A Status Report on

Establishing Regulatory Limits for PFAS, Chromium (VI), and 1,4-Dioxane in Virginia Drinking Water

To

The Chairmen of
the Senate Committee on Education and Health

and

the House Committee on Health, Welfare, and Institutions

Submitted By

Office of Drinking Water
Safe Drinking Water for a Healthy Virginia

Virginia Department of Health
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1 Executive Summary

In its 2020 session, the Virginia General Assembly passed and Governor Northam signed two bills directing the Virginia Department of Health (VDH) to study the occurrence of specified per- and polyfluoroalkyl substances (PFAS) contaminants in drinking water in Virginia (Acts of Assembly Chapter 611, House Bill (HB) 586) and to promulgate regulations establishing maximum contaminant levels (MCL) for specified PFAS, Chromium (VI), and 1,4-Dioxane in drinking water (Acts of Assembly Chapter 1097, HB1257). HB586 became effective on July 1, 2020; HB1257 becomes effective January 1, 2022, but requires VDH to report to the Chairmen of the Senate Committee on Education and Health and the House Committee on Health, Welfare and Institutions on the status of research related to MCLs by November 1, 2020, and submit a final report by October 1, 2021. This report discusses the status of VDH's work to satisfy the requirements of HB586 and HB1257.

To implement HB586 and HB1257, staff from VDH's Office of Drinking Water (ODW) will provide administrative support, technical guidance, form a workgroup, plan, design and conduct a PFAS monitoring study as required by HB586. Information about PFAS contamination in drinking water in Virginia will inform the development and implementation of MCLs as required by HB1257. The Virginia PFAS Workgroup will consist of representatives from various stakeholder groups such as waterworks operators and owners, environmental advocacy groups, chemical manufacturers, subject matter experts, and the general public.

Per- and polyfluoroalkyl substances are man-made, industrially produced compounds consisting of carbon-chain molecules where the carbon atoms are fully (per-) or partially (poly-) surrounded by fluorine atoms, except where the carbons connect. PFAS production began in the 1940s and there are more than 4,000 different chemicals in the PFAS family. A wide variety of products, including stain-resistant fabric coatings, non-stick coatings, food packaging, and firefighting foam contain PFAS. PFOA (perfluorooctanoic acid) and PFOS (perfluorooctane sulfonate) are two of the most extensively produced and studied chemicals in the PFAS family. PFOA/PFOS are very persistent in the environment and the human body, meaning they do not break down and can accumulate over time. Exposure to humans can occur by eating, inhaling, or even touching the product.

The U.S. Environmental Protection Agency (EPA) reports that scientists have found

traces of these PFAS (one or more) in the blood of nearly all the people they tested. Possible health effects associated with exposure to chemicals in the PFAS family include developmental effects to fetuses during pregnancy or to breastfed infants (e.g., low birth weight, accelerated puberty, skeletal variations), cancer (e.g., testicular, kidney), liver effects (e.g., tissue damage), immune effects (e.g., antibody production and immunity), thyroid effects and other effects (e.g., cholesterol changes). PFAS have varying half-life in humans (PFOA – 3.8 years, PFOS – 5.4 years, PFBS (perfluorobutane sulfonate) – 4 months).

From 2013 to 2015, EPA evaluated the occurrence of PFOA, PFOS, and 4 other PFAS compounds at 4,920 public water systems (known as "waterworks" in Virginia) across the U.S. as part of its third "Unregulated Contaminant Monitoring Rule" (UCMR3) evaluation. UCMR3 had reporting limits of 20 parts per trillion (ppt) and 40 ppt for PFOA and PFOS, respectively. Nationally, EPA found 1.6% of samples had the presence of one or more PFAS at 4.0% of waterworks. The data did not reveal significant occurrences of PFOA or PFOS in Virginia; however, two Virginia waterworks detected PFAS compounds. Follow-up sampling at the waterworks did not identify the source or an impact on drinking water supplies.

On May 16, 2016, EPA issued a Lifetime Health Advisory of 70 ppt for combined PFOA and PFOS. This is a lifetime advisory. As a result of the Heath Advisory, several states have sampled for PFAS in their public water systems to evaluate PFAS occurrence; others are in the process of sampling and evaluating PFAS occurrence. Several states have developed regulatory limits for PFOA, PFOS, and other PFAS that are lower than EPA's Lifetime Health Advisory of 70 ppt. In 2019, EPA held a national leadership summit for PFAS, developed a PFAS management plan, and stated that it would decide whether to regulate PFAS chemicals by December 2019. On February 20, 2020, EPA announced its proposed decision to regulate PFOA and PFOS in drinking water. EPA sought public comment on its proposed regulatory determinations for eight contaminants listed on the fourth Contaminant Candidate List and its proposal to regulate PFOS and PFOA. EPA also asked for information and data on other PFAS substances, as well as sought comment on potential monitoring requirements and the regulatory approaches EPA is considering for PFAS chemicals.

There are treatment options available for PFAS, but they are expensive. Conventional water treatment processes are ineffective at removing or destroying PFAS. Reverse osmosis

(RO) is very effective, but expensive and yields a waste stream of concentrated PFAS. Granular activated carbon (GAC) filtration can be effective in removing some (but not all) PFAS. The GAC must be regenerated or replaced at site-specific intervals, and the regeneration process can result in sending the fluorine compounds into the atmosphere. Ion exchange (IX) can remove some PFAS, but the resins create disposal problems.

The occurrence of chromium (VI) and 1,4-dioxane in Virginia has not been studied, nor has a public health risk assessment of these chemicals in drinking water been evaluated.

2 Purpose of the Study

ODW prepared this status report in response to HB1257, which Delegate Sam Rasoul sponsored during the 2020 General Assembly session. The third enactment clause requires the Department of Health to report on the status of research related to MCLs, as required in the Code of Virginia § 32.1-169 B, by November 1, 2020. The bill, approved as Acts of Assembly Chapter 1097 follows:

> An Act to amend and reenact § 32.1-169 of the Code of Virginia, relating to drinking water; maximum contaminant levels; perfluoroalkyl and polyfluoroalkyl substances, and other contaminants.
>
> Approved April 10, 2020
> Be it enacted by the General Assembly of Virginia:
>
> 1. That § 32.1-169 of the Code of Virginia is amended and reenacted as follows:
> § 32.1-169. Supervision by Board.
> *A.* The Board shall have general supervision and control over all water supplies and waterworks in the Commonwealth insofar as the bacteriological, chemical, radiological, and physical quality of waters furnished for human consumption may affect the public health and welfare and may require that all water supplies be pure water. In exercising such supervision and control, the Board shall recognize the relationship between an owner's financial, technical, managerial, and operational capabilities and his capacity to comply with state and federal drinking water standards.
> *B. The Board shall adopt regulations establishing maximum contaminant levels (MCLs) in all water supplies and waterworks in the Commonwealth for (i) perfluorooctanoic acid and perfluorooctane sulfonate, and for such other perfluoroalkyl and polyfluoroalkyl substances as the Board deems necessary; (ii) chromium-6; and (iii) 1,4-dioxane. Each MCL shall be protective of public health, including vulnerable subpopulations, including pregnant and nursing mothers, infants, children, and the elderly, and shall not exceed any MCL or health advisory for the same contaminant adopted by the U.S. Environmental Protection Agency. In establishing such MCLs, the Board shall review MCLs adopted by other states, studies and scientific evidence reviewed by such states, material in the Agency for Toxic Substances and Disease Registry of the U.S. Department of Health, and current peer-reviewed scientific studies produced independently or by government agencies.*
> 2. That the provisions of this act shall become effective on January 1, 2022.
> 3. That the Department of Health shall report to the Chairmen of the Senate Committee on Education and Health and the House Committee on Health, Welfare and Institutions on the status of research related to MCLs, the review of which is required by subsection B of § 32.1-169 of the Code of Virginia, as amended by this act, by November 1, 2020, and shall submit a final report to the Chairmen of the Senate Committee on Education and Health and the House Committee on Health, Welfare and Institutions by October 1, 2021, detailing the MCL regulations established by the Department of Health.

HB 586 Acts of Assembly Chapter 1097 requires the Virginia Department of Health (VDH) to convene a workgroup to study the occurrence of PFOA, PFOS, perfluorobutyrate

(PFBA), perfluoroheptanoic acid (PFHpA), perfluorohexane sulfonate (PFHxS), perfluorononanoic acid (PFNA), and other PFAS, as deemed necessary, in the Commonwealth's public drinking water. VDH may develop recommendations for specific maximum contaminant levels for PFOA, PFOS, PFBA, PFHpA, PFHxS, PFNA, and other PFAS, as deemed necessary, for inclusion in regulations of the Board of Health. HB586 helps ensure data on PFAS contamination in drinking water so that the Board of Health can make an informed decision on establishing MCLs.

3 Introduction

PFAS, a class of synthetic organic chemicals, recently entered the national spotlight because of the potential risk that they pose to human health and the environment. While public attention to PFAS is relatively new, the chemicals themselves have been manufactured and used worldwide since the 1940s. The chemical structures of PFAS compounds vary widely but all contain at least one fully fluorinated carbon atom. Their strong carbon-fluorine (C-F) bonds make PFAS highly stable, heat-resistant, and oil- and water-repellent. Due to these properties, PFAS are widely used in consumer products such as nonstick cookware, waterproof apparel, stain-resistant textiles and carpets, personal care products, cleaners, waxes, and food packaging materials.

PFAS chemicals also have numerous industrial applications—for instance, PFAS are used in metal finishing operations, and as the primary ingredient in aqueous film-forming foam (AFFF), the class of firefighting foam used to extinguish high-hazard flammable liquid fires. The unique chemical properties that made PFAS desired chemicals in manufacturing also make these chemicals pervasive and persistent once released into the environment. PFAS easily migrate in the environment and cause contamination of soil, sediment, groundwater, and surface water. Due to their non-biodegradable, persistent nature during natural processes, these PFAS chemicals are also known as “forever chemicals.” As such, humans and animals can be exposed to PFAS through exposure pathways such as drinking contaminated water and eating contaminated fish and plants and various environmental exposure routes from the use of PFAS-containing consumer products and consumption of food packaged in PFAS-containing materials.

The existing body of scientific literature on PFAS has focused more on a limited number of PFAS compounds (PFOA, PFOS, and a few others). Such literature linked the exposure of

these chemicals to human health effects ranging from developmental effects in fetuses and infants to certain forms of cancer. For these compounds with substantiated health risks, environmental concentrations of concern currently reach as low as the parts per trillion (ppt) range. At present, limited toxicity data is available for the remainder of the more than 4,000 PFAS compounds, so further study is necessary to understand their potential health effects.

In the past few years, the EPA began assessing PFAS, primarily in drinking water. Between 2013 and 2015, large public water systems serving more than 10,000 individuals were required to test their finished drinking water for six specific PFAS chemicals, among other pollutants, under the Third Unregulated Contaminant Monitoring Rule (UCMR3) carried out according to the Safe Drinking Water Act (SDWA). In Virginia, 72 large community waterworks and 15 small systems were tested for PFAS. Of 509 tests, only two reported any PFAS detections above EPA's reporting limit. Upon retesting, confirmation samples did not show the detection of PFAS. In Connecticut, 42 large public water systems were tested for the six PFAS, and none reported any PFAS detections above EPA's reporting limit at that time. Nationwide, between 2013 and 2015, under the UCMR3, 1.3 percent of large public water systems reported detections of at least one PFAS compound that exceeded the reference concentration of 70 ppt (70 ng/L). These systems are estimated to provide drinking water to approximately 5.5 million people. However, the reporting limits for PFOA and PFOS used in UCMR3 was high (20 and 40 ppt).

In May 2016, soon after the conclusion of the UCMR3 sampling, EPA issued a Lifetime Health Advisory (LHA) for levels of two specific PFAS chemicals in drinking water, PFOA and PFOS of 70 ppt, either individually or combined. Per EPA guidelines, Virginia uses 70 ppt as LHA in drinking water. The announcement of EPA’s LHA, along with high-profile news reporting on PFAS contamination sites such as those in Parkersburg, West Virginia, Minneapolis-St. Paul, Minnesota, Portsmouth, New Hampshire, and Hoosick Falls, New York, caused many states to evaluate the PFAS levels detected in their public water systems and consider how best to address the possibility of contamination of public and private drinking water supplies. Hence, many state drinking water programs or environmental protection agencies began to address PFAS. In May 2018, EPA hosted a National Leadership Summit on PFAS. As a follow-up to the many concerns raised by states and stakeholder groups, EPA held Regional Community Engagement events in communities impacted by PFAS in drinking water and committed to prepare an action plan to address PFAS nationwide.

In February 2019, EPA released its PFAS Action Plan. Key action items include:

- Determination, by the end of 2019, on whether a maximum contaminant level (MCL) for PFOA and PFOS in drinking water should be promulgated;
- Steps to list certain PFAS as "hazardous substances" under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA);
- Development of interim groundwater cleanup standards;
- Potential PFAS use reporting on the Toxics Release Inventory;
- Potential review of new PFAS under the Toxic Substances Control Act;
- Expansion of PFAS research; and
- Development of a PFAS Communication Toolbox.

Since issuing the PFAS Action Plan, EPA has taken several key actions, including:

- Issued preliminary determinations to regulate PFOA and PFOS;
- Announced a supplemental proposal to ensure that new uses of certain persistent long-chain PFAS chemicals in surface coatings cannot be manufactured or imported into the United States without notification and review under TSCA;
- Developed new validated methods to accurately test for 11 additional PFAS in drinking water;
- Issued Interim Recommendations for Addressing Groundwater Contaminated with PFOA and PFOS;
- Announced availability of $4.8 million in funding for new research on managing PFAS in agriculture;
- Issued an advanced notice of proposed rulemaking that would allow the public to provide input on adding PFAS to the Toxics Release Inventory toxic chemical list; and
- Issued a directive to prioritize federal research on impacts on agriculture and rural economies.

EPA is on the pathway to issue MCLs for PFOA and PFOS in drinking water but the required federal regulatory process could take four years to complete. Many states have

independently conducted risk assessments for PFAS. PFAS monitoring studies caused some states to reduce LHA values for PFAS compounds or to establish state-specific MCLs for certain PFAS chemicals.

Since PFAS is not a regulated contaminant under the SDWA, there is scant monitoring data of PFAS occurrence in Virginia's public drinking water systems. Fentress Naval Auxiliary Landing Field (NALF, or Fentress) in Chesapeake found PFAS in the groundwater. The Navy shut down the waterworks serving the base and provided bottled water on-base and to surrounding property owners with private wells, added new treatment for PFAS in April 2018, and is working to connect those property owners with private wells to the City's public water system. The Naval Air Station – Oceana (Oceana) is another location in Virginia with groundwater PFAS contamination, which was discovered in 2017. Oceana receives water from the City of Norfolk, via the City of Virginia Beach. Private wells and small privately-owned waterworks surrounding Oceana were not affected, but PFAS is in groundwater in those areas. NASA Wallops Flight Facility in Accomack County is the third location with known PFAS groundwater contamination. Monitoring in 2017 indicated wells serving the Town of Chincoteague and NASA had levels of PFAS above 70 ppt. The Town shut down the impacted wells and NASA provided the Town with finished water from the NASA waterworks to supplement the water that the Town produced. NASA is constructing a GAC system to treat the water from the Town's affected wells.

The 2020 Virginia General Assembly passed HB586 and HB1257 to direct VDH to study PFAS contamination in Virginia's drinking water and establish MCLs for specified PFAS, 1, 4-Dioxane, and Chromium (VI). VDH has identified the following objectives:

3.1 Proposed Objectives

- Form a Virginia Statewide PFAS Workgroup to study the level of PFAS contamination in drinking water in Virginia; and, based on sample results, formulate and make recommendations for the State Board of Health to establish MCLs for PFAS;
- Perform a literature and data review to determine whether 1,4-Dioxane, and Chromium (VI) may be present in drinking water in Virginia; and, if so, at what levels;
- Based on research data, sample results, and stakeholder input, make recommendations to the State Board of Health to consider MCLs for PFAS, 1-4-Dioxane, and Chromium (VI).

4 VDH Approach & Methodology

The Board of Health promulgated the Waterworks Regulations, 12VAC5-590-10 et seq., to establish standards for permitting, constructing, operating, and designing waterworks in Virginia. The Waterworks Regulations contain water quality standards from the National Primary Drinking Water Regulations, 40 C.F.R. Part 141. As a requirement of federal primacy, the Board of Health must have regulations as stringent as the federal requirements. Exercising authority in the Public Water Supplies Law, Code of Virginia §§ 32.1-167 through 32.1-176, VDH, through the Office of Drinking Water (ODW), regulates 2,811 waterworks in the Commonwealth of Virginia, collectively serving approximately 7.5 million consumers--about 89% of the total population (8.5 million people).

ODW collaborates with owners, operators, and stakeholders to protect public health and the environment. ODW ensures compliance with applicable laws and regulations by conducting sanitary surveys and inspections; providing training and technical assistance; issuing permits and plan approvals; tracking compliance monitoring; managing data and information; training licensed operators; and where appropriate, taking enforcement actions. Virginia's drinking water program protects public health from "source to tap" by assessing the vulnerability of water sources and preparing communities for the resilient response to natural and manmade hazards. ODW's program has high compliance rates with water quality standards. Core metrics for the program include the percent of waterworks with an uncorrected health-based violation (less than 1.5%), the percent of waterworks that sample on time (better than 98%), and the percent of waterworks inspected on time (over 99%).

To accomplish the project objectives as mentioned in Section 3.1, ODW plans a multi-step implementation strategy that (1) identifies available resources and funding mechanisms, (2) planning, designing, and implementing a monitoring study, (3) conducting a literature review, and (4) forming a diverse Virginia-specific PFAS workgroup. More details are described below.

4.1 Virginia PFAS Workgroup

To the extent that funding allows, the Virginia PFAS Workgroup will consider the occurrence of PFAS in drinking water throughout the Commonwealth, identify possible sources of PFAS contamination, evaluate existing approaches to regulating PFOA, PFOS, and other PFAS, including regulatory approaches in other states, and may develop recommendations to

establish MCLs for specific PFAS.

The legislation requires the workgroup to "determine current levels of PFOA, PFOS, PFBA, PFHpA, PFHxS, PFNA, and other PFAS, as deemed necessary, contamination in the Commonwealth's public drinking water, provided that in making such determination of current levels, the Department of Health shall sample no more than 50 representative waterworks and major sources of water[.]" As this refers specifically to "public drinking water" and "waterworks," the PFAS Workgroup will focus on "water supplies" and "waterworks," as those terms are defined in the Public Water Supplies Law, Code of Virginia§ 32.1-167, and Waterworks Regulations, 12VAC5-590-10. The PFAS Workgroup must report its findings to the Governor and legislative committees by December 1, 2021. ODW will facilitate and lead the PFAS Workgroup.

4.1.1 Structure and Logistics

The PFAS Workgroup will consist of about 20 non-VDH members. The Office of Drinking Water (ODW) Deputy Director will serve as the PFAS Workgroup leader and be a permanent ex-officio member. To ensure broad stakeholder representation on the PFAS Workgroup, ODW will seek participation by the following stakeholders as the Commissioner may deem appropriate:

- Two representatives from community waterworks that serve more than 50,000 persons.*
- One representative from a community waterworks that serves less than 50,000 persons.*
- One representative from a community waterworks that serves less than 1,000 persons.*
- One representative from an advocacy group that represents waterworks in Virginia.
- One representative who represents a manufacturer with chemistry experience.
- One representative who is a consumer of public drinking water.
- Two representatives from non-governmental environmental organizations.
- One representative from the ODW staff.
- Commonwealth of Virginia State Toxicologist.
- One representative from a Local Health Department; the District Health Director.
- One representative from the Virginia Department of Environmental Quality (DEQ).

*At least one representative from a community waterworks will be from a private company that operates waterworks.

Depending on interest and expertise, PFAS Workgroup members may be working in subgroups to focus on specific aspects of PFAS in drinking water, such as:

- Current levels of PFAS contamination in drinking water in Virginia and areas most likely to have PFAS contamination;
- Toxicity and regulatory approaches to protect public health, regulatory activities by the EPA and other states;
- Treatment alternatives and implications for waterworks and consumers, public education/community outreach, and policy and regulatory actions.

Subgroups will meet more frequently and bring their findings to the quarterly PFAS Workgroup meetings. Workgroup members will use an invitation-only electronic file sharing platform such as Google Drive or Box to share information among PFAS Workgroup members and subgroups.

An ODW facilitator will assist with the PFAS Workgroup meetings. The ODW facilitator will share meeting announcements, agendas, and minutes with the public through the Virginia Town Hall website (www.townhall.virginia.gov). PFAS Workgroup meeting agendas and minutes will be posted to the Virginia Townhall website and the drinking water program webpages on the VDH website. A webpage with all the PFAS relevant information will be hosted and a centralized email account will be used to answer related questions. The ODW staff who support and work with the PFAS Workgroup will provide updates of workgroup activities to the Waterworks Advisory Committee when the committee meets.

4.1.2 Requirements for PFAS Workgroup members:

Workgroup members must possess knowledge and expertise in the field of "emerging contaminants in the environment" and be willing to participate and contribute to the topic of interest (PFAS and emerging contaminants in drinking water) and quarterly meetings (3 - 4 hours). Workgroup members will make a commitment of approximately 5- 10 hours per month for studying, reviewing, interpreting, and developing new documents, guidelines, and recommendations**.** All workgroup members will participate and contribute to at least one subgroup.

To the extent possible, PFAS Workgroup meetings will be in-person and each will be held at a different geographic location within Virginia (Richmond, Central VA, Northern VA, and possibly Southeastern VA). However, depending on restrictions associated with the

COVID-19 pandemic, PFAS Workgroup and/or subgroup meetings may be held virtually with electronic communication as necessary. Staff will post notices of PFAS Workgroup meetings on the Town Hall website in advance of meetings; meetings will be open to participation from all workgroup members and interested stakeholders to the extent possible with COVID-19 restrictions. All meetings will comply with FOIA requirements and be open to the public to the extent possible.

VDH intends to provide transparency, capture input, recommend policies, and ultimately suggest implementation procedures to maximize the effectiveness of the PFAS Workgroup activities. In forming the PFAS Workgroup, ODW solicited input from and participation by drinking water industry representatives and advocates, waterworks owners, and other knowledgeable stakeholders. Participation and input from a broad spectrum of stakeholders will enhance and improve the drinking water program to ensure fairness, relevancy, and public health protection. The PFAS Workgroup will routinely report its work to the State Health Commissioner.

4.1.3 Virginia PFAS Workgroup Status

Except as noted in the Introduction, VDH has very limited information on the occurrence of PFOA, PFOS, and other specific PFAS compounds in Virginia's public drinking water. Understanding the occurrence, transport, risk, and treatment of PFAS generally, and PFOA and PFOS specifically, in public water supplies across the Commonwealth would help with implementing HB586 and HB1257. The State Health Commissioner has nominated 20+ members to the Virginia PFAS Workgroup.

4.2 Literature Review of available data/information

ODW will partner with state universities to collect and summarize the current peer-reviewed literature as funding and cooperation allow. ODW will also review other states' MCLs or other regulatory limits for contaminants of interest and review current health studies available from federal agencies as time permits. Data on PFAS occurrence in drinking water is available from EPA databases, peer-reviewed publications, state reports, and other organizations, such as the Association of State Drinking Water Administrators (ASDWA) and the American Water Works Association (AWWA).

The PFAS Workgroup will consider toxicological and regulatory methodologies by other states. As funding and time allow, ODW will consider having subject matter experts present to the PFAS Workgroup.

4.3 Virginia PFAS Monitoring Study

Due to the widespread use of PFAS in various applications, PFAS contamination has been reported in multiple media including soil, water, air, and biosolids. However, PFAS Workgroup discussions will focus on the PFAS contamination in drinking water in Virginia and will include the occurrence of PFAS in finished water as well as water supplies. To identify possible sources of contamination, the PFAS Workgroup will also consider sources of drinking water such as rivers, lakes, springs, and groundwater aquifers.

Different states used different methodologies and approaches to establish MCLs for specific compounds within the broad family of PFAS contaminants. Conducting a statewide PFAS sampling and monitoring study is time and resource-intensive, and costly. ODW worked with EPA and secured funding of $145,000 via the Public Water Supply Supervision (PWSS) grant program. VDH intends to use this grant to help with sampling. The grant requires an in-kind contribution of $48,333. The EPA funding is not sufficient to sample all waterworks. Hence, a more focused PFAS sampling study design is required. HB586 restricts testing to no more than 50 representative waterworks and major sources of water.

4.3.1 An approach based on potential higher risk reduction

ODW plans to sample the 17 largest waterworks in Virginia using certified laboratories. These waterworks are located throughout the Commonwealth. Most use surface water, not groundwater, as the source water. Staff anticipates sampling at the surface water entry points. Also, ODW plans to sample at selected small and medium community waterworks using surface and groundwater sources, as funding allows. Staff will prioritize sampling based on proximity to activities and locations likely to pose a risk for PFAS contamination, such as:

- Landfills
- Airports
- Industrial activity
- Military
- Known or suspected contamination

Staff will also prioritize by population served--higher population means a higher priority. Given the limited funding, ODW will likely only offer one sample per waterworks. ODW will work with the Virginia Department of Environmental Quality (DEQ) on identifying potential sampling locations.

4.3.2 Chromium (VI) Occurrence

UCMR3, conducted 2013 through 2015, included monitoring for total chromium and Chromium (VI). Based on data from the UCMR3, Virginia can identify entry points associated with specific waterworks that had Chromium (VI) detected for further evaluation.

5 References

Connecticut PFAS Action Plan. https://portal.ct.gov/DEEP/Remediation--Site-Clean-Up/PFAS-Task-Force/PFAS-Task-Force

US EPA PFAS Webpage. https://www.epa.gov/pfas

Virginia Legislative Assembly. https://lis.virginia.gov/cgi-bin/legp604.exe?201+sum+HB1257

US EPA PFOA and PFOS Health Advisories. https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos