

# In-Depth Analysis: Stage 2 DBPR

## WHAT IS A SDWA IN-DEPTH ANALYSIS (AKA DEEP DIVE)?

The goal of an in-depth analysis is to identify compliance challenges related to a specific regulatory requirement and to share best practices for enhancing implementation. This national effort is strategic in scope, is conducted as a joint effort between EPA and the states, and supports EPA's breakthrough measure to reduce the number of community water systems (CWSs) with health-based violations by 25% within five years.

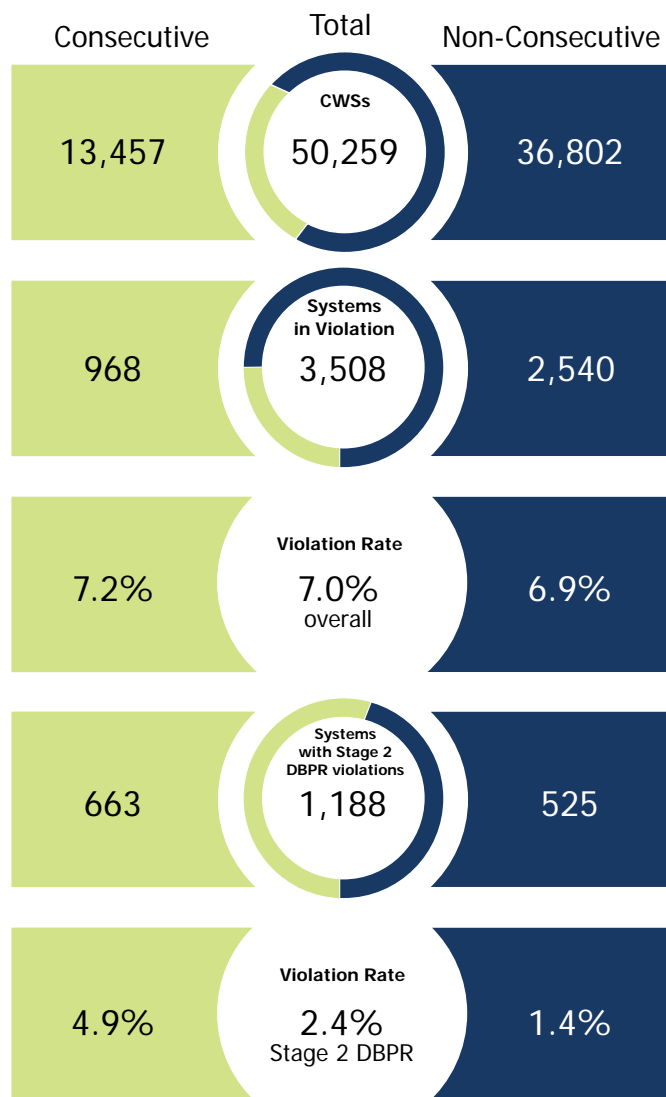
EPA works with the states to select areas for analysis and seeks state volunteers to participate in the effort. EPA and the states work together to:

- Understand the root cause of the implementation issue;
- Seek state best practices; and
- Develop and provide targeted training and technical assistance to enhance the effectiveness of the SDWA program.

## STAGE 2 DBPR AND CONSECUTIVE SYSTEM CHALLENGE

The National Primary Drinking Water Regulation (NPDWR) with the largest number of CWSs in violation, roughly 30% of all violations during fiscal year 2017 (FY17) and 2018, was the Stage 2 Disinfectants and Disinfection Byproduct Rule (DBPR). As shown in the figure, more than half of the systems in violation were consecutive CWSs, with a violation rate of 4.9% for consecutive CWSs compared to 1.4% for non-consecutive.

As part of this in-depth analysis, EPA worked with five state partners, Indiana, Kentucky, New Jersey, North Dakota, and Pennsylvania, to evaluate this compliance challenge and share lessons learned and best practices.



Rates of Stage 2 DBPR health-based violations at consecutive CWSs and non-consecutive CWSs (FY17).

## NATIONAL DATA ANALYSIS

The first step in this in-depth analysis was to conduct a national data analysis to identify areas of the United States with Stage 2 DBPR compliance challenges and evaluate common characteristics of the CWSs that were out of compliance. General findings based on FY2017 data included the following:



- **Location of Stage 2 DBPR health-based violations:** Systems in violation generally formed a band from the mid-Atlantic states down through Texas, along with Alaska and Puerto Rico; consecutive systems showed a similar geographical pattern, though the percentage of systems in violation was greater.
- **Maximum Contaminant Level (MCL) violation type:** CWSs can have a violation of the total trihalomethanes (TTHM) MCL, the five haloacetic acids (HAA5) MCL, or both MCLs. TTHM MCL violations (systems with a TTHM or both TTHM and HAA5) were dominant comprising approximately 80% of the systems in violations. This pattern is slightly more pronounced at consecutive CWSs (83%) than in non-consecutive CWSs (76%). In contrast, systems with HAA5 MCL violations were higher at non-consecutive CWSs (43%) than at consecutive CWSs (33%).
- **Source water:** Stage 2 DBPR violations are a greater issue for surface water systems, especially for purchased water systems. Violations for non-consecutive systems were approximately 62% surface water, whereas 37% of violations were for ground water sources. This relationship is even more pronounced for consecutive systems where approximately 81% had a surface water primary source, compared to approximately 18% for ground water.
- **System size:** TTHM and HAA5 MCL violations occurred most frequently, and at higher concentrations above the MCL, for those systems serving approximately 1,000 persons; the pattern is similar for both consecutive and non-consecutive systems.

## STATE BEST PRACTICES

Information on state best practices was based on site visits to the five partner states, as well as feedback from 32 other states provided by Association of State Drinking Water Administrators (ASDWA). General lessons learned include:



- **Alabama and Tennessee** require sample collection at the system's interconnection with the consecutive system and the wholesalers must conduct an operational evaluation level (OEL) report when they are triggered by the consecutive system.
- Several states use **system optimization and training programs** to evaluate treatment plant processes and distribution system issues. Such approaches allow systems to identify the root cause of the disinfectant byproduct (DBP) challenge and develop approaches to improve system performance.
- **Kentucky's** drinking water program works in coordination with their enforcement program to identify the root cause of the systems' DBP violation and develop a path to return to compliance, often using a system optimization approach.
- Several states mentioned challenges with different laboratories producing variable results that are above and/or below the MCL. Best practices suggested from **EPA's Technical Support Center (TSC)** include using newer laboratory methods (552.3, 524.3, and 524.4) that utilize newer instrumentation, as well as additional quality control specifications.
- **North Dakota** provides peer training sessions at their annual state conference by bringing in a panel of operators who have dealt with common challenges and sharing their approaches to returning to compliance.



For more information, visit: <https://www.epa.gov/dwreginfo/diving-regulations>