATER SUPPLY PROGRAM

The Water Supply Program (WSP) is a part of the Water and Science Administration in the Maryland Department of the Environment (MDE). The mission of WSP is to ensure that public drinking water systems provide a safe and sustainable supply of water to all current and future users in Maryland, and that appropriate usage, planning, and conservation policies are implemented for Maryland's water resources. This mission is accomplished through proper planning for water withdrawal, protection of water sources that are used for public water supplies, oversight and enforcement of routine water quality monitoring at public water systems, regular on-site inspections of water systems, review of design plans to install or upgrade water treatment, and prompt response to water supply emergencies. In addition to ensuring that public drinking water systems meet federal and State requirements under the PWSS program, WSP also administers the wellhead protection program, manages water resources, oversees the Board of Water and Wastewater Operators Certification, the Board of Well Drillers and the Laboratory Certification Program, and issues water appropriation permits for public water users, private water users, commercial entities and agricultural entities statewide. Because all of these activities reside together in WSP, Maryland has the unique opportunity to evaluate and regulate public drinking water systems from a broad perspective that includes an evaluation of the resource for both quantity and quality. WSP's activities help to ensure safe drinking water for over five million Marylanders.

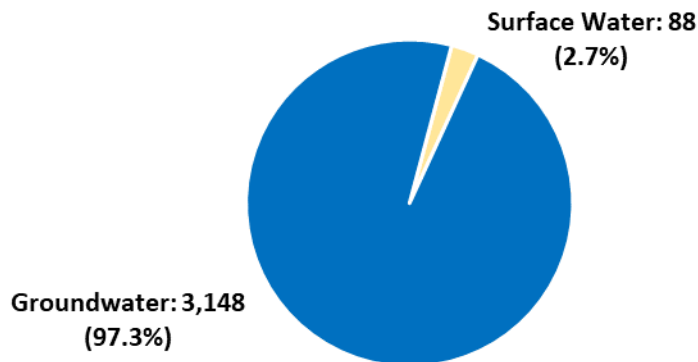
A public water system (PWS) is defined as a system that provides water via piping or other constructed conveyances for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days each year. PWSs fall into three categories: community, non-transient non-community, and transient non-community. Community water systems (CWSs), such as towns, serve year-round residents; non-transient non-community water systems (NTNCWSs), such as schools or factories, serve non-residents; and transient non-community water systems (TNCWS), such as rest stops or parks, serve different consumers each day. During 2022, the number of public water systems in Maryland was: 468 CWSs, 540 NTNCWSs, and 2,228 TNCWSs.



MDE directly regulates CWSs (county and municipal systems, large and small communities, and mobile home parks) and NTNCWSs (businesses, schools, and day care centers that have their own water supply system). TNCWSs (e.g., gas stations, campgrounds, and restaurants that have their own water supply system) are regulated and enforced by the local county environmental health departments through State-County delegation agreements, with the exception of systems in Anne Arundel, Cecil, Charles, Harford, Montgomery, Prince George’s, Washington, and Wicomico counties, which are directly regulated and enforced by WSP. Table 1 presents a summary of Maryland’s 2022 statistics on public water systems and the populations served by each type of system.

<b>Table 1. Maryland Drinking Water Statistics</b>	
Population of Maryland (July 1, 2022, Census estimate)	6,164,660
Number of individuals served by community water systems	5,484,265
Percent of population served by public water systems	90
Percent of population served by individual wells	10
Number of Public Water Systems	3,236
Number of Community Systems	468
Number of Non-transient Non-community Systems	540
Number of Transient Non-community Systems	2,228
Number of Systems using surface water	88
Number of Systems using only ground water	3,148

### NUMBER OF PUBLIC WATER SYSTEMS BY SOURCE TYPE



In WSP, emphasis is placed on preventative measures instead of reactive enforcement actions in order to avert serious public health incidents. The vast majority of drinking water violations are corrected immediately or following the initial notices of violation. Preventative measures include source water (ground and surface) protection, water monitoring schedules, technical assistance, operator training, and sanitary survey inspections. Source water protection programs, such as wellhead protection and surface water protection, are used to identify sources of potential contamination and activities that can prevent future contamination incidents.

## Program Activities

Routine oversight of public drinking water systems involves a wide range of activities. These activities focus on helping systems to obtain and protect the best available source of water, ensuring that systems comply with State and federal water quality monitoring requirements, and making certain that systems maintain sufficient treatment processes to address any water quality concerns. Table 2 presents a summary of the major activities conducted by the Program in 2022.

Sanitary Surveys (Class 1) Conducted on CWS and NTNCWS	319
Sanitary Surveys Conducted on TNC Systems by MDE	118*
Technical Reviews of Water Construction Projects	35
Water Appropriation Permits Issued (New and Renewal)	342
Individuals Certified to Sample Drinking Water	1,113
New Wells Sited	22
Water Quality Records Reviewed	52,000
County Water and Sewer Plans Reviewed	70
Laboratory certifications completed	92

**\* NOTE: One hundred eighteen class 1 Sanitary Surveys of TNCWS were completed by MDE staff in 2022. Totals for TNCWS Sanitary Surveys conducted by local health departments in 2022 were not fully calculated at the time this report was written.**

**Appropriation Permits** - Maryland implements a comprehensive water appropriations permitting program, ensuring that the State is able to effectively manage its water resources to ensure their sustainable use and to minimize the potential for conflicts between users. Permits specify the water source (e.g., the name of the aquifer for groundwater withdrawals), location of withdrawal, the quantity of allowable use, purpose of use, measuring and reporting of use, and other conditions in accordance with the appropriate laws and regulations. Permits are valid for a period of up to 12 years. Details on who should obtain a permit can be found on MDE's website ([https://mde.maryland.gov/programs/water/water\\_supply/Pages/WaterAppropriationsOrUsePermits.aspx](https://mde.maryland.gov/programs/water/water_supply/Pages/WaterAppropriationsOrUsePermits.aspx)). Evaluation of permit requests requires an assessment of the reasonableness of the quantity for the intended use, the reasonableness of the impact on the resource, and the potential impact of the withdrawal on neighboring users.

Permitted quantities are not allowed to exceed the sustainability of the resource. The appropriation permitting process is a key component in ensuring an adequate and reliable capacity of Maryland's community water systems.

**Compliance Activities** - All of the approximately 1,000 CWSs and NTNCWSs in Maryland must test for over 90 regulated contaminants on schedules that vary based on source type, historical



data, and population. Data is received throughout the year and reviewed for compliance with the regulations. WSP staff received and reviewed approximately 52,000 water quality reports for samples collected in 2022. WSP issues Notices of Violations (NOVs) for Maximum Contaminant Level (MCL) and Treatment Technique (TT) violations as they occur. NOVs for monitoring violations are issued monthly. The WSP maintains an inventory of more than 3,200 public water systems.

***Consumer Confidence Reports*** - The Consumer Confidence Report Rule requires all community systems to report water quality data in an understandable format to their consumers. The reports must be submitted annually to WSP by July 1, for the previous calendar year's data, and certification of their delivery to each resident within the system must be submitted to WSP by October 1 of each year. MDE places the reports for the water systems on the MDE website every year.

***Enforcement Strategy*** - The strategy that has been adopted for managing enforcement is progressive enforcement. This technique has been effective in resolving violations and reserving time consuming formal civil and criminal actions for the most serious cases.

In 2022, MDE continued to implement the federal Drinking Water Enforcement Response Policy (ERP). The strategy prioritizes water systems needing enforcement action. It also establishes a new priority for noncompliance that has the potential to affect children, such as violations at schools and daycare centers. The goal is to be consistent with EPA's enforcement targeting tool, which ranks water systems with violations based on violation type (e.g., MCL) and length of time the violation has occurred. Systems are considered to be "on the Path to Compliance" if they have received a formal notice of violation, entered into a compliance agreement, or returned to compliance. As of June 2023, 38 out of 43 public water systems identified in the July 2022 targeted list for enforcement under the ERP have returned to compliance, are no longer active, or have been addressed by formal enforcement actions.

***Sanitary Survey Inspections*** - A sanitary survey is a comprehensive on-site inspection of a water system, including the source, treatment, storage, and distribution systems, as well as a review of the operations and maintenance of the system. These inspections are conducted for the purpose of determining the adequacy and reliability of the water system to provide safe drinking water to its customers. The sanitary survey can be used to follow up on known or suspected problems or on a routine basis to assess a water system's viability and prevent future problems from occurring. WSP's current goals for inspection frequencies are: once a year for surface water systems; once every two years for CWSs; and once every three years for NTNCWSs and non-delegated TNCWSs, when resources are available. Inspectors may require system upgrades if sanitary deficiencies are identified. A total of 319 sanitary surveys were completed for CWSs and NTNCWSs in 2022. In addition, WSP staff conducted sanitary survey inspections for 118 TNCWSs during 2022

***School Notifications*** - Schools that have their own water systems tend to have more total coliform bacteria detections at the beginning of the school year. This is mostly because of the school closing during the summer, which results in the water being stagnant in the building plumbing for a long period of time, allowing bacteria to grow. In addition, metals from the pipes, fittings, and plumbing fixtures may leach into the drinking water when water remains stagnant in the plumbing for an extended period of time. As part of MDE's annual compliance assistance to schools, on August 12, 2022, WSP sent information to the County Boards of Education and

private schools recommending that they flush the plumbing in their buildings prior to school starting in order to avoid water quality problems, including bacteria and metals.

**Source Water Protection** - Source Water Assessments were completed in 2004 for all public water systems that were active in Maryland. The WSP continues to provide technical support for the Maryland Rural Water Association (MRWA) to work on source protection issues. WSP continues to be involved with our partners from the Drinking Water Source Protection Partnership (DWSPP) as the Little Pipe Creek National Water Quality Initiative (NWQI) moves through the planning phase. MDE staff have participated in planning meetings with EPA Region 3 and other partners in preparation for an influx of funding associated with the 2021 Bipartisan Infrastructure Law (BIL). The WSP continues to assist with the sampling of public drinking water sources in the State for per- and polyfluoroalkyl substances (PFAS). WSP continues to coordinate with MDE's Voluntary Cleanup Program, and the regulatory siting of new public water supply sources.

**Transient Non-community Water System Oversight** TNCWSs, such as churches, campgrounds, rest stops, and rural establishments, account for approximately 70% of the total number of Maryland's public water systems. As of December 31, 2022, 15 of Maryland's 23 counties had delegated authority for oversight of transient non-community systems in their jurisdictions and received funding (approximately \$350,000) from MDE through the Drinking Water State Revolving Fund set-asides. The agreements for the delegated programs were renegotiated under a four-year agreement with an effective date of October 1, 2019. In 2022, WSP had direct oversight of 907 TNCWSs.

Counties with delegated authority have overseen the TNCWS program since 1998. WSP provides delegated counties with funding, written and verbal guidance regarding implementing drinking water regulations, and provides training opportunities to educate the county programs about the federal and State requirements for these systems.

**Well Siting** One important step in protecting a groundwater supply is to identify the best possible location for drilling the well. WSP joint field investigations with local health department personnel for approval of CWS and NTNCWS well sites that are not susceptible to contaminant sources. In 2022, 22 well sites for public water systems were approved by WSP.

# ANNUAL COMPLIANCE INFORMATION

This report covers violation and enforcement data for calendar year 2022. MCL, TT, and M/R violations are reported for all community and non-transient non-community water systems.

Summaries of the various violations for all public water systems in 2022 are presented in Tables 3 through 11.

Both MCL and M/R violations occur more frequently in smaller systems, which have fewer resources and less technical expertise for operating the systems. WSP regularly visits systems where water quality problems occur to advise and assist system owners to meet their regulatory and water quality requirements.

## *Maximum Contaminant Level (MCL) Compliance*

Under the SDWA, EPA sets national limits on contaminant levels in drinking water to ensure that the water is safe for human consumption. These limits are known as MCLs. Contaminants are categorized into four main categories: 1) Inorganic Contaminants, 2) Organic Contaminants, 3) Microbiological Contaminants, and 4) Disinfectants and Disinfection Byproducts.

Tables 3 through 8 present summaries of public water system violations that occurred during 2022, or violations that occurred prior to 2022 and were not resolved.

***Inorganic contaminant (IOC) violations.*** In 2022, 14 water systems exceeded the MCL or had ongoing MCL violations for nitrate, and two systems exceeded the MCL for arsenic or had ongoing MCL violations for arsenic. Table 3 summarizes this data.

***Volatile organic contaminant (VOC) violations and synthetic organic contaminant (SOC) violations.*** No systems exceeded the MCL for any organic contaminant in 2022. Tables 4 and 5 summarize the monitoring and reporting violations for these contaminants.

***Microbial Contaminants.*** Four systems (two very small systems with 50 or fewer water customers, one medium CWS, and one large CWS) had an acute MCL violation under the Revised Total Coliform Rule. Table 6 summarizes this data.

Historically, the majority of the MCL violations have occurred in very small TNCWSs in Maryland. However, in September 2022, the City of Baltimore received an MCL violation under the Revised Total Coliform Rule because of *E. coli* detections in one of the system's three pressure zones. WSP staff worked closely with Baltimore City staff to determine potential cause(s) for the *E. coli* detections, and to provide appropriate public notice to affected portions of the distribution system. A boil water advisory was in effect for five days for affected portions of the distribution system. During this time, WSP staff met with Baltimore City staff to identify potential sources of contamination, review distribution system management, review source water quality, and provide guidance regarding public notice content and delivery requirements.

## *Monitoring Compliance*

If a PWS fails to have its water tested as required or fails to report test results correctly or on time to the primacy state, a monitoring violation occurs.

Water systems are notified annually by MDE of their monitoring requirements. In addition, a reminder notice is sent to the systems approximately one month before the end of the monitoring period if reports are not received. If a system fails to report or complete the required testing, a violation letter is sent to the water system. If there is no response after one month, a second notice of violation letter is sent by certified mail to the water system; this letter will typically contain a requirement for public notification and potential fines. Telephone calls and site visits by the technical staff are also used.

***Monitoring/Reporting Violations*** For this report, monitoring violations are generally defined as any monitoring violation that occurred during the calendar year of the report or occurred prior to the calendar year of the report and were not resolved. A M/R violation, with rare exceptions, occurs when no samples were collected or no results were reported during a compliance period.

The tables in this report include M/R violations for CWSs, NTNCWSs, and TNCWSs (where indicated).

During 2022, or prior to 2022 and ongoing, 233 systems had monitoring/reporting violations for IOCs (178 of which for nitrate) and no systems had monitoring/reporting violations for organic contaminants (VOCs and SOCs). Four hundred one systems had M/R violations for total coliform under the Revised Total Coliform Rule, and three systems had M/R violations under the D/DBPR (see Tables 3 through 8). Two systems had M/R violations for initial tap sampling for lead and copper, and 62 systems had M/R violations for follow-up or routine (reduced) sampling for lead and copper (see Table 9).

### Table 3. Inorganic Contaminant Violations (2022)

(CWS, NTNCWS, & TNCWS)

Contaminant			MCL Violations			Monitoring Violations		
Code	Name	MCL (mg/L)	# of Vios	# Vios RTC	# of Systems with Vios	# of Vios	# Vios RTC	# of Systems with Vios
1074	Antimony*	0.006	0	0	0	46	35	46
1005	Arsenic	0.010	9	6	2	38	30	37
1094	Asbestos	7 mil. fibers/L	0	0	0	0	0	0
1010	Barium*	2	0	0	0	49	38	47
1075	Beryllium*	0.004	0	0	0	46	35	46
1015	Cadmium*	0.005	2	2	1	46	35	46
1020	Chromium*	0.1	0	0	0	46	35	46
1024	Cyanide	0.2	0	0	0	0	0	0
1025	Fluoride	4	0	0	0	19	14	19
1035	Mercury*	0.002	0	0	0	46	35	46
1036	Nickel*	N/A	0	0	0	46	35	46
1040	Nitrate-N	10	19	17	14	237	138	178
1041	Nitrite-N	1	0	0	0	0	0	0
1045	Selenium*	0.05	0	0	0	46	35	46
1085	Thallium*	0.002	0	0	0	46	35	46
4000	Gross Alpha Radioactivity	15 pCi/L	0	0	0	0	0	0
4100	Gross Beta Radioactivity	4 mrem	0	0	0	0	0	0
4010	Combined Radium 226 +228	5 pCi/L	0	0	0	0	0	0
	<b>Totals</b>		<b>30</b>	<b>25</b>	<b>16**</b>	<b>711</b>	<b>500</b>	<b>233***</b>

MCL = maximum contaminant level

RTC = returned to compliance

\* The nine Phase II/V metals are typically sampled and reported as a group; the “Totals” row in Table 3 does not always reflect the individual contaminants

\*\* 16 systems had one or more MCL violations for IOC contaminants

\*\*\* 233 systems had one or more monitoring violations for IOC contaminants

**Table 4. Violations for Volatile Organic Contaminants\* (2022)**

Contaminant			MCL Violations			Monitoring Violations		
Code	Name	MCL (mg/L)	# of Vios	# Vios RTC	# of Systems with Vios	# of Vios	# Vios RTC	# of Systems with Vios
2977	1,1-Dichloroethylene	0.007	0	0	0	0	0	0
2981	1,1,1-Trichloroethane	0.2	0	0	0	0	0	0
2985	1,1,2-Trichloroethane	0.005	0	0	0	0	0	0
2980	1,2-Dichloroethane	0.005	0	0	0	0	0	0
2983	1,2-Dichloropropane	0.005	0	0	0	0	0	0
2378	1,2,4-Trichlorobenzene	0.07	0	0	0	0	0	0
2990	Benzene	0.005	0	0	0	0	0	0
2982	Carbon Tetrachloride	0.005	0	0	0	0	0	0
2380	cis-1,2-Dichloroethylene	0.07	0	0	0	0	0	0
2964	Dichloromethane (methylene chloride)	0.005	0	0	0	0	0	0
2992	Ethylbenzene	0.7	0	0	0	0	0	0
2989	Monochlorobenzene	0.1	0	0	0	0	0	0
2968	o-Dichlorobenzene	0.6	0	0	0	0	0	0
2969	p-Dichlorobenzene	0.075	0	0	0	0	0	0
2996	Styrene	0.1	0	0	0	0	0	0
2987	Tetrachloroethylene	0.005	0	0	0	0	0	0
2991	Toluene	1	0	0	0	0	0	0
2979	Trans-1,2-Dichloroethylene	0.1	0	0	0	0	0	0
2984	Trichloroethylene	0.005	0	0	0	0	0	0
2976	Vinyl Chloride	0.002	0	0	0	0	0	0
2955	Xylenes (Total)	10	0	0	0	0	0	0
	Totals		0	0	0	0	0	0

MCL = maximum contaminant level  
 RTC = returned to compliance

\* The 21 VOCs are typically sampled and reported as a group

**Table 5. Violations for Synthetic Organic Contaminants (2022)**

Contaminant		MCL Violations			Monitoring Violations			
Code	Name	MCL (mg/L)	# Vios	# Vios RTC	# of Systems with Vios	# Vios	# Vios RTC	# of Systems with Vios
2063	2,3,7,8-TCDD(dioxin)	3x10-8	0	0	0	0	0	0
2105	2,4-D (Formula 40, Weedar 64)	0.07	0	0	0	0	0	0
2110	2,4,5-TP (Silvex)	0.05	0	0	0	0	0	0
2051	Alachlor (Lasso)	0.002	0	0	0	0	0	0
2050	Atrazine (Atranax, Crisazina)	0.003	0	0	0	0	0	0
2306	Benzo(a)pyrene	0.0002	0	0	0	0	0	0
2046	Carbofuran (Furdan, 4F)	0.04	0	0	0	0	0	0
2959	Chlordane	0.002	0	0	0	0	0	0
2031	Dalapon	0.2	0	0	0	0	0	0
2035	Di(2-ethylhexyl)adiphate	0.4	0	0	0	0	0	0
2039	Di(2-ethylhexyl)phthalate	0.006	0	0	0	0	0	0
2931	Dibromochloropropane (DBCP, Nemafoam)	0.0002	0	0	0	0	0	0
2041	Dinoseb	0.007	0	0	0	0	0	0
2032	Diquat	0.02	0	0	0	0	0	0
2033	Endothall	0.1	0	0	0	0	0	0
2005	Endrin	0.002	0	0	0	0	0	0
2946	Ethylene Dibromide (EDB, Bromofume)	0.00005	0	0	0	0	0	0
2034	Glyphosate	0.7	0	0	0	0	0	0
2065	Heptachlor (H-34, Heptox)	0.0004	0	0	0	0	0	0
2067	Heptachlor Epoxide	0.0002	0	0	0	0	0	0
2274	Hexachlorobenzene	0.001	0	0	0	0	0	0
2042	Hexachlorocyclopentadiene	0.05	0	0	0	0	0	0
2010	Lindane	0.0002	0	0	0	0	0	0
2015	Methoxychlor (DMDT, Marlata)	0.04	0	0	0	0	0	0
2036	Oxamyl (Vydate)	0.2	0	0	0	0	0	0
2326	Pentachlorophenol	0.001	0	0	0	0	0	0
2040	Picloram	0.5	0	0	0	0	0	0
2384	Polychlorinated biphenyls (PCB, Aroclor)	0.0005	0	0	0	0	0	0
2037	Simazine	0.004	0	0	0	0	0	0
2020	Toxaphene	0.003	0	0	0	0	0	0
	Totals		0	0	0	0	0	0

MCL = maximum contaminant level

RTC = returned to compliance

**Table 6. Revised Total Coliform Rule Violations (2022)**

(CWS, NTNCWS, & TNCWS)

<b>Violation Name</b>	<b>MCL/TT/ M/R</b>	<b># of Vios</b>	<b># Vios RTC</b>	<b># of Systems with Vios</b>
MCL, Acute (E. coli) Violation type 1A	MCL (Absence)	4	3	4
Level 1 Assessment Violation type 2A (Severity = Non Acute)	TT	0	0	0
Level 2 Assessment Violation type 2B	TT	0	0	0
Corrective/Expedited Actions Violation type 2C	TT	0	0	0
Monitoring, Routine Violation type 3A (Severity = Major)	M/R	731	237	401
Report Sample Result/Failure to Monitor Violation type 4B	M/R	0	0	0
<b>Totals</b>		<b>735</b>	<b>240</b>	<b>405</b>

MCL = maximum contaminant level

TT = treatment technique

M&R = Monitoring and Reporting

RTC = returned to compliance



<b>Table 7. Ground Water Rule Violations (2022)</b>			
<b>Violation Name</b>	<b># of Vios</b>	<b># Vios RTC</b>	<b># of Systems with Vios</b>
Monitoring of Source Water M/R (violation type 34)	0	0	0
Public Notice (violation type 73, 75, or 76)	2	1	2
Failure to Address Deficiency (violation type 45)	2	0	2
Failure to Address Contamination (violation type 48)	0	0	0
<b>Totals</b>	<b>4</b>	<b>1</b>	<b>3*</b>

RTC = returned to compliance

\* Systems that had violations in multiple categories were counted once

## Treatment Technique Compliance

Under the National Primary Drinking Water Regulations, EPA has established treatment technique requirements in lieu of an MCL for some regulations. Treatment techniques are processes that are intended to reduce the level of a contaminant through water treatment or other requirements by a water system.

In 2022, no water systems failed to meet the disinfection byproduct precursor removal standard for Total Organic Carbon under the Disinfection Byproduct Rule (see Table 8). Four systems had Lead and Copper Rule (LCR) treatment technique violations for Lead Public Education and no systems had a LCR treatment technique violation for Treatment Installation (see Table 9).

**Disinfection Byproduct Rule** - All CWSs and NTNCWSs that add a disinfectant (other than UV light) and TNCWSs that treat with chlorine dioxide are required to sample for haloacetic acids (HAA5) and total trihalomethane (TTHM). Water systems that use surface water as their drinking water source are required to provide specific water treatment (i.e., sedimentation and filtration) to reduce disinfection byproduct precursors that are likely to form disinfection byproducts with the addition of chlorine. In 2022, two systems had MCL violations for disinfection byproducts.

<b>Table 8. Disinfection Byproduct Rule Violations (2022)</b>								
<b>Contaminant</b>			<b>MCL/MRDL/TT Violations</b> (violation types 02 and 46)			<b>Monitoring Violations</b> (violation type 27)		
<b>Code</b>	<b>Name</b>	<b>MCL/ MRDL (mg/L)</b>	<b># of Vios</b>	<b># Vios RTC</b>	<b># of Systems with Vios</b>	<b># of Vios</b>	<b># Vios RTC</b>	<b># of Systems with Vios</b>
2950	Total Trihalomethanes	0.08	7	7	2	3	2	3
2456	Haloacetic Acids (5)	0.06	0	0	0	3	2	3
2920	Total Organic Carbon – TT	N/A	0	0	0	0	0	0
0999	Chlorine Residual (MRDL)	4	0	0	0	0	0	0
1009	Chlorite	1	0	0	0	1	1	1
1008	Chlorine Dioxide	0.8	0	0	0	1	1	1
1927	Alkalinity	N/A	0	0	0	0	0	0
<b>Totals</b>			<b>7</b>	<b>7</b>	<b>2</b>	<b>8</b>	<b>6</b>	<b>3*</b>

MCL = maximum contaminant level; RTC = returned to compliance

\* Some systems had violations in multiple categories and were counted once; there are three systems with DBP Monitoring Violations (i.e., they did not take paired samples for TTHM and HAA5)

**Lead and Copper Rule** – CWSs and NTNCWSs are required to treat their water if it is found to be corrosive and/or if the source water contains unacceptable levels of lead or copper. Based on a system’s population, five to 100 samples are collected at homes or sample locations with the highest probability of elevated lead concentrations. This is determined based on a survey of when buildings were constructed and/or when plumbing is installed (i.e., if the service line leading to the building contains lead and/or if the interior plumbing of the building contains lead pipes or lead solder). Lead solder was prohibited from use in water system plumbing beginning in the mid-1980s. A water system’s sample results for the compliance period cannot exceed the Action Level (AL) for lead or copper in more than 10 percent of the samples. Although exceeding the AL is not a violation, follow-up actions, such as water testing, lead public education, and treatment recommendations, are required. In 2022, four systems failed to conduct required lead public education activities (see Table 9).

<b>Table 9. Lead and Copper Violations (2022)</b>			
<b>Violation Name</b>	<b># of Vios</b>	<b># Vios RTC</b>	<b># of Systems with Vios</b>
Initial Tap Sampling for Lead and Copper M/R (violation type 51)	2	2	2
Follow-up or Routine Tap Sampling M/R (violation type 52)	65	50	62
Lead Public Education TT (violation type 65)	5	4	4
Treatment Installation TT (violation type 58)	0	0	0
<b>Totals</b>	<b>72</b>	<b>56</b>	<b>66*</b>

RTC = returned to compliance

# of Vios = Number of violations that occurred in 2022 plus number of ongoing, unresolved violations

\* Some systems had violations in multiple categories and were counted once

**Surface Water Treatment Rule** - Water systems that use surface water as their drinking water source are required to provide filtration and disinfection water treatment. The treatment processes are monitored throughout each day and reported monthly to the state. Table 10 outlines the Surface Water Treatment Rule violations for 2022. No water systems exceeded the turbidity standards for treatment technique.

Maryland does not have any water systems that are approved to use an unfiltered surface water source. Maryland continues to evaluate new and existing groundwater systems for vulnerability to surface water contamination. Untreated raw water samples are analyzed for *E. coli*, turbidity, temperature, and pH. If a groundwater source is determined to be under the direct influence of surface water, the water system has 18 months to install treatment or to replace the wells with an approved water source.

Under the Long Term 2 Surface Water Treatment Rule (LT2SWTR), the Schedule 1 water systems that serve over 100,000 persons and Schedule 2 water systems that serve over 50,000 persons have completed the source water testing prior to 2018. The Schedule 3 water systems that serve over 10,000 persons completed their sampling of source water for *Cryptosporidium* and *E. coli* in 2018. The Schedule 4 water systems that serve under 10,000 persons with elevated *E. coli* concentrations are in the process of sampling and reporting source water test results for *Cryptosporidium*.

Following the completion of the LT2SWTR source water monitoring, water systems were placed in “Bins” corresponding to the detected levels of *Cryptosporidium*. Systems placed in “Bin 1” required no additional treatment; systems in “Bin 2” or higher will be required to provide additional treatment or to optimize their current operations. The following water systems were classified as “Bin 2” water systems:

- MD0100011 Fort Detrick
- MD0100030 New Design--Frederick County Department of Public Works
- MD0120003 Maryland American Water Co. - Bel Air
- MD0070011 Town of Elkton
- MD0210017 Town of Sharpsburg

<b>Type of System</b>	<b>Violation Name</b>	<b># of Vios</b>	<b># Vios RTC</b>	<b># of Systems with Vios</b>
Filtered Water Systems	Treatment Technique – Failure to Maintain Microbial Treatment (violation type 41)	0	0	0
Filtered Water Systems	Treatment Technique - Exceeds 1 NTU (violation type 43)	0	0	0
Filtered Water Systems	Treatment Technique - Exceeds 0.3 NTU (conventional or direct filtration) or 1 NTU (alternative filtration technology) (violation type 44)	0	0	0
Filtered Water Systems	Monitoring, Routine/Repeat (violation type 36)	2	2	2
Filtered Water Systems	Turbidity Monitoring, Filtered (violation type 38)	0	0	0
Filtered Water Systems	Treatment Technique – Failure to Submit Report – LT2SWTR (violation type 33)	0	0	0
Filtered Water Systems	Monitoring, Source Water – Cryptosporidium (violation type 32)	0	0	0
Unfiltered Water Systems	Treatment Technique - Failure to Filter – GWUDI (violation type 42)	0	0	0
Totals		2	2	2

RTC = returned to compliance

## *Variances*

A primacy state can grant a PWS a variance from a primary drinking water regulation if the characteristics of the raw water sources reasonably available to the PWS do not allow the system to meet the MCL. To obtain a variance, the system must agree to install the best available technology, treatment techniques, or other means of limiting drinking water contamination that the Administrator finds are available (taking costs into account), and the state must find that the variance will not result in an unreasonable risk to public health. At the time the variance is granted, the state must prescribe a schedule that the PWS will follow to come into eventual compliance with the MCL. Small systems may also be granted variances if they cannot afford (as determined by application of the EPA Administrator's affordability criteria) to comply with certain MCLs (non-microbial, promulgated after January 1, 1986) by means of treatment, alternative source of water, restructuring, or consolidation. Small systems are allowed three years to install and operate EPA approved small system variance technology. The variance must be reviewed not less than every five years to determine if the system remains eligible for the variance. In 2022, no variances were granted by MDE and no variances were in effect.

## *Exemptions*

A primacy state can grant an exemption temporarily relieving a PWS of its obligation to comply with an MCL, treatment technique, or both if the system's noncompliance results from compelling factors (which may include economic factors) and the system was in operation on the effective date of the MCL or treatment technique requirement. A new PWS that was not in operation on the effective date of the MCL or treatment technique requirement by that date may be granted an exemption only if no reasonable alternative source of drinking water is available to the new system. Neither an old or a new PWS is eligible for an exemption if management or restructuring changes can reasonably be made that will result in compliance with the SDWA or improvement of water quality, or if the exemption will result in an unreasonable risk to public health. The state will require the PWS to comply with the MCL or treatment technique as expeditiously as practicable, but not later than three years after the otherwise applicable compliance date. In 2022, no exemptions were granted by MDE and no exemptions were in effect.

## Consumer Confidence Report (CCR) Rule Compliance

Every CWS is required to deliver to its customers a brief annual water quality report. This report is required to include certain educational material, and provides information on the source water, the levels of any detected contaminants, and compliance with drinking water regulations. Systems that failed to submit their CCRs by the July 1 compliance deadline, or their certification forms by the October 1 compliance deadline, were contacted by telephone by WSP. Table 11 presents a summary of the CCR reporting violations.

<b>Violation Name</b>	<b># of Vios</b>	<b># Vios RTC</b>	<b># of Systems with Vios</b>
Failure to Produce or Deliver Report (violation type 71)	15	11	13
Adequacy, Availability, Content or Certification (violation type 72)	13	5	12
Totals	28	16	22*

\* Some systems had violations in multiple categories and were counted once

## Conclusion

Maryland public water systems maintain a high level of compliance with all SDWA requirements. This high rate of compliance can be attributed to the strong oversight of WSP's dedicated staff, and commitment of MDE's leadership to the protection of public health. In general, compliance is more difficult for smaller systems, which struggle both financially and technically to meet a continually increasing number of complex regulations. MDE's technical assistance approach is aimed at helping all public drinking water systems to achieve the highest possible level of public health protection.

## Attachment 1: Definitions

**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 also 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 categories:

*Initial lead and copper tap monitoring and reporting:* SDWIS Violation Code 51 indicates that 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 and reporting:* SDWIS Violation Code 52 indicates that a system did not meet follow-up or routine lead and copper tap testing requirements, or failed to report the results.

*Public education:* SDWIS Violation Code 65 shows that 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 farm cropland or discharge from factories. EPA has set legal limits on 54 organic contaminants that are to be reported [40 CFR 141.61].

**Public Water System** A Public Water System (PWS) is defined as a system that provides water via piping or other constructed conveyances for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days each year. There are three types of PWSs. PWSs can be community (such as towns), non-transient non-community (such as schools or factories), or transient non-community systems (such as rest stops or parks). For this report when the acronym “PWS” is used, it means systems of all types unless specified in greater detail.

**Radionuclides** Radioactive particles that 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 categories:

*Gross alpha:* SDWIS Contaminant Code 4000 for alpha radiation above MCL of 15 picoCuries/liter (pCi/L). Gross alpha includes radium-226 but excludes radon and uranium.

*Combined radium-226 and radium-228:* SDWIS Contaminant Code 4010 for combined radiation from these two isotopes above MCL of 5 pCi/L.

*Gross beta:* SDWIS Contaminant Code 4100 for beta particle and photon radioactivity from man-made radionuclides above 4 millirem/year.

*Uranium:* SDWIS Contaminant Code 4006 for total Uranium above MCL of 30 micrograms/liter (µg/L).

**Reporting Interval** The WSP Annual Compliance Report is submitted to EPA by July 1 of each year, and reports violations for the previous calendar year.

**Revised Total Coliform Rule (RTCR)** The Total Coliform Rule establishes regulations for microbiological contaminants in drinking water; it replaced the Total Coliform Rule effective April 2016. New violation codes were developed for this regulation. States are to report four categories of violations:

*Maximum Contaminant Level (MCL):* SDWIS Violation Code 1A shows a system’s failure to properly treat its water, and the presence of *E. coli* bacteria.

*Treatment techniques:* SDWIS Violation Code 2A, 2B, 2C, and 2D show a system’s failure to complete assessments of the water system’s problems, and to take corrective actions to properly treat its water

*Monitoring, routine/repeat:* SDWIS Violation Code 3A, 3B, 3C, and 3D show a system’s failure to carry out required tests.

*Reporting:* SDWIS Violation Code 4D, 4E, and 4F show a system’s failure to carry report compliance results in a timely manner.



**SDWIS Code** Specific numeric codes from the Safe Drinking Water Information System (SDWIS) have been assigned to each violation type included in this report. The violations to be reported include exceeding contaminant MCLs, failure to comply with treatment requirements, and failure to meet monitoring and reporting requirements. Four-digit SDWIS Contaminant Codes have also been included in the chart for specific MCL contaminants.

**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 categories:

*Monitoring, routine/repeat (for filtered systems):* SDWIS Violation Code 38 indicates a system's failure to carry out required tests, or to report the results of those tests.

*Treatment techniques:* SDWIS Violation Code 41, 43, and 44 show a system's failure to properly treat its water. States report Code 41, 43, and 44 for filtered and unfiltered systems to EPA.

*Failure to filter (for unfiltered systems):* SDWIS Violation Code 42 shows a system's failure to properly treat its water.

**Treatment Technique** A water treatment 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, Disinfectant and Disinfection Byproduct, Groundwater, Revised Total Coliform, 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.