

Drinking Water Quality¹

Grade: A-

Drinking water supplied by the Dayton Water Department to Dayton residents and to most Montgomery County residents meets or exceeds federal standards and meets many of the federal goals for the 83 substances that are regulated by the U.S. EPA. In addition, the city has an exemplary program to prevent contamination of the groundwater that supplies drinking water. However, one-third of county residents are served by smaller water systems that have had a history of not meeting federal health standards.

An important measure of drinking water quality is –

➤ **Is the water safe to drink?**

A new tool to help answer this question is the Consumer Confidence Report (CCR), which community water systems with at least 15 service connections serving residents year-round are required to deliver annually to their customers. The report lists some of the contaminants in the drinking water and how the levels compare to federal health standards, referred to as Maximum Contaminant Levels (MCLs).

The CCR can help to answer the following questions:

- 1. What are some of the contaminants that are in the drinking water and what are their levels?**
- 2. Does the drinking water meet health standards?**
- 3. What are the major sources of water pollution?**
- 4. What are the state and local authorities doing to improve the water quality?**
- 5. Are state and local efforts sufficient to ensure optimal drinking water quality?**

1. What are some of the contaminants that are in the drinking water and what are their levels?

Dayton's Department of Water delivers drinking water to all of the residents of Dayton and many other communities in Montgomery County. The city operates two well fields – the Miami and the Mad River well fields – including 6,280 acres and approximately 160 monitoring wells that surround the 107 production wells. Dayton's Consumer Confidence Report (see below) identifies the concentrations of contaminants found in the drinking water compared to EPA's Maximum Contaminant Levels (MCLs) for those contaminants.

Setting Health Standards

EPA sets MCLs based on a risk assessment process that estimates the cancer and noncancer risks of prolonged exposure to that contaminant. The levels are also based on the ability of various technologies to remove the contaminant and the cost of treatment.

The MCL goals (MCLGs) are generally lower than MCLs, and could be a more accurate estimate of the maximum levels that should be allowable in the water. Below this level there is no known or expected risk to health.

¹ Montgomery County's drinking water originates from groundwater sources. While groundwater and surface water (such as the Great Miami and Mad rivers) can intermingle, most of the issues are different, and they are being tackled separately within this report.

**Dayton Department of Water
Consumer Confidence Report 1999 (1998 Data)**

Regulated Substance	Sources of Contaminants	EPA Regulations		Dayton Water	
		MCL	Ideal Goal (MCLG)	Highest Level Detected	Range of Detection
Alpha Emitters (pCi/l)	Erosion of Natural Deposits	15	0	4.3	
Fluoride (ppm)	Natural Geology/Supplement	4	4	1.12 Avg.	[0.23, 1.7]
Nitrate (ppm)	Fertilizer Runoff/ Natural Geology	10	10	2.04	[0.04, 2.04]
Turbidity (NTU)	Lime Softening Residuals. Measures Performance of Sand Filters	TT=5 TT>95% must be <0.5	N/A	0.79 99% (1)	[0.02, 0.79]
Carbon Tetrachloride (ppb)	Industrial Activities	5	0	0.32	[0, 0.32]
Cis-1,2-dichloroethylene (ppb)	Discharge from Industrial Chemical Factories	70	70	0.85	[0, 0.85]
Dichloromethane (ppb)	Discharge from Factories	5	0	0.61	[0, 0.61]
Trichloroethylene (ppb)	Discharge from Factories	5	0	0.63	[0, 0.63]
Vinyl Chloride (ppb)	Discharge from Factories	2	0	0.37	[0, 0.73]
Trihalomethanes (ppb)	By-Product of Chlorination	100	0	30 Avg.	[11, 32]
Coliform Bacteria (% Positive samples/month)	Naturally Present in the Environment	0.05	0	0.8% (2)	
Lead (ppb)		AL=15	0	4.8	5 Samples > AL (3)
Copper (ppb)	Corrosion of Household Plumbing Materials	AL = 1300	1300	74	No Samples > AL
Not Regulated by EPA					
Bromodichloromethane (ppb)		N/A	N/A	3.7 Avg.	[0.8, 10.3]
Bromoform (ppb)		N/A	N/A	1.8 Avg.	[0, 2.8]
Chloroform (ppb)	By-Product of Chlorination	N/A	N/A	2.5 Avg.	[0, 9.2]
Dibromochloromethane (ppb)		N/A	N/A	4.4 Avg.	[0.5, 10.2]
Haloacetic Acids (ppb)		N/A	N/A	6 Avg.	[5, 8]
Haloacetonitriles (ppb)		N/A	N/A	2.7 Avg.	[2, 3]
Chloral Hydrate (ppb)		N/A	N/A	0.5 Avg.	[0, 0.5]

- (1) 99% was lowest monthly percentage of samples < 0.5 NTU.
- (2) Only one of the 1499 distribution samples was positive for coliform bacteria. The repeat samples were negative.
- (3) 232 samples from high-risk homes were tested. Lead was not detected in most samples.

NTU: Nephelometric Turbidity Units (measure of "cloudiness")

TT: Treatment Technique –technique intended to reduce the level of a contaminant in drinking water

AL: Action Level – the concentration of a contaminant, which, if exceeded, triggers treatment or other requirements for a water system

Pci/l: picocuries per liter (a measure of radioactivity)

ppm: parts per million

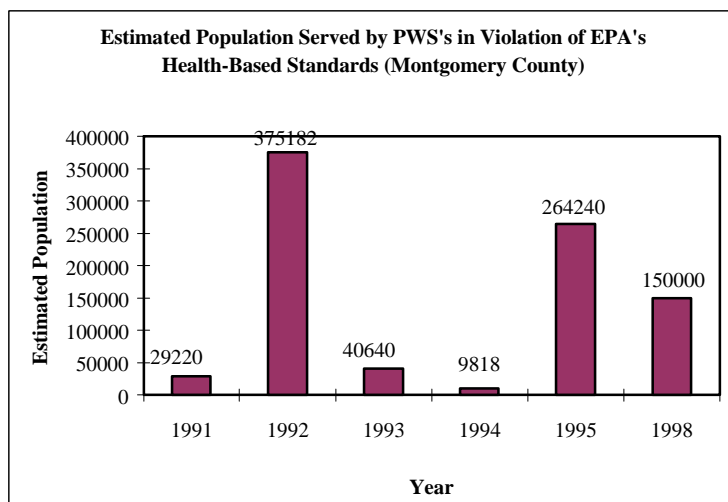
ppb: parts per billion

N/A: not applicable

2. Does the drinking water meet health standards?

The 1999 CCR Report for the Dayton Department of Water shows that the contaminants that are found in Dayton's drinking water are well below the MCL; in fact, the contaminant levels are often even near or below the MCL Goals, which are lower than the standards. This water comes from a groundwater source – the Great Miami Valley Buried Aquifer – which is pumped to the Miami and the Ottawa Water Treatment Plants where it is treated before entering pipes to homes and businesses. EPA has no records that these treatment plants violated any monitoring or health-based requirements since 1993, the earliest date for which this information is widely available. Dayton's water therefore performs well compared to EPA's regulations.

Some of the other public water systems in Montgomery County did not fare as well, however. The following chart illustrates how many people in the county have been affected by a violation of EPA's health-based standards (there can be some duplication as some systems have multiple violations)



(Source: U.S. EPA, <http://www.epa.gov>)

The tables below show how many health-based and monitoring violations other facilities in Montgomery County had between 1993 and 1999. Contact your

How to read a CCR and what is missing?

To determine the quality of your drinking water, compare the "highest level detected" with its MCL (Maximum Contaminant Level). To meet US EPA standards, the highest level detected should be below EPA's MCL. Ideally, the detected levels should be below the MCL Goal. The MCLG is the level of a contaminant in drinking water below which there is no known or expected risk to health. For more information on the risks from specific chemicals, refer to EPA

(<http://www.epa.gov/safewater/ccr/ccr-frne.html>) and Scorecard

(<http://www.scorecard.org>).

While the annual CCR, which was mandated by the Safe Drinking Water Act Amendments of 1996, is useful for residents to understand what may be in their drinking water, the information is limited in scope.

First of all, the U.S. EPA has only determined the maximum allowable levels for 83 of the hundreds of possible contaminants. Of these, only the ten or 15 pollutants that are most relevant to the city or region are included in the CCR.

Furthermore, a CCR only describes the water as it leaves the water treatment facility and does not take into account substances, such as lead, that may increase on the way to the tap.

Finally, the CCR does not indicate the specific facilities or activities that are causing water pollution, making it more difficult to remedy the problem. In fact, several of the contaminants, such as chlorine and haloacetic acids, come from the treatment itself. In many urban areas, the largest point source of pollution to waterways is the sewage treatment plant. To find the sources of the contaminants in your area, refer to your local water department.

local drinking water provider for more information on its violations. For more information on the water supplied by the Dayton Department of Water, call (937) 333-3734.

Facilities with Health-Based Violations

Facilities with Monitoring Violations

Facility	Population Served	Number of Violations	Facility	Population Served	Number of Violations
Montg. County Water System #2	10,9000	1	Huber-Heights Plant #2	9,750	2
Huber-Heights Plant #1	29,250	1	City of Trotwood	8,816	3
Montg. County Water System #1	15,000	2	Village of Germantown	5,020	64
City of Trotwood	8,816	1	Municipality of Brookville	4,880	2
City of Union	6,400	2	Village of New Lebanon	4,320	2
Village of Germantown	5,020	20	Village of Farmersville	932	2
Village of New Lebanon	4,320	2	Voyager Village Mobile Home Park	450	59
Village of Farmersville	932	2	Pineview Estates MHP	400	1
Brookville Lake Estates	216	1	Brookville Lake Estates	216	6
Cains Mobile Home Court	70	21	Catalpa Grove MHP	74	2
Shady Acres Mobile Home Park	48	2	Cains Mobile Home Court	70	117
			Shady Acres MHP	48	3

(Source: EPA Envirofacts, http://www.epa.gov/enviro/html/sdwis/sdwis_query.html)

3. What are the major sources of drinking water pollution?

Dayton Department of Water’s CCR notes that some general sources for pollutants, in particular fertilizer run-off and industrial activities, but does not provide specific information about what type of industrial activity is the cause. Contact the Dayton Water Department for information on sources of specific contaminants.

4. What are state and local authorities doing to improve water quality?

The Dayton Water Department operates the Miami and Ottawa Water treatment plants, which provide drinking water to area residents. State and federal rules set monitoring requirements and health standards that the department must meet (although over the past few years, individual states have been allowed to take more control over the protection of their watersheds and drinking water). Generally, the larger the population served by the drinking water system, the more frequent the monitoring and reporting requirements. Monitoring requirements also vary according to the contaminant that is being evaluated – while lead levels only need to be checked every 6 months, coliform levels must be tested every month.

While polluted water can be treated to be drinkable, many treatment costs can be reduced or avoided by making sure that the sources of drinking water are not contaminated. Furthermore, treatment is not always foolproof—operator error and equipment problems can have deadly

results. One such incident was the 1993 Cryptosporidium outbreak in Milwaukee, which killed 103 people. While Cryptosporidium is largely a problem when drinking water comes from surface water sources, similar outbreaks could be possible because of contaminants in the groundwater.

The city of Dayton has a number of programs that help prevent ground- and therefore drinking water pollution. One of the most effective programs is the Well Field Protection Program, which seeks to prevent contamination from entering the groundwater in the designated “well field” area. Dayton adopted such a program in 1985, becoming one of the first U.S. cities to adopt one and the first one to be endorsed by the Ohio EPA.

Under the program, the Dayton Water Department samples the wells four times a year for about 100 possible contaminants. The department also uses a zoning overlay that restricts the amount of chemicals and types of land development that may occur in the well field area. The amount of chemicals permitted on site was capped at 1985 levels based on a combination of the poundage and the risk of the chemicals present at that time. Furthermore, businesses that operate in the well field are required to submit biennial chemical inventories. The Water Department then monitors, investigates, and oversees cleanup efforts at facilities in the well field area. The five other jurisdictions that are on top of the well field area – Huber Heights, Riverside and Vandalia, Harrison Township, and Wright-Patterson Air Force Base – have similar groundwater protection programs. A small surcharge on all users of water supplied by the Dayton Department of Water goes to programs that engage in emergency response planning, monitoring, cleanup, education, investigation and reducing risks to the water supply.

5. Are state and local efforts sufficient to ensure optimal drinking water quality?

Considering its long industrial history and the reliance on the Great Miami Buried Aquifer, the city of Dayton is doing well to clean up and prevent groundwater pollution. The city is seen as a leader and a pioneer in Miami Valley and in the country for its well field protection program. To remain a leader, however, the program needs to continuously evolve and improve by maintaining its funding, technical staff, and program support. This is important to be able to continue inspections and investigations of facilities to help prevent groundwater pollution rather than simply treating the water. Also important is that Dayton continues to coordinate and fund efforts in the surrounding jurisdictions to support their groundwater protection programs.

While the water from the Dayton Department of Water performs well, many of the smaller water systems in Montgomery County do not meet EPA’s standards. It is therefore important to focus on improving these facilities to ensure that all residents of the county have safe, healthy water to drink.