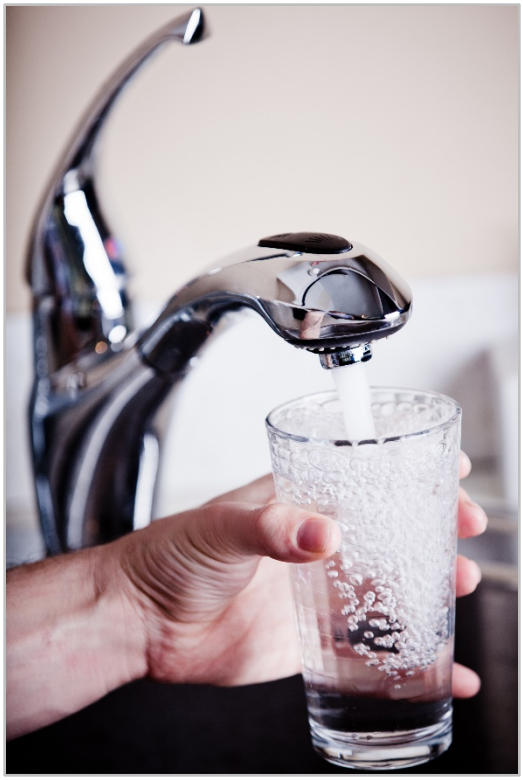
Ohio Environmental Protection Agency

Ohio Department of Health

Ohio Per- and Polyfluoroalkyl Substances (PFAS) Action Plan for Drinking Water



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List of Acronyms

CCR	Consumer Confidence Report
CWS	community water systems
DDAGW	Ohio EPA's Division of Drinking and Ground Waters
DES	Ohio EPA's Division of Environmental Services
EPA	Environmental Protection Agency (state – Ohio EPA, federal – U.S. EPA)
HAL	health advisory level
LHD	local health department
MCL	maximum contaminant level
MRL	method reporting limits
NTNC	non-transient, non-community systems
OAC	Ohio Administrative Code
ODH	Ohio Department of Health
ORC	Ohio Revised Code
PFAS	per- and polyfluoroalkyl substances
PPT	parts per trillion
PWS	public water system
QAPP	quality assurance project plan
SWAP	Source Water Assessment and Protection
WPAFB	Wright-Patterson Air Force Base

Executive Summary

Ohio and states nationwide are faced with challenges related to per- and polyfluoroalkyl substances (PFAS), which have been manufactured and used for years in everyday items such as nonstick cookware, water-resistant clothing and personal care products. PFAS chemicals have also been widely used in firefighting foams, at military installations and fire training facilities.

On Sept. 27, 2019, Governor Mike DeWine announced the establishment of an inter-agency workgroup to address the emerging issue of PFAS in Ohio, both for the protection of our natural resources and public health. In his announcement, he directed the Ohio Environmental Protection Agency (Ohio EPA) and Ohio Department of Health (ODH) to work together on developing a statewide PFAS action plan to address potential threats to both public and private drinking water systems.

In developing the action plan, Ohio EPA and ODH will work with other key stakeholders to more fully evaluate the risks of PFAS in Ohio and assist our communities in addressing these risks.

While the initial focus of the action plan is on potential risks associated with PFAS in drinking water, there are other emerging areas of national research related to PFAS, including identifying safer chemical substitutes for PFAS, soil remediation technologies and other treatment methods to address PFAS.

Earlier this year, Governor DeWine, along with 14 governors signed a letter to both the United States Senate and House Armed Services Committees calling for more comprehensive national legislation on PFAS and action to address PFAS contamination in and around military bases.

To this end, Ohio EPA and ODH will keep abreast on these developments and ensure this plan is adapted as the science and the national regulatory framework on PFAS unfolds.

Action Plan Objectives

- Gather and provide sampling data from specific types of public water systems to determine if PFAS is present in raw and finished drinking water.
- Assist private water system owners with guidelines and resources to identify and respond to potential PFAS contamination.
- Establish Action Levels for drinking water systems in Ohio to aid in appropriately responding to PFAS contamination for the protection of public health.
- Work with Ohio communities to identify resources to assist their public water systems in implementing preventative and long-term measures to reduce PFAS-related risks.
- Develop and disseminate educational information to the public to increase awareness and understanding of PFAS-related compounds and relative risk of exposure to PFAS through drinking water and other exposure pathways.
- Continue ongoing engagement to ensure this action plan for Ohio is adapted as the scientific body of knowledge expands and the regulatory framework progresses at the national level.

Introduction

Per- and Polyfluoroalkyl Substances (PFAS)

PFAS is a family of over 4,000 man-made chemicals that have been used in a variety of industrial, commercial and consumer products. With strong carbon-fluorine bonds, these chemicals are extremely effective in making everyday items more resistant to stains, grease, and water. They have been widely used to manufacture paper and cardboard packaging, carpeting, leather products, textiles and personal care products. They are used extensively in the manufacture of materials that have non-stick properties. PFAS have also been widely used in fire suppression foams. Two specific chemicals of the PFAS family, PFOA and PFOS have been the most extensively produced and most widely studied to date.

The major source of exposure to PFAS is through ingestion. Data suggest that PFAS are not easily or readily metabolized by the human body and are commonly found in human blood across the nation. With more scientific data emerging on PFAS, studies indicate that potential health risks associated with PFAS exposures can include liver damage, thyroid disease, elevated cholesterol, decreased antibody response to vaccines, and pregnancy-induced hypertension, decreased fertility and small decreases in birthweight, developmental and immune toxicity.

While PFAS do not occur naturally, they may be found throughout the environment due to a long history of manufacturing and use. PFAS chemicals are very stable and do not easily biodegrade. PFAS contamination in soils is of particular concern for drinking water due to potential impacts to surface and ground water sources.

Public and Private Water System Oversight

Public water systems are regulated by the Ohio EPA. Community water systems (CWS) serve at least 15 service connections used by year-round residents or regularly serve at least 25 year-round residents. Examples include cities, mobile home parks and nursing homes. Non-transient, non-community systems (NTNC) serve at least 25 of the same persons over six months per year. Examples include schools, hospitals and factories.

Private water systems are regulated by the ODH. Private water systems are defined as any water system for the provision of water for human consumption, if the system has fewer than 15 service connections and does not regularly serve an average of at least 25 individuals at least 60 days out of the year (e.g. private homes, small churches, etc.).

PFAS in Ohio

The Safe Drinking Water Act requires U.S. EPA to identify up to 30 unregulated contaminants to be monitored by public water systems every five years, to provide a basis for future regulatory actions to protect public health. The third cycle of the Unregulated Contaminant Monitoring Rule required monitoring for 28 chemicals and included six PFAS chemicals. In Ohio, 186 public water systems participated in the monitoring during 2013-2015. As a result of this sampling, one public water system serving Wright-Patterson Air Force Base (WPAFB) reported PFAS at elevated levels.

In 2016, the U.S. EPA set a health advisory level (HAL) of 70 parts per trillion (ppt) for PFOA and PFOS in drinking water to help ensure sensitive populations were protected from adverse health effects associated with these chemicals. While a HAL has been established for these chemicals, U.S. EPA is working on a national framework to set regulatory standards for PFAS, including national safe drinking water standards (known as a maximum contaminant level or MCL).

The establishment of the HAL prompted additional coordination between Ohio EPA, communities and military installations to gather more information on potential PFAS risks in drinking water. There has been ongoing data collection, assessment efforts and coordination between WPAFB, Ohio EPA and the City of Dayton to monitor impacts to public water systems that serve both WPAFB and the City of Dayton.

As a proactive measure, the Ohio National Guard also worked with Ohio EPA to obtain sample results for private water supply wells near its bases, including former fire training areas, to ensure that these wells were not contaminated by PFAS. As a result of this sampling, one private well near the Toledo Air National Guard base was connected to a public water system due to the detection of contamination.

PFAS contamination has also been identified from manufacturing activities associated with the Chemours (formerly known as DuPont) Washington Works facility, located near Parkersburg, West Virginia. Remediation requirements, including treatment for several public and private water supply systems are included in a federal consent order, entered into between U.S. EPA, Chemours and DuPont.

Ohio's statewide action plan will focus on gathering additional data to assist in identifying, responding to and communicating PFAS-related drinking water risks in Ohio. This plan has been developed and will be implemented in partnership between Ohio EPA and ODH.

PFAS Action Plan — Objectives and Strategies

Objective 1: Gather sampling data from public water systems statewide to determine if PFAS is present in drinking water.

Ohio EPA will coordinate sampling of approximately 1,500 public water systems statewide. These systems provide water to cities, mobile home parks, schools, and daycares and serve approximately 90 percent of Ohio's population.

Raw and finished water samples will be collected at these public water systems, with a goal of completing sampling efforts by the end of 2020. Finished water samples will be collected at an entry point to the distribution system, which is a location in the public water system after treatment or chemical addition.

Sampling efforts will be coordinated by Ohio EPA under contracts with qualified consultants and laboratories. Contract labs will conduct analyses in accordance with a quality assurance project plan (QAPP) and U.S. EPA-approved methods for drinking water. Some sampling may also be conducted by trained technicians from Ohio EPA and analyzed by Ohio EPA's Division of Environmental Services (DES), which has also been approved for U.S. EPA methods.

PFAS sampling results for public water systems will be published on Ohio's PFAS web page to allow public access to the data.

Objective 2: Assist private water system owners with guidelines and resources to identify and respond to potential PFAS contamination.

ODH will evaluate the PFAS source water results from the public water systems sampled by Ohio EPA. If the data suggest that nearby private water system sources may potentially be contaminated, ODH will coordinate with local health districts and private water system owners for appropriate response measures, including providing guidance on testing recommendations and steps to reduce risks, including treatment options for private water systems.

ODH has established fact sheets, guidance and videos for the public related to health effects from exposure to PFAS, ways the public can reduce their exposures, and information on systems available to private water system owners for the treatment and removal of PFAS. These materials and other PFAS resources will be available and updated, as needed, on Ohio's PFAS webpage.

Objective 3: Establish Action Levels for drinking water in Ohio to aid in appropriately responding to PFAS contamination for the protection of public health.

There are currently no national drinking water standards for PFAS compounds. The establishment of national drinking water standards, called Maximum Contaminant Levels or MCLs, is under consideration by U.S. EPA. In 2016, U.S. EPA set Health Advisory Levels (HALs) of 70 parts per trillion (ppt) for two of the most studied PFAS chemicals, PFOA and PFOS. In Table 1, the Ohio Action Levels for PFOA and PFOS utilize the established U.S. EPA HALs. Because HALs are not available for other PFAS chemicals at this time, the Ohio Action Levels for GenX, PFBS, PFHxs, and PFNA are calculated using the U.S. EPA's established Drinking Water Equivalent Level method and toxicity data. These levels will be re-evaluated as U.S. EPA finalizes toxicity assessments. Additional information used to develop the action levels will be provided on Ohio's PFAS web page.

Ohio EPA and ODH will use these action levels as thresholds in providing guidance to drinking water system owners/operators in mitigating health risks.

Table 1 — Ohio PFAS Action Levels

	PFAS Chemicals[1]					
	PFOA	PFOS	GenX	PFBS	PFHxS	PFNA
Action Level (ppt)	>70 single or combined with PFOS	>70 single or combined with PFOA	> 700	>140,000	> 140	> 21

Ohio EPA will be establishing response protocols for public water systems in Ohio when action levels are exceeded, including public notification and issuance of drinking water advisories. ODH will be establishing response protocols to PFAS detections for private water systems in Ohio when action levels are exceeded.

Table 2 summarizes agency responsibilities in sampling and responding to PFAS detections and exceedances in drinking water at public and private water systems.

Table 2 — Summary of Agency Responsibilities

Event	Ohio EPA Responsibilities (Public Water Systems)	ODH Responsibilities (Private Water Systems)
Sampling and Data Collection	• Develop and implement statewide public water system sampling plans. • Coordinate sampling with public water systems. • Ensure results posted and available to the public in a timely manner.	• Review public water system raw sample data in coordination with Ohio EPA to evaluate potential contamination of private water systems.
PFAS Detection	• Notify the public water system and ODH of detections. • Work with the public water system to develop approaches to address PFAS source and establish monitoring frequency.	• Notify private water system owners of detections in coordination with local health districts. • Provide information to affected homeowner(s) on potential PFAS health effects and ways to reduce exposures.
Action Level Exceeded	• Public water system notifies consumers of results and advice using Ohio EPA templates. • Work with the public water system to identify and implement short-term and long-term response measures to reduce exposure risks, including source water management and treatment.	• Notify private water system owners of action level exceedances in coordination with local health districts. • Work with private water system owners to identify appropriate short-term and long-term measures to reduce exposures.

Detection levels are based on the lowest achievable method reporting limits (MRL) by the laboratory. A survey of state and federal laboratories taken at the writing of this document indicate achievable MRLs for PFOA is 5 ppt, PFOS is 5 ppt, GenX is 25 ppt, PFBS is 5 ppt, PFHxS is 5 ppt and PFNA is 5 ppt.

[1] 1 PFOA (Perfluorooctanoic Acid), PFOS (perfluorooctane Sulfonate), GenX (HFPO dimer acid), PFBS (perfluorobutanesulfonic acid), PFHxS (perfluorohexane sulfonic acid), and PFNA (perfluorononanoic acid).

Objective 4 — Work with Ohio communities to identify resources to assist their public water systems in implementing preventative and long-term measures to reduce PFAS-related risks.

Ohio EPA's Division of Environmental and Financial Assistance will provide communities with information on available loans and technical assistance to help communities with planning, design and installation of treatment or other infrastructure improvements.

Ohio EPA will work with communities to support and develop source water protection capabilities, including conducting source water protection workshops to help communities understand measures they can take to identify potential sources of PFAS contamination and preventative measures to reduce impacts to their drinking water sources.

ODH will coordinate with Ohio EPA and other stakeholders to identify potential resources available to assist private water system owners with sampling and analysis for PFAS, and installation and maintenance of water treatment systems.

Objective 5 — Develop and disseminate educational information to the public to increase awareness and understanding of PFAS-related compounds and relative risk of exposure to PFAS through drinking water and other exposure pathways.

Ohio EPA and ODH will collaborate in developing and disseminating educational information to increase awareness and understanding of PFAS-related compounds and relative risk of exposure to PFAS through drinking water and other exposure pathways. The public will receive this information through a PFAS web page, social media, and other communication vehicles. Topics will include:

- Results/data from public water system sampling;
- Health-based information on PFAS exposure and risks;
- Interpretation of detections;
- Information on reducing potential exposure risks;
- Public and private water systems toolkits directing responses to detections and action level exceedances;
- Technical support documentation and helpful resources;
- Guidelines and educational information for private water system owners; and
- Updates on PFAS-related activity occurring at the national level.

Objective 6 — Continue ongoing engagement to ensure this action plan for Ohio is adapted as the scientific body of knowledge expands and the regulatory framework progresses at the national level.

While the initial focus of the action plan is on potential risks associated with PFAS in drinking water, there are other emerging areas of national research related to PFAS, including development of analytical methods, identifying safer chemical substitutes for PFAS, addressing other exposure pathways, and PFAS treatment and remediation technologies.

To this end, Ohio EPA and ODH will keep abreast on these developments and ensure the plan is adapted as the science and the national regulatory framework on PFAS unfolds. Both agencies will also continue to network with research organizations and other states in advancements in the understanding of PFAS to determine future actions to protect natural resources and public health in Ohio.