

**OHIO's PUBLIC WATER SYSTEMS
ANNUAL COMPLIANCE REPORT**

For

CALENDAR YEAR 2001

**Ohio Environmental Protection Agency
Division of Drinking and Ground Waters
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Introduction

The 1996 Amendments to the Safe Drinking Water Act require each State to prepare an Annual Compliance Report summarizing violations incurred by Public Water Systems. The Annual Compliance Report is to be compiled by the State and submitted to U.S. EPA and made available to the public. This report summarizes compliance rates and the number and types of violations generated as a result of various public water systems failing to meet certain Safe Drinking Water Act requirements for calendar year 2001.

Ohio's 2001 Annual Compliance Report contains an overview of the Public Water System Supervision Program in Ohio; provides summary information on the number, types and population served for public water systems; explains the requirements of the annual compliance report; defines the primary categories for which violation information are summarized; a summary table of the number and types of violations; an analysis of public water system compliance with the regulations; and a list of public water system violations for the maximum contaminant level and treatment technique categories.

The Drinking Water Program: An Overview

U.S. EPA established the Public Water System Supervision (PWSS) Program under the authority of the 1974 Safe Drinking Water Act (SDWA). Under the SDWA and the 1986 and 1996 Amendments, U.S. 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). For some regulations, U.S. EPA establishes treatment techniques in lieu of an MCL to control unacceptable levels of contaminants in water by measuring the level of treatment. The Agency also regulates how often public water systems (PWSs) monitor their water for contaminants and report the monitoring results to the States or U.S. EPA. Generally, the larger the population served by a water system, the more frequent the monitoring and reporting (M/R) requirements. However, the M/R requirements vary dependent on which contaminant is being evaluated and the source water used by a system (surface water systems and systems that use ground water under the direct influence of surface water typically monitor more frequently than a ground water system). Finally, public water systems are required to notify the public when they have violated these regulations. The 1986 Amendments to the SDWA require public notification to include a clear and understandable explanation of the nature of the violation, its potential adverse health effects, steps that the public water system is undertaking to correct the violation and the possibility for the need to obtain alternative water supplies during the violation.

The SDWA allows States to seek U.S. EPA approval to administer their own PWSS Programs. The authority to run a PWSS Program is called primacy. To receive primacy, States must meet certain requirements set forth in the SDWA and the regulations, including the adoption of drinking water regulations that are at least as stringent as the Federal regulations and provide a demonstration that they can enforce the program requirements. *Ohio is a primacy state.*

Regulated Public Water Systems in Ohio

In Ohio, a public water system (PWS) is defined as a system that provides piped water 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 public water systems: community water systems serve at least fifteen service connections used by year-round residents or regularly serve at least twenty-five year-round residents (e.g. cities; mobile home parks); non-transient non-community systems serve at least twenty-five of the same persons over six months per year (e.g. schools; businesses); transient non-community systems serves at least 25 different persons over 60 days per year (e.g. rest stops; parks). These three type of systems use either a ground water source, surface water source, or use ground water under the direct influence of surface water. In addition, Ohio regulates the drinking water systems associated with agricultural migrant labor camps as defined by the Ohio Department of Agriculture even though they may not meet the minimum number of people or service connections. For this report when the acronym “PWS” is used, it means systems of all types unless specified in greater detail. In Ohio, 5,718 public water systems serve approximately 10.8 million people daily with an average production of approximately 1.7 billion gallons of water per day. This yields an average water use of 154 gallons per person per day. Table 1 summarizes the total number and percentage of active public water systems per type with the corresponding total population served daily. As you can see in this table, the CWS only represent 24 percent of the number of systems in the state, but serve almost 93 percent of the population.

The total number and percentage of PWS by population categories are presented in Table 2. An interesting note from this table is that 26 PWS, less than 1 percent of the total systems in the state, serve over half the entire states population.

Table 1. Public Water System Summary by Category Type

| PWS Category Type | Number of PWSs per Category | Percentage of each PWS Type | Total Population Served Daily per Category | Percentage of Total Population for each PWS Type |
|------------------------------------|------------------------------------|------------------------------------|---|---|
| Community (CWS) | 1,362 | 24% | 10,042,640 | 93% |
| Non-Transient Non-Community (NTNC) | 1,068 | 19% | 261,115 | 2% |
| Transient Non-Community (TNC) | 3,288 | 57% | 504,790 | 5% |
| Total | 5,718 | 100% | 10,808,545 | 100% |

Table 2. Public Water System Summary by Population Categories

| PWS Populations Categories | Number of PWS per Category | Percentage of the Total PWS for each Category | Total Population Served Daily per Category | Percentage of the Total Population for each Category |
|---------------------------------|----------------------------|---|--|--|
| Population: 25 - 500 | 4,702 | 82.2% | 619,225 | 5% |
| Population: 501 - 3,300 | 710 | 12.4% | 880,384 | 8% |
| Population: 3,301 - 10,000 | 153 | 2.7% | 951,063 | 9% |
| Population: 10,001 - 50,000 | 127 | 2.2% | 2,663,311 | 25% |
| Population: Greater than 50,000 | 26 | 0.5% | 5,694,562 | 53% |
| Total | 5,718 | 100% | 10,808,545 | 100% |

Annual State PWS Compliance Report

Ohio EPA submits data to U.S. EPA's Safe Drinking Water Information System (SDWIS/FED) on a quarterly basis. The data includes PWS inventory statistics, the incidence of Maximum Contaminant Level (MCL), major monitoring, treatment technique violations, and the enforcement actions taken against violators. This Annual Compliance Report provides a total annual representation of the number of violations for each of the four categories listed in section 1414(c)(3)(A)(i) of the Safe Drinking Water Act re-authorization, as well as consumer notification requirements. This report will analyze violation and compliance information for the 2001 calendar year using five categories: MCLs, treatment techniques, significant monitoring violations, consumer notifications, and variances and exemptions. This report was generated with the data available to Ohio EPA by May of 2002.

1. *Maximum Contaminant Level*

Under the SDWA, U.S. 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. When a public water system exceeds an MCL, they are required to notify the public of the violation within 72 hours for acute violations (e.g. nitrate; total coliform), and within 14 days for nonacute MCL violations (e.g. VOCs; SOCs). In addition, the water system must continue to monitor regularly, as well as take steps to correct the contamination problem.

2. *Treatment Techniques*

For some regulations, the EPA establishes treatment techniques (TTs) in lieu of an MCL to control unacceptable levels of certain contaminants by a measurement of the treatment process. Treatment techniques have been established for viruses, some bacteria, turbidity, lead and copper.

3. *Monitoring*

A PWS is required to monitor and verify that the levels of contaminants present in the water do not exceed the MCL. If a PWS fails to have its water tested as required, then a monitoring violation occurs. A monitoring violation also includes failure to report test results correctly to the State. These violations occur when a system misses one or more of several sampling events, misses one of one sampling event or samples but reports the sample results late to Ohio EPA. When a public water system fails to have its water tested as required, they are required to notify the public of the violation within 30 days. For systems monitoring less frequently than quarterly, they are required to sample for the contaminant(s) missed, in order to return to compliance.

Return to Compliance

As noted in the definition of monitoring violations, systems which monitor less frequently than quarterly can return to compliance. Some systems can return to compliance if they monitor for the missed contaminants. In this report, return to compliance rates were determined for inorganic contaminants, nitrate, nitrite, regulated volatile organic contaminants, synthetic organic contaminants, trihalomethanes and radiological contaminants, as a group.

Significant Monitoring Violations

For this report, significant monitoring violations are defined as any major monitoring violation that has occurred during the specified report interval. A major monitoring violation occurs when no samples were taken or no results are reported during a compliance period.

4. *Consumer Notification*

Every Community Water System is required to deliver to its customers a brief annual water quality report - a Consumer Confidence Report (CCR). This report is to include some educational material, and will provide information on the source water, the levels of any detected contaminants, and compliance with drinking water regulations.

Significant Consumer Notification Violations

A significant public notification violation occurred if a community water system completely failed to provide its customers the required annual water quality report.

5. *Variances and Exemptions*

Variances and exemptions to specific requirements under the SDWA Amendments of 1996 may be granted under certain circumstances. If, due to the characteristics of the raw water sources reasonably available, a PWS cannot meet the MCL, the State can grant the PWS a variance from the applicable primary drinking water regulation on the condition that the system install the best available technology which the Administrator finds is available (taking costs into account). *Ohio did not issue any variances or exemptions during the 2001 compliance year.*

Compliance Table Summary Analysis

A summary table of public water system compliance rates and violations for the 2001 calendar year is included in Appendix A. The information summarized in the table includes the total number of PWS required to monitor during the 2001 calendar year; total number of violations; total number of systems with

a violation; and percent compliance achieved for a particular regulated contaminant in three different violation categories. These violation categories are MCL, Treatment Technique and Monitoring (CCR notification violations have also been included under this heading). The regulatory contaminant categories include: organic contaminants, inorganic contaminants, and radionuclide contaminants, all which are classified as the MCL contaminant group; total coliform bacteria regulations (TCR); surface water treatment regulations (SWTR); lead and copper regulations, and CCR notifications.

Violation totals and compliance rates for each of the contaminant groups are presented in Table 3. Compliance rates are based on the total number of systems *required to* comply with each of the contaminant categories. For example, the 85% CCR compliance rate is based on 1,362 CWS required to send notifications with 206 systems failing to comply. The total number of violations and total number of water systems with at least one violation is presented in Table 4.

Table 3. Violation Totals and Compliance Rates per Contaminant Group Category

| Contaminant Category | MCL | | | Treatment Technique | | | Monitoring or CCR notifications | | |
|-----------------------|------------|----------------------|------------|---------------------|----------------------|------------|---------------------------------|----------------------|------------|
| | Violations | Systems in Violation | Comp. Rate | Violations | Systems in Violation | Comp. Rate | Violations | Systems in Violation | Comp. Rate |
| MCL Contaminant Group | 31 | 18 | 99.7% | | | | 2,306 | 732 | 86.5% |
| TCR | 892 | 620 | 89% | | | | 2,043 | 1,282 | 78% |
| SWTR | | | | 444 | 69 | 62% | 1 | 1 | 99.5% |
| Lead and Copper | | | | 0 | 0 | N/A | 127 | 127 | 88% |
| CCR | | | | | | | 206 | 206 | 85% |

Table 4. Violation Totals and Compliance Rates for the Individual MCL Contaminant Group Constituents

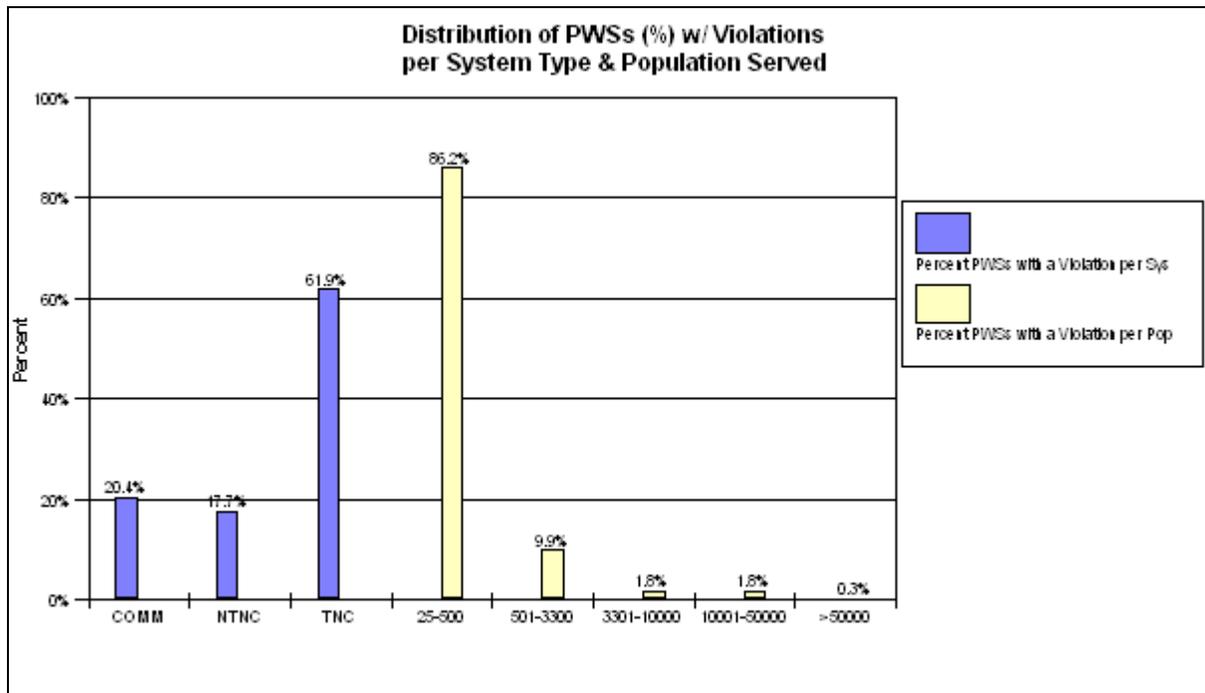
| Contaminant Category | MCL | | | | Monitoring Requirements | | | |
|----------------------|------------|----------------------|------------------------------------|------------|-------------------------|----------------------|------------------------------------|------------|
| | Violations | Systems in Violation | No. of Systems Required to Monitor | Comp. Rate | Violations | Systems in Violation | No. of Systems Required to Monitor | Comp. Rate |
| VOCs | 3 | 1 | 1405 | 99.9% | 188 | 175 | 1405 | 87.5% |
| SOCs | 0 | 0 | 422 | 100.0% | 473 | 83 | 422 | 80.3% |
| TTHMs | 3 | 1 | 129 | 99.2% | 7 | 7 | 129 | 94.5% |
| IOCs | 4 | 3 | 1128 | 99.7% | 851 | 116 | 1128 | 89.6% |
| Nitrate | 17 | 12 | 5434 | 99.7% | 740 | 467 | 5434 | 91.4% |
| Nitrite | 0 | 0 | 173 | 100.0% | 1 | 1 | 173 | 99.4% |
| RADS | 4 | 1 | 595 | 99.8% | 46 | 38 | 595 | 93.6% |

* The number of systems required to monitor for the different IOCs and SOC varies, but 1128 PWS were required to monitor for at least one of the inorganic chemicals, and 422 PWS were required to monitor for at least one of the SOCs. See Appendix A for details.

Table 5. State of Ohio Violation Totals for 2001

| | State of Ohio Data |
|--------------------------------------|--------------------|
| Total Number of Systems in Violation | 2,106 |
| Total Number of Violations | 6,050 |

Figure 1.



As depicted in Figure 1, of all water systems with at least one violation, 61.9 percent were associated with TNC water systems, 17.7 percent with NTNC water systems and 20.4 percent with CWS. Of the PWSs having one or more violations, 86.2 percent were associated with a population served category of serving fewer than 500 people per day.

More than 77 percent of the violations in Ohio occur because public water systems fail to monitor and report for various required contaminants in the period as specified on an individual system monitoring schedule provided by the Director of the Ohio EPA, or as a result of failing to collect follow-up or repeat samples. For systems that can return to compliance, an average of 46 percent returned to compliance following their violation(s). A detailed analysis of each contaminant group and violation category is presented below. When sufficient data was available, charts displaying the number of water systems with a violation per system type and population categories have been prepared and included in this report.

Organic Contaminants

The organic contaminants group summarized in the Compliance Table include: volatile organic chemicals (VOCs); synthetic organic chemicals (SOCs); and total trihalomethanes (TTHMs).

VOCs are predominantly used as solvents, degreasers, cleaning solutions, dry cleaning fluids, and components of pesticides and plastics. These chemicals are described as volatile because of their

tendency to evaporate. They generally enter drinking water systems through spills and improper disposal. VOCs are monitored by all community and NTNC PWSs (and 2 purchased water systems) on one of three schedules based on source type and past monitoring history: one sample quarterly, one sample annually, or one sample in 3 years. During 2001, 1,405 public water systems were required to sample at least once for VOCs. A significant difference to note between monitoring for VOCs and other contaminant groups is that every time a PWS samples for VOCs, they are required to have the sample analyzed for all 21 regulated VOC compounds using one analytical method which scans for all of the compounds. So, for each missed VOC sample, a PWS would have 21 violations for the regulated VOC compounds. This creates an artificially high number of violations for the VOC group as well as the total number of violations issued in Ohio. There are 3,948 individual VOC compound M/R violations. This really represents 188 VOC samples which were not collected. There were 175 of the 1,405 public water systems required to sample during 2001 that failed to collect one or more samples which resulted in a M/R violation. Overall compliance for the VOC M/R is 87.5 percent, down from 90.3 percent in 2000. Approximately 65 percent of the VOC M/R violations were associated with NTNC systems. Of those public water systems with a VOC M/R violation, 82 percent were associated with water systems serving less than 500 people. One system exceeded the MCL of 2 micrograms per liter for vinyl chloride. Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.

VOC Contaminant Group Highlights

- ▶ 1,405 public water systems required to collect VOC samples
- ▶ 99.9 percent compliance with all VOC MCLs
- ▶ 87.5 percent of the public water systems are in compliance for the VOC M/R category
- ▶ 188 VOC group M/R violations; 3,948 individual VOC compound violations
- ▶ 82 percent of the VOC M/R violations occurred at PWS serving less than 500 people

SOCs, which includes primarily pesticides, are monitored by all community and NTNC PWS (and 2 purchased water systems). Some of the SOC are monitored more often than others because they are used in large quantities on Ohio farm fields, like alachlor, atrazine, and simazine. Based on Ohio's pesticide study, systems are required to monitor or monitor more frequently during time periods which are most likely to see occurrence of the contaminants.

Ground water systems monitor for alachlor, atrazine, and simazine at least once every three years. If a ground water system has a detection for one of these SOC, they are required to monitor at a minimum on a quarterly basis. All ground water systems were required to monitor for these three SOC during the April through June quarter, 2001.

Because Ohio's surface water systems are more vulnerable to pesticide contamination, they are required to monitor for alachlor, atrazine, and simazine every year at a much greater frequency, including every-other-week May thru July for systems that have a history of elevated pesticide levels in their finished water.

Systems are required to monitor the remaining 14 SOC's once every three years if they have a mean nitrate measurement greater than 2 mg/L. Nitrate is used as an indicator of a system's susceptibility. Monitoring waivers are granted for systems that have a mean nitrate concentration less than or equal to 2 mg/L. The waivers are granted for a 3-year period and must be renewed when that period lapses.

During the 2001 calendar year, 422 public water systems were required to sample for one or more of the SOC compounds. All of the SOC violations incurred during the 2001 calendar year were related to M/R requirements. No public water systems incurred an SOC MCL during 2001. The overall M/R compliance rate for 2001 is 80.3 percent, down from 87.6 percent from 2000, when only 209 systems were required to monitor.

SOC Contaminant Group Highlights

- ▶ 422 public water systems required to sample for SOC's
- ▶ 100 percent compliance with all SOC MCLs
- ▶ 80.3 percent of the public water systems were in compliance for all SOC M/R
- ▶ 45.7 percent of the M/R violations which occurred were for public water systems serving fewer than 500 people

Total Trihalomethanes (TTHMs), classified as organic disinfection by-products, are sampled in the distribution system by community PWSs that disinfect and have a population of 10,000 or greater. Disinfection by-products are created when organic compounds react with the disinfectant added to the water. (It is important to note that disinfectants are an important part of the control of water-borne pathogens.) PWSs monitor for TTHMs on a quarterly basis. During the 2001 calendar year, 129 systems were required to perform TTHM monitoring. Overall compliance with TTHMs M/R is 94.5 percent, down from 98.6 percent in 2000. One public water system exceeded the MCL of 100 micrograms per liter 3 times during 2001. Some people who drink water containing TTHMs in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer. Compliance with the TTHM MCL is determined by calculating a running annual average at the end of each quarter of monitoring.

TTHM Contaminant Group Highlights

- ▶ 129 community public water systems required to sample for TTHMs
- ▶ 99.2 percent compliance with the TTHM MCL
- ▶ 94.5 percent of the public water systems were in compliance for TTHMs M/R

Figures 2 and 3 show VOC, SOC and TTHM violation numbers by population categories and system types, respectively. For specific information on each contaminant, such as the number of PWSs required to sample a contaminant in 2001 and how many violations occurred for that contaminant, please refer to the Appendix A Compliance Table.

Figure 2.

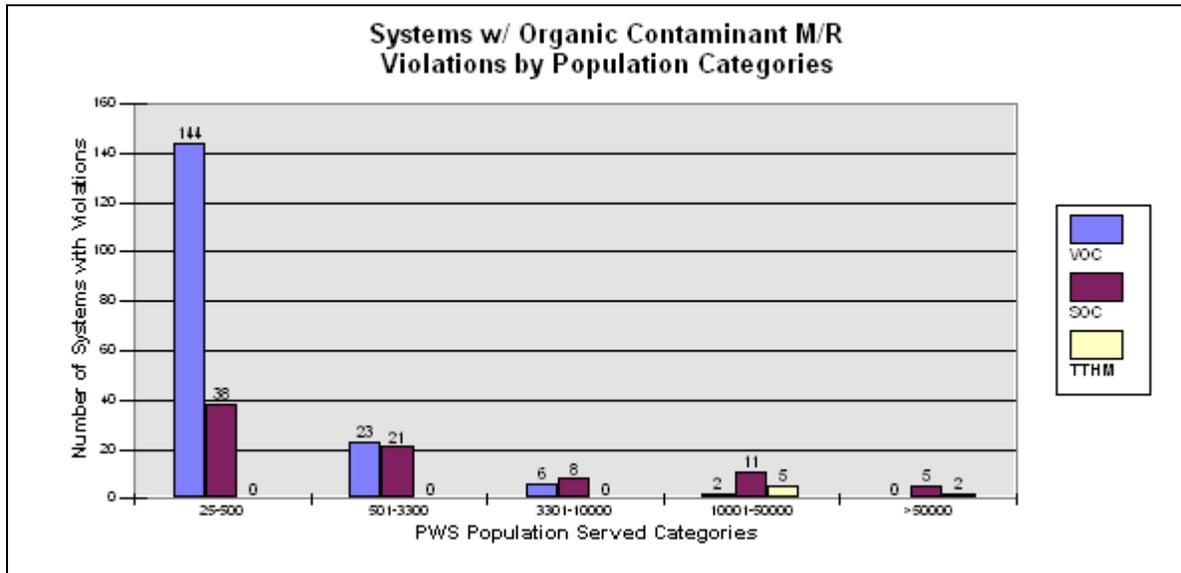
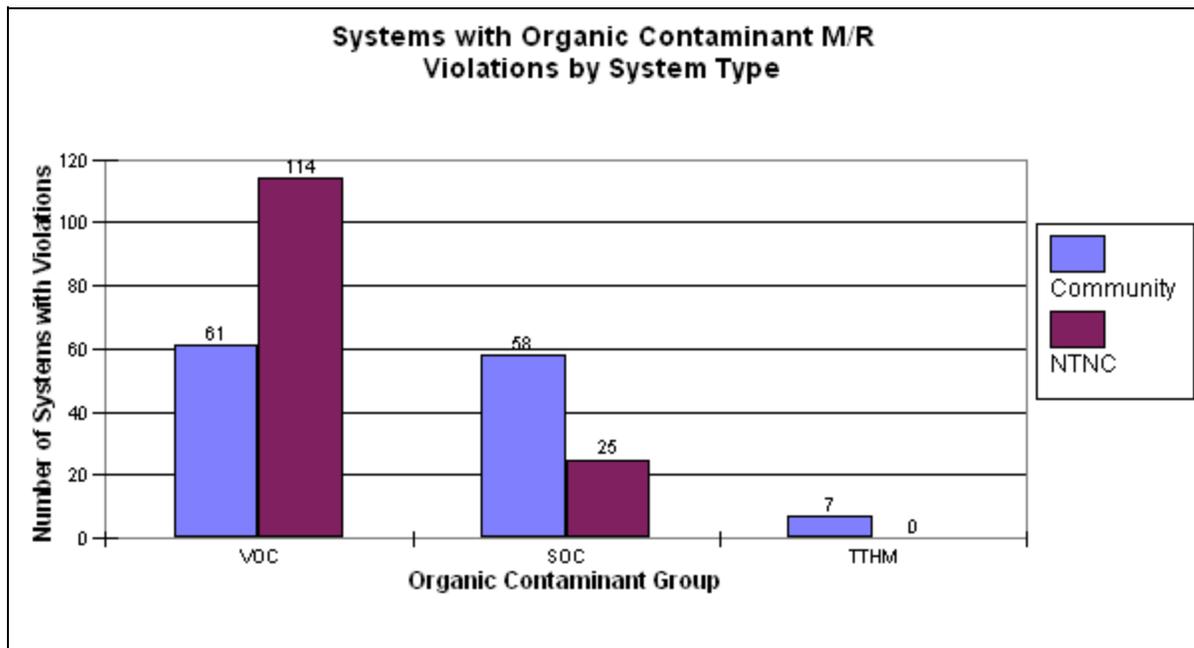


Figure 3.



Inorganic Contaminants

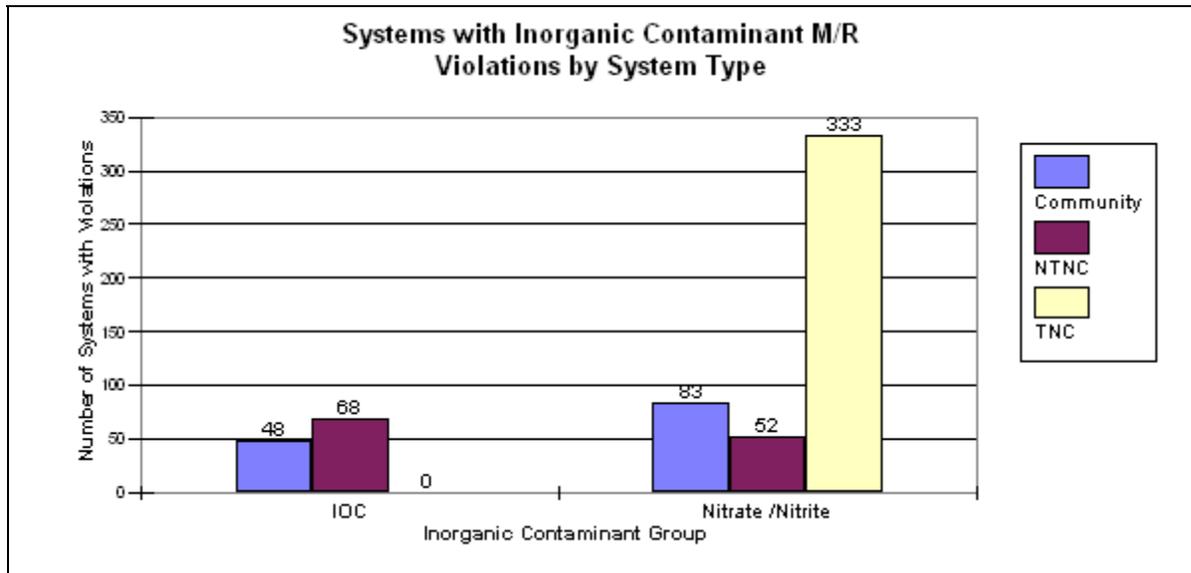
The inorganic contaminant group summarized in the Appendix A Compliance Table includes metals (e.g. chromium, cadmium, mercury, etc.) and non-metal contaminants (e.g. asbestos, cyanide, nitrate, etc.). Many of these naturally occurring chemicals are also used in different manufacturing processes. Nitrate and nitrite are separated out as a group from the other inorganics (IOCs) for monitoring purposes and they are discussed in a separate section below. Both IOC and Nitrate/Nitrite violation numbers are shown in Figures 4 and 5.

Except for nitrate and nitrite, IOCs are monitored by all community and NTNC PWS (and 2 purchased systems). Most IOCs are monitored by surface water systems on an annual basis and by ground water systems once in 3 years. One exception is asbestos, which is monitored once in 9 years. IOC monitoring may also be waived for eligible systems. During the 2001 calendar year, 1,128 public water systems were required to sample for at least one of the 13 individual IOC compounds. The overall M/R compliance rate for the IOC contaminant group is 89.6 percent, down from 93.7 percent in 2000. Of the 116 water systems with an IOC M/R violation, approximately 41% were community water systems, and 59% were non-community water systems. However, 84 percent of all violations were associated with water systems serving less than 500 people. One system exceeded the MCL of 50 micrograms per liter for arsenic. Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer. One system exceeded the MCL of 4 milligrams per liter for fluoride. Some people who drink water containing fluoride well in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth. One system exceeded the MCL of 2 micrograms per liter for mercury. Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.

IOC Contaminant Group Highlights

- ▶ 1,128 public water systems were required to sample for at least one IOCs
- ▶ 99.7 percent compliance with all IOC MCLs
- ▶ 89.6 percent of the public water systems were in compliance for IOC M/R
- ▶ 84 percent of the M/R violations were associated with public water systems serving fewer than 500 people

Figure 4.



Nitrate contamination of drinking water usually results from runoff of agricultural fertilizers, or from human or animal wastes, such as feedlots or faulty septic systems. Nitrite is the reduced form of nitrate, and is usually found in nature at lower levels than nitrate. Nitrate/nitrite, as a combined group, are monitored by all community, NTNC, and TNC PWS (and 2 purchased systems). Nitrate is monitored monthly by surface water systems, ground water systems under the direct influence of surface water, and by systems using treatment to remove nitrate. Ground water systems monitor annually for nitrate. Some ground water systems may be monitoring quarterly for nitrate based upon the levels reported in previous sampling. Since the requirements have become effective, nitrite, as a single contaminant, has been monitored for only once by each system. Occurrence of nitrate, nitrite or nitrate/nitrite may require the systems to do additional monitoring. During the 2001 calendar year, 5,434 water systems were required to monitor for nitrate and 173 water systems were required to monitor for nitrite.

The compliance rate for nitrate M/R during 2001 is 91.4 percent, and 99.4 percent for nitrite. The overall compliance rate for nitrate/nitrite M/R is 91.4 percent, down from 93.1 percent in 2000. Of the 468 water systems with a nitrate/nitrite violation during the 2001 calendar year, 71 percent were issued to TNC water systems and approximately 88 percent were associated with systems serving fewer than 500 people.

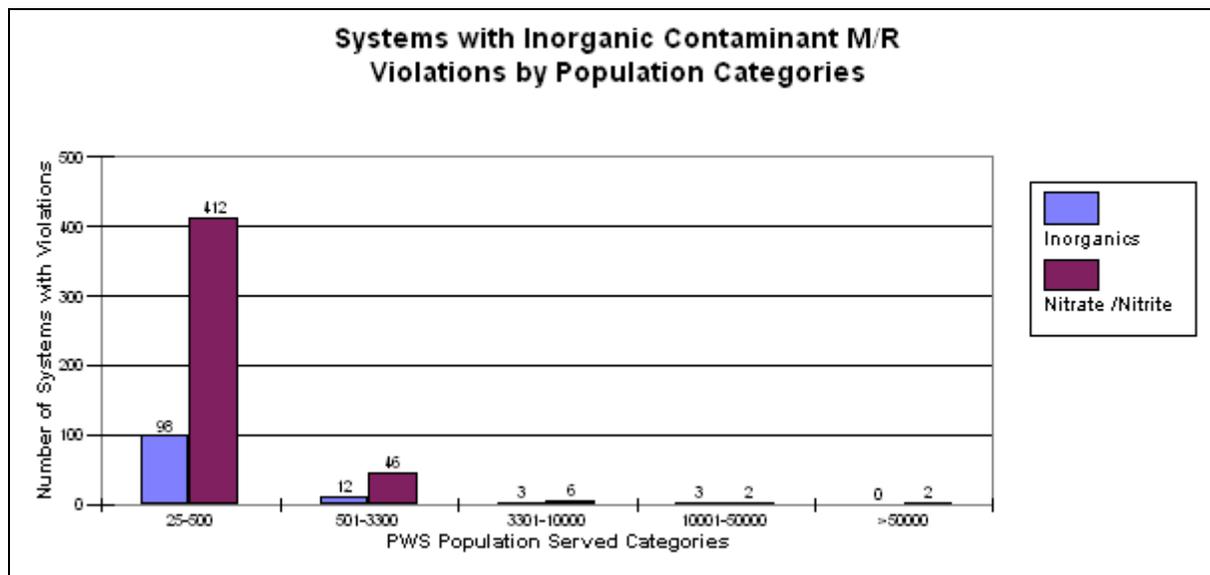
The highest number of MCL violations for any chemical parameter was associated with nitrate. During the 2001 calendar year, 17 nitrate MCL violations occurred at 12 water systems. These occurrences typically last for a short duration if they occur in a surface water system. There were no MCL violations for nitrite during 2001. Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

Nitrate/Nitrite Contaminant Group Highlights

- ▶ 5434 public water systems were required to sample for nitrate and/or nitrite
- ▶ 99.7 percent compliance rate for nitrate MCLs
- ▶ 100 percent compliance rate for nitrite MCLs
- ▶ 17 nitrate MCL violations occurred at 12 water systems
- ▶ 91.4 percent of the public water systems were in compliance for nitrate M/R
- ▶ 99.4 percent of the public water systems required to monitor were in compliance for nitrite M/R
- ▶ 91.4 percent compliance for overall nitrate/nitrite monitoring
- ▶ 88 percent of the M/R violations were associated with public water systems serving fewer than 500 people

For specific information on each contaminant, such as the number of PWSs required to sample a contaminant in 2001 and how many violations occurred for that contaminant, please refer to Appendix A-Compliance Table.

Figure 5.



Radionuclide Contaminants

The radionuclide group, which includes the contaminants gross alpha, gross beta, radium-226 and radium-228, occurs from the erosion or decay of natural and manmade deposits. Radium-226 and radium-228 are only monitored individually when a PWS exceeds the gross alpha action level of 5 pCi/L.

Radionuclides are monitored by all community PWSs (and 2 purchased systems). Initially, systems monitor for radionuclides quarterly, then annually for surface water systems, and once every 3 years for ground water systems. If the MCL is exceeded, systems return to quarterly monitoring. During the 2001 calendar year, 595 water systems were required to monitor for radionuclides. The overall radionuclide MCL compliance rate is 99.8 percent. Only one water system incurred MCL violations for radium

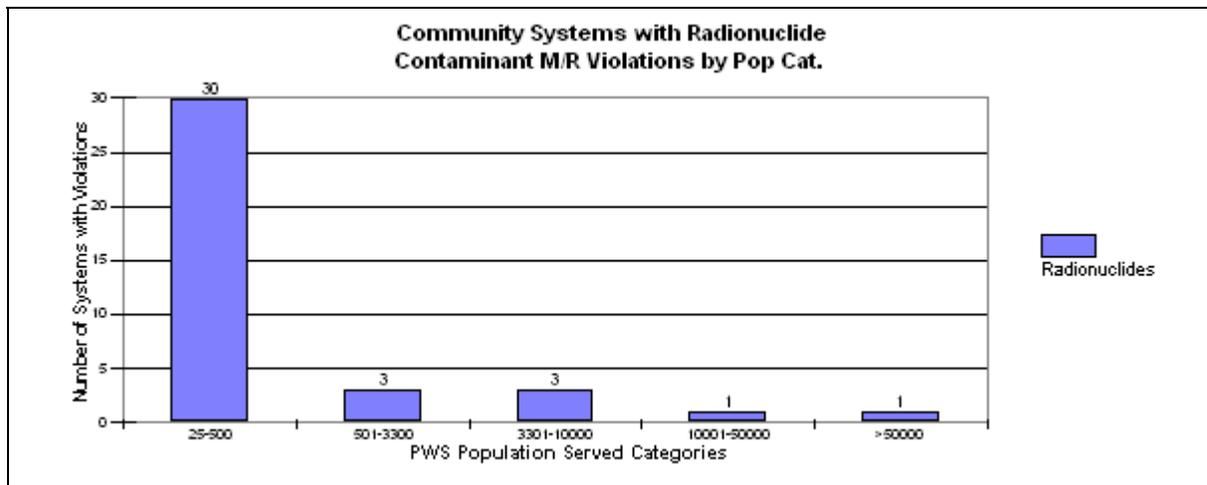
226/228. Some people who drink water containing radium 226 or 228 in excess of the MCL of 5 picocuries per liter over many years may have an increased risk of getting cancer. The overall compliance rate for radionuclide M/R is 93.6 percent, which is down from 97.5 percent in 2000. Of the 38 water systems with a violation during the 2001 calendar year, 79 percent were associated with systems serving fewer than 500 people.

Radionuclides Contaminant Group Highlights

- ▶ 595 public water systems were required to sample for radionuclides
- ▶ 99.8 percent compliance rate for radionuclide MCLs
- ▶ 4 radium 226/228 MCL violations occurred at 1 water system with a population <500
- ▶ 93.6 percent of the water systems were in compliance for radionuclides M/R
- ▶ 79 percent of the M/R violations were associated with public water systems serving fewer than 500 people

For specific information on each contaminant, such as the number of PWSs required to sample a contaminant in 2001 and how many violations occurred for that contaminant, please refer to Appendix A.

Figure 6.



Total Coliform Regulations

The total coliform regulations determine if microbiological contaminants are present in drinking water and if contaminants are detected if they are indicative of an unsafe type. Total coliform is a family of bacteria which contain pathogenic as well as harmless organisms. Total coliform, alone, is not used to determine if contamination exists. Fecal and *E. coli* bacteria are specific types of coliform bacteria which are associated with animal waste and can indicate a breakdown in treatment or some other influence of animal waste, including failing septic systems. In Ohio, a total coliform (TC) test is used initially to indicate whether or not microbiological contaminants are present. If a sample is TC positive (microbiological contaminants are present), further analysis for either fecal coliform and *E. Coli* and the collection of additional samples are required to determine if contamination is present. TC is monitored by all PWSs. The frequency of TC testing and the number of samples collected is dependent upon the type of PWS, the

population served and source type. Sampling requirements range from as few as one TC sample per quarter for TNC water systems to hundreds of TC samples per month for large community water systems. Ohio's minimum monitoring requirements of one sample per quarter can be up to four times as frequent as the federal requirements. Two types of MCL violations, acute and non-acute, are associated with the total coliform regulations. An acute violation occurs when more than one sample is total coliform positive and at least one sample contains *E. coli* or fecal coliform bacteria. An acute violation also occurs when an insufficient number of samples are collected following one or more TC positive samples. Non-acute MCL violations occur when greater than 5 percent (or 2 or more samples if collecting less than 40 samples) of all the samples collected are TC positive.

During the 2001 calendar year, the compliance rate for TC acute MCL violations is 89 percent (87% in 2000) and 78 percent for non-acute MCL violations (77.6% in 2000). Of the water systems with TC MCL violations, 76 percent were associated with TNC water systems, and 94 percent were associated with water systems serving less than 500 people. The majority of the acute MCL violations (81%) can be attributed to a water system's failure to collect a sufficient number of confirmation samples following a positive total coliform sample. Although this is most protective of public health, Ohio EPA can not determine if true contamination is present. Major routine and follow-up M/R violations for the TC regulations are incurred by water systems when they fail to sample or report all of the required samples during a given monitoring period. Of the water systems with one or more major routine and follow-up M/R violations, 81 percent were associated with TNC water systems and 95 percent were associated with water systems serving less than 500 people.

Total Coliform Contaminant Group Highlights

- ▶ 5,718 public water systems were required to sample for TC
- ▶ 89 percent compliance with the acute MCL
- ▶ 78 percent compliance with the TC M/R requirements
- ▶ 95 percent of the M/R violations and 94 percent of MCL violations were associated with public water systems serving fewer than 500 people, mostly TNC water systems

Figure 7.

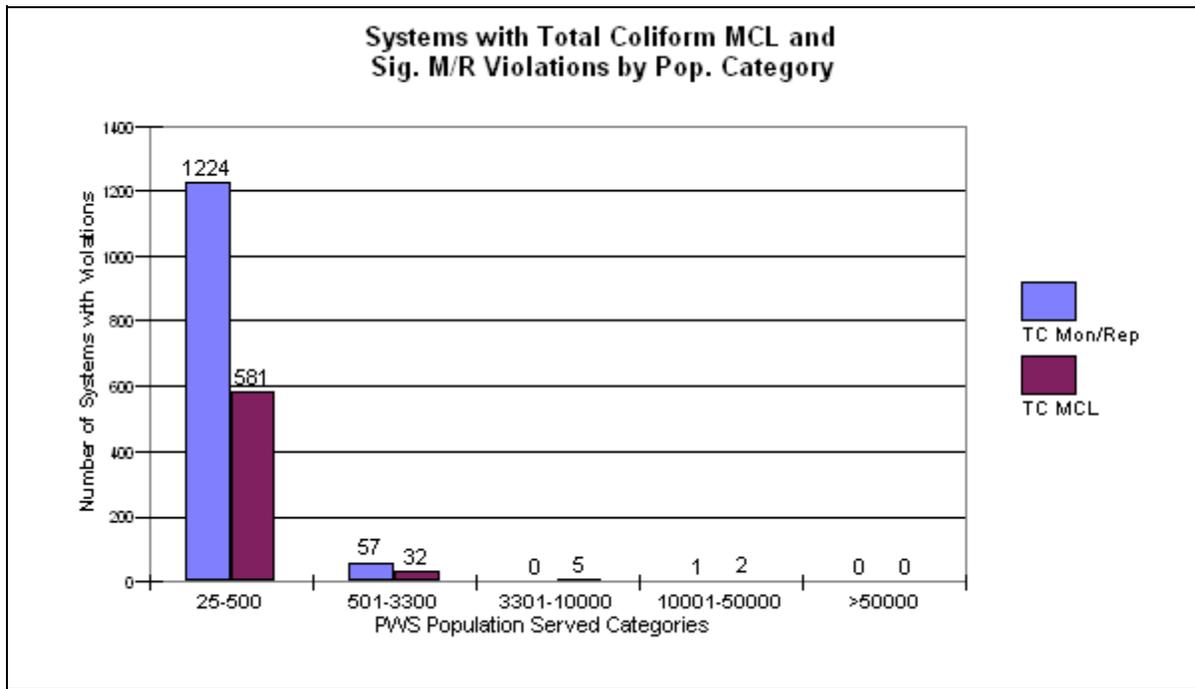
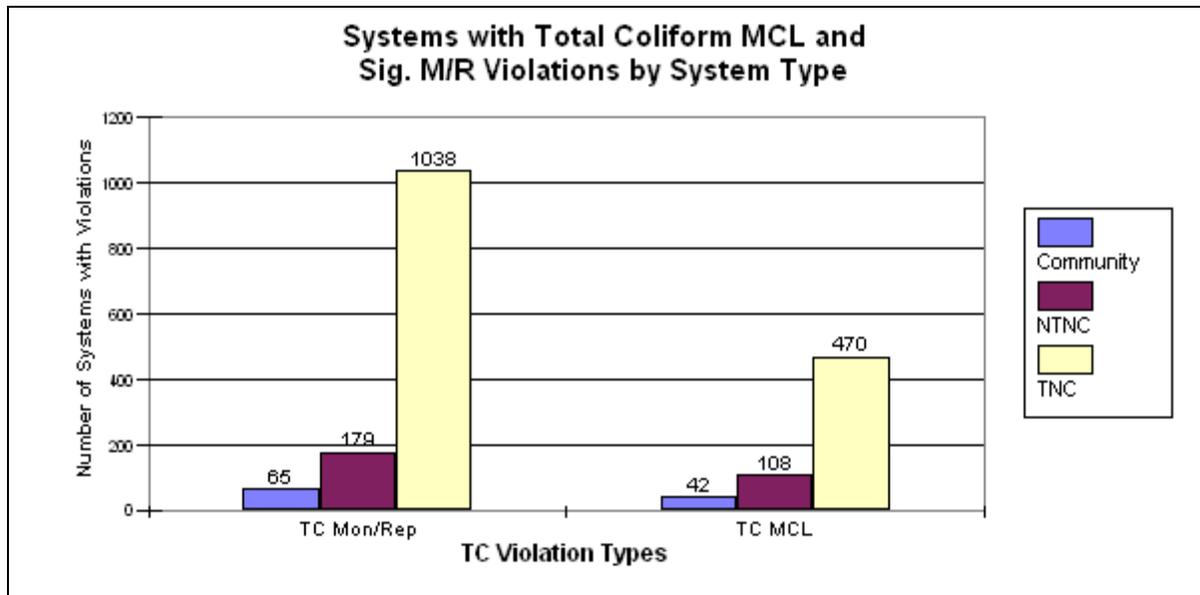


Figure 8.



Surface Water Treatment Regulations

The surface water treatment regulations (SWTR) in Ohio establish treatment and monitoring standards for water systems that have sources designated as surface water or ground water under the direct influence of surface water. Ground water under the direct influence of surface water are systems that use wells to obtain their water, but the water quality is subject to the influence of surface water. The influence of surface water can be from unacceptably constructed wells to the type of aquifer from which the system is drawing. Public water systems subject to these regulations are required to provide filtration and disinfection of the water. The surface water treatment requirements are designed to inactivate or kill pathogens found in surface water. Water quality tests are performed on the water to ensure treatment is being maintained to a set standard that should prevent contamination. Tests include evaluation and measurement of sufficient chlorination contact time, filtration type and effectiveness, turbidity levels, and residual chlorine levels in the distribution system. Failure to meet one or more of these standards results in a monthly treatment technique (TT) violation. During the 2001 calendar year, 182 water systems were subject to the SWTR TT and M/R requirements. The overall SWTR TT compliance rate is 62 percent (82.7% in 2000). The majority of water systems with these violations are the systems designated ground water under the direct influence of surface water (GUDI). GUDI systems have 18 months, by rule, to eliminate the causes of the GUDI designation or install surface water treatment. Many small systems have exceeded the 18 month time period in 2001 and are accumulating TT violations. The overall compliance rate for SWTR M/R is 99.5 percent (99.6% in 2000). Of the 69 water systems with a TT violation during the 2001 calendar year, 72 percent were associated with systems serving fewer than 500 people.

SWTR Contaminant Group Highlights

- ▶ 182 public water systems were subject to the SWTR monitoring and treatment requirements
- ▶ 62 percent of the public water systems were in compliance with the TT requirements
- ▶ 99.5 percent of water systems which provide treatment were in compliance with the SWTR M/R requirements
- ▶ 72 percent of the water systems with a TT violations were associated with water systems serving fewer than 500 people

Figure 9.

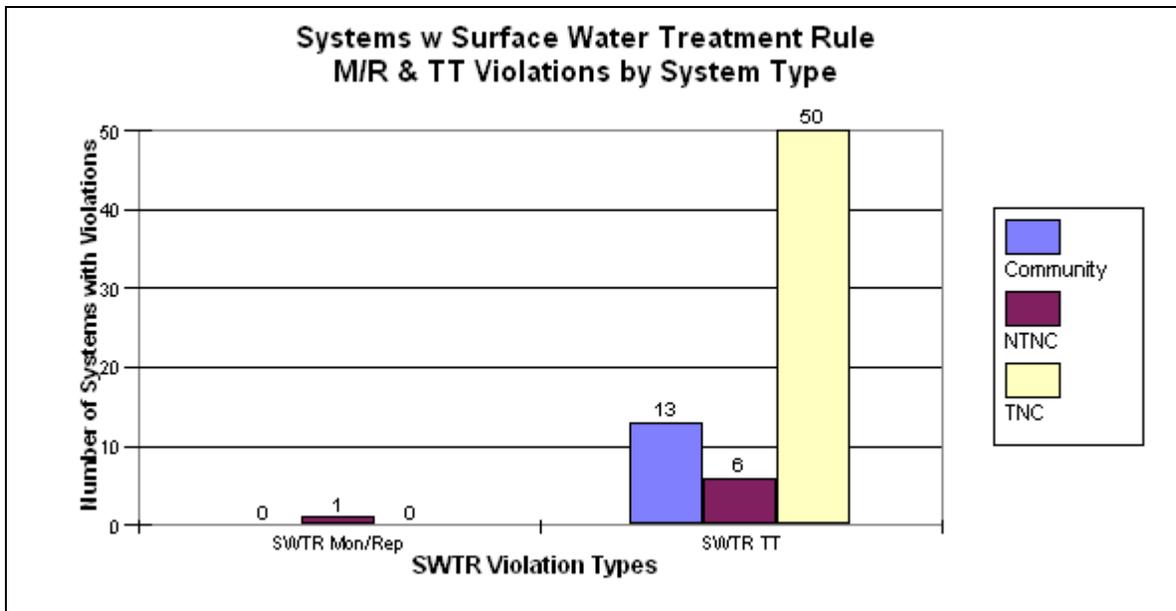
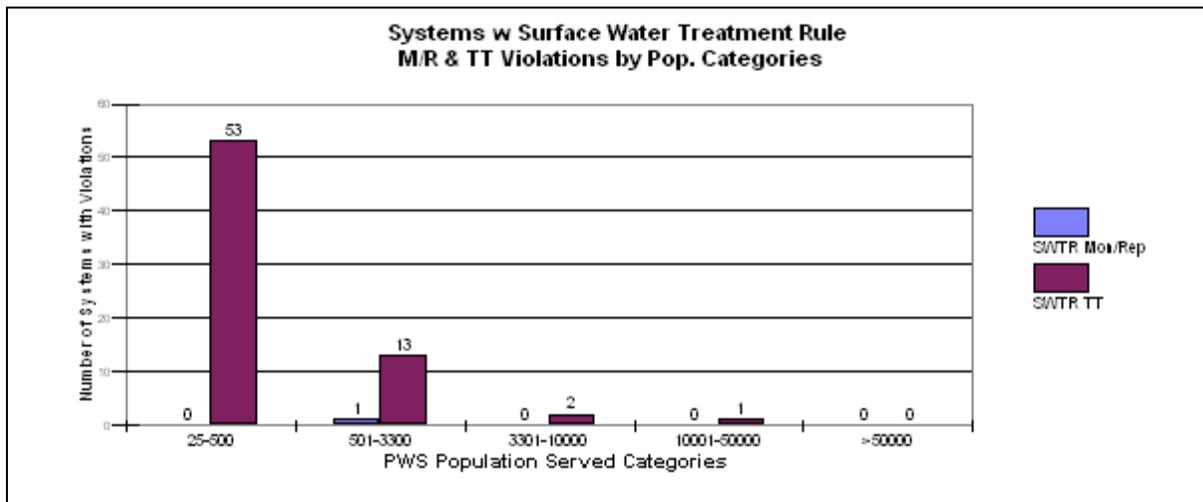


Figure 10.



Lead and Copper Regulations

The lead and copper regulations in Ohio establish standards for levels of lead and copper in the distribution systems of community and NTNC public water systems. During the beginning phases of monitoring, these public water systems are required to perform initial monitoring during two consecutive six month periods. Following completion of these periods, routine annual or triennial monitoring periods are required. For the 2001 calendar year, 154 water systems were required to perform initial monitoring and 912 systems were required to perform either annual or triennial monitoring. In addition, 33 systems were required to perform public education notifications due to an exceedance of the lead action level. The overall compliance for lead and copper monitoring is 88 percent (89.7% in 2000). Of the 127 water systems with lead and copper violations, 91 percent were associated with systems serving fewer than 500 people.

Lead and Copper Contaminant Group Highlights

- ▶ 1,099 public water systems were required to perform initial, annual or triennial monitoring and public education requirements
- ▶ 88 percent of water systems were in compliance with the lead and copper M/R requirements
- ▶ 91 percent of the water systems with a lead and copper M/R violation were associated with public water systems serving fewer than 500 people

Figure 11.

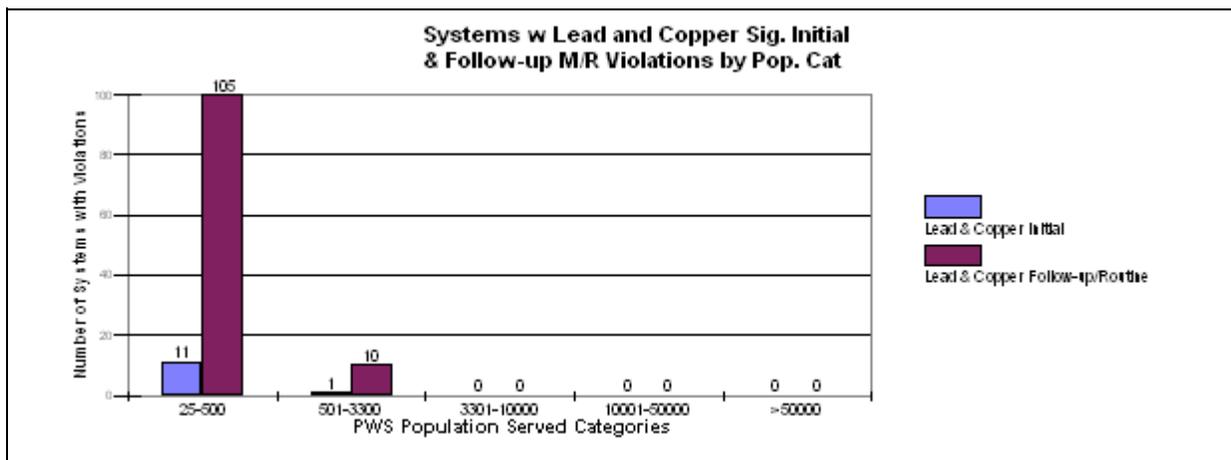
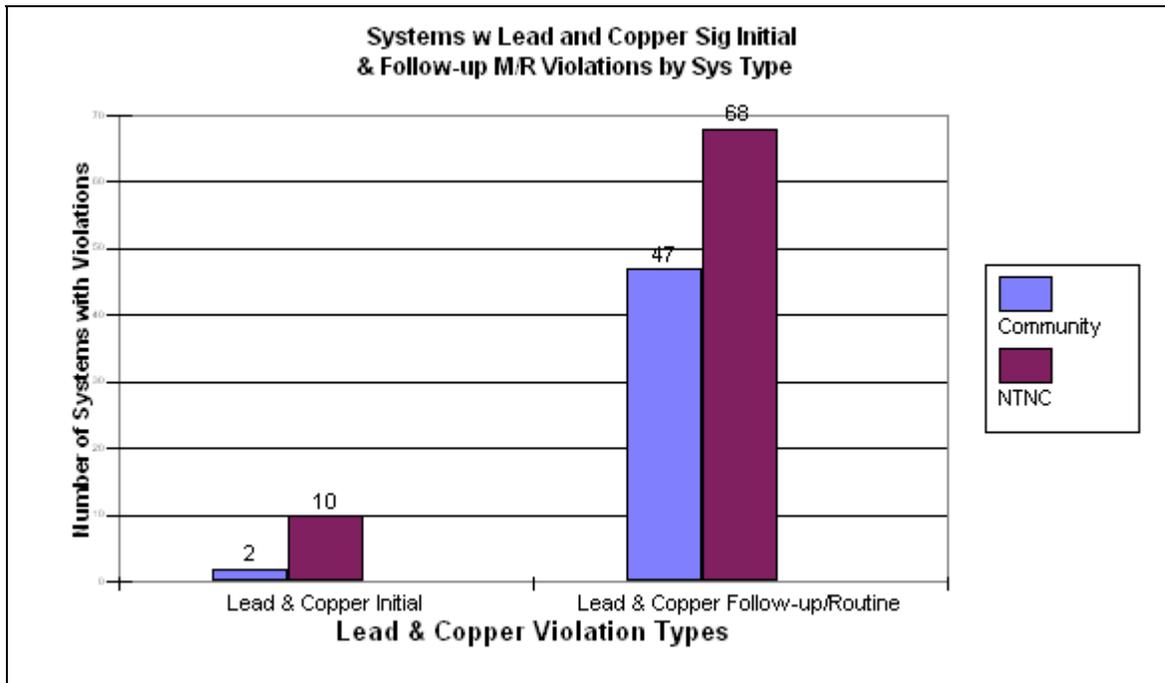


Figure 12.



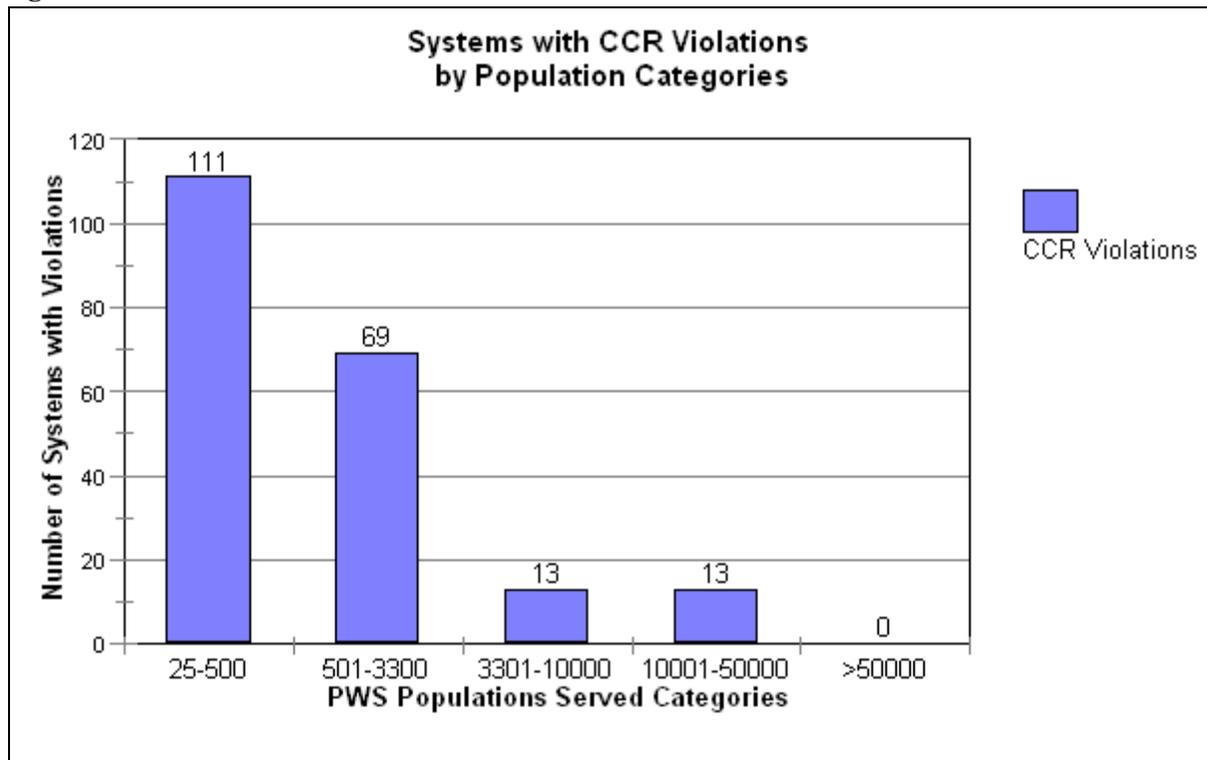
Consumer Confidence Reports

Every Community Water System is required to deliver to its customers a Consumer Confidence Report (CCR). This report is to include some educational material, provide information on the source water, levels of any detected contaminants, and compliance with drinking water regulations. A significant public notification violation occurred if a community water system completely failed to provide its customers the required annual water quality report. A total of 1,362 community water systems were required to provide their customers with a CCR. For the 2001 calendar year, 67 systems failed to provide this report in violation of these requirements, and 139 systems that provided a CCR did not include all the required content which resulted in a violation. Of the 206 systems failing to meet these requirements, 54 percent were communities serving less than 500 people. Figure 13 shows the breakdown of community water systems in violation by population served. The overall compliance for CCR requirements is 85 percent (92.4% in 2000).

Consumer Confidence Report Highlights

- ▶ 1,362 public water systems were subject CCR requirements
- ▶ 85 percent of the water systems were in compliance with the requirements
- ▶ 54 percent of the systems that had CCR notification violations were associated with systems serving less than 500 people

Figure 13.



Ohio EPA's Public Water System Compliance Assistance

Ohio EPA employs various methods to assist public water systems in achieving compliance with the Safe Drinking Water Act regulations. Some of the methods that may be used include: providing a sampling and monitoring schedule for each public water system; offering technical assistance during facility inspections (sanitary surveys) and follow-up visits; assisting in investigations of contamination; performing investigatory monitoring; providing off-site assistance through phone calls and meetings; providing outreach training sessions for new rules and treatment; assistance in finding funding for projects; providing operator and laboratory personnel training sessions; distributing reminder postcards and/or contacting the water systems towards the end of the monitoring period to ensure collection of the required samples; and sending notice of violation letters for failure to meet the requirements for each specific regulation. The use of these methods is based on the availability of Ohio EPA personnel and resources. Activities such as follow-up visits, contamination investigation, sampling, outreach training, distributing reminder post cards and other reminders to sample were curtailed due to a reduction in funding. In particular, the small GUDI systems have not received the compliance assistance that is necessary to meet the 18 month compliance date and for the large part, remain unaddressed. Compliance rates were impacted, at least in part, by Ohio EPA's reduction in technical assistance.

In the next several years, Ohio EPA will be required to implement several new rules directly related to disinfection by-products, arsenic, additional radiological contaminants, ground water source monitoring, as

well as other contaminants. Currently, no additional funding will be granted, and more reductions in funding are expected. Additional funding for public water systems to meet the new requirements is also not anticipated. As a result, there will be less resources available to spend on compliance assistance, something that public water systems need more of as they face the challenge of meeting all of the new requirements.

Listing of Maximum Contaminant Level and Treatment Technique Violations

Appendix B contains a listing of all violation types related to the MCL and TT regulation categories. The listing is ordered by water system identification number and violation date. Violation type or contaminant codes associated with the violations are defined in the Appendix A Compliance Summary Table. Included in the violation listing are enforcement action type codes (e.g. A, E, G, etc) associated with each violation. These are the particular actions the State of Ohio took to address each violation with the water system. Table 6 describes the enforcement action type codes used in Appendix B. Not all violations are required to have a compliance achieved enforcement action type code associated with them when a public water system has returned to compliance. In particular, the total coliform (code 3100) MCL violations listed do not have the returned to compliance enforcement code associated violations while almost all systems have returned to compliance. A return to compliance for these violations is determined by lack of subsequent on-going violations.

Table 6. Enforcement Action Type Code Descriptions

| Enforcement Action Type Code | Description |
|------------------------------|--|
| A | Notice of Violation Letter sent to Public Water System |
| C | Technical Assistance Visit, Meeting, or Investigation |
| E | Request for System to Public Notice |
| F | Public Notice received from Public Water System |
| G | Ohio EPA News Release (Public Notice) |
| H | Boil Water Order |
| J | Division, Notice of Violation Warning Letter |
| K | Bilateral Compliance Agreement Signed |
| L | Administrative Order without penalty |
| O | Administrative Order with penalty |
| Q | Civil Case Filed |
| R | State Consent Decree or Consent Judgement |
| X | Compliance Achieved |
| 9 | Civil Case Referred to Attorney Generals Office |

A list of violations can also be viewed using the Internet at U.S. EPA's site known as "Envirofacts". This Internet site provides access to a subset of data available from U.S. EPA's Safe Drinking Water Information System (SDWIS). Using the Envirofacts website allows the user to select by state, county, public system name, public water system identification number and population size to obtain general facility information and violation information for public water systems in Ohio. The Internet address for this Envirofacts site is http://www.epa.gov/enviro/html/sdwis/sdwis_query.html.

Report Availability and Contact Information

The 2001 summary report may be obtained by writing to the State of Ohio at: PWS Annual Compliance Report, Ohio EPA - DDAGW, P.O. Box 1049, Columbus, OH 43216-1049. In addition, this summary report has been posted on the Ohio EPA's Website at

<http://www.epa.state.oh.us/ddagw/annualreports.html>.

For further information concerning this report, you may contact Rick Magni or Beth Messer with the Ohio EPA Division of Drinking and Ground Waters at (614) 644-2752. If you have questions concerning the specific violations associated with individual water systems, contact your local Ohio EPA District Office in your region.

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APPENDIX A:

COMPLIANCE SUMMARY TABLE

APPENDIX B:

MCL and TT VIOLATION LISTING
