WEST PLAINS WATER COALITION

# SUMMARY OF THE WEST PLAINS COMMUNITY PFAS SURVEY

SPOKANE, WA


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# CONTENT



## Background

The West Plains Water Coalition, a community-based 501c3, was founded in 2023 to find and share local PFAS information, and to advocate for safe clean water for everyone on the West Plains.

The founders suspected that PFAS contamination was worse than had been publicly reported. Results now show serious contamination in at least 400 of 1400 rural wells in this distinct aquifer, according to tests by homeowners, EPA, Fairchild AFB, and geologist Dr. Chad Pritchard.

The Coalition speaks about PFAS to regulatory agencies and elected officials, and aids their own community relations. Several members of the Coalition sit on other organizational boards, including the Restoration Advisory Board of Fairchild AFB.

The five board members have had careers in nonprofit leadership, business, education, law, military, and healthcare. 35 volunteers and advisors support over 400 members in rural Eastern Washington, plus interested persons from regional and national organizations and the media. Outreach and education activities are funded by a Public Participation Grant from the Washington Department of Ecology.

This survey began as an inquiry into the many concerns of residents, the lack of help available for private well owners, holes in the regulatory safety net, real estate valuation, and suspected health affects for all living things.

On behalf of our neighbors, we hope that this illustration of the lived PFAS experience brings more constructive attention to the circumstances in our Spokane community.

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# FINAL REPORT

## Survey Overview

**Purpose** This descriptive survey was designed to learn the knowledge, awareness perspectives and concerns of West Plains residents about water contamination from per-and polyfluoroalkyl substances (PFAS).

**Key findings** Many respondents had good knowledge and awareness of the PFAS contamination of the aquifer that supplies well water in the area, especially after the West Plains Water Coalition (WPWC) was formed (2023). Less than 50% of respondents had added a filtration system to their drinking water, 79% are still using unfiltered well water for gardens or other farming activities, and 7% have asked for and/or received blood test screening, although they likely have had PFAS exposures. There is much concern about exposures and health effects, especially cancers. One-third of respondents reported having someone who is immunocompromised in their household.

**What do these findings mean?** Respondents know about PFAS and how they effect drinking water, as well as potential negative impacts to their health and those in their households. PFAS are strongly associated with decreasing immunity in those with exposures and those who are immunocompromised have a greater risk for infections and decreased vaccine protection. Yet many respondents still have not added protections, such as filters, and have not addressed PFAS exposure risks with health providers.

**Next steps** The WPWC presented the results of this study with respondents and community members via public meetings and on the website. Results will be now shared with other public health agencies and PFAS community and research organizations. The Health Committee will work to provide medical provider education for local clinics and agencies. There is an opportunity for the local health department to develop action plans to address and provide solutions for behavior changes related to health concerns such as providing information about blood tests as a screening tool for those with exposures.

# BACKGROUND

Groundwater from the regional Columbia Basin basalt aquifer system, located in the West Plains area of Spokane County, supplies hundreds of wells with drinking water. The Fairchild Air Force Base and Spokane International Airport are located above this aquifer system, which is separate from the larger Spokane Valley-Rathdrum Prairie Aquifer that serves the larger cities and areas of Spokane County. In 2016, the Environmental Protection Agency (EPA) provided a health advisory for PFOA/PFOS in drinking water. Prompted by the EPA advisory, the Air Force, in 2017, began testing the wells that serve the City of Airway Heights. PFAS concentrations were discovered by the Air Force in three wells that were above the EPA 2016 health advisory levels.[1] The majority of PFAS chemicals found came from aqueous film forming foam, better known as "firefighting foam" or AFFF. The Department of Defense (DoD) designated a testing area using Hayford Road as an eastern boundary for well testing, and implemented a filter installation program for those with positive PFAS contamination west of the road. It was believed these residents were more at risk for contamination since the area is closer to the air force base.

After a public records request in 2023 by a West Plains resident, it was revealed that the Spokane International Airport also had known PFAS well contamination in 2017, but had not released information to the community.[2] After receiving the records, the Washington State Department of Ecology (DoE) and EPA began testing other wells outside of the DoD designated area and found many PFAS positive wells.[3] As a result, the DoE began offering bottled water to residents with contaminated wells outside of the DoD area boundaries as a first step.[2] In addition, the DoE, through the city of Medical Lake, sponsored a grant to Dr. Chad Pritchard, professor of geosciences at Eastern Washington University, to map the West Plains aquifer/paleochannels flow in order to determine how PFAS contaminants move through the groundwater.[4]

## Methods

**Purpose** This survey was created to provide answers to many prevailing questions residents have asked at meetings of committee members, and to educate, through survey questions, information about PFAS water contamination participants may not know or may not have been aware.

**Survey Development** The WPWC Health Committee reviewed a number of community surveys regarding health and toxic chemical concerns. A descriptive survey would offer the ability to obtain quantitative data that would prioritize the concerns of community residents. Open text fields were also provided to allow further explanation of responses. The committee met over a three-month period to develop the survey. Oregon Public Health Institute (https://www.ophi.org/), which offers technical assistance to community organizations dealing with public health issues, was contacted for assistance and agreed to assist with the survey development and presentation. Drafts of the questions were sent to several individuals in health organizations, including PFAS researchers and the Washington Department of Health, for review and comments. The survey was made available online through the WPWC website, since it was known to the community as a source of information. Responses were not required for every question, some allowed multiple responses. (See Appendix A for questions). Because privacy concerns had been expressed at WPWC events, demographic questions were limited to simply obtain a 'snapshot' of respondents, to include the number and age of household members and years lived in the area.

**Survey Content Areas** Questions were developed in four areas of concern: PFAS literacy, water quality, habits and behaviors, and health effects. The goal for each area was perceptions and/or actions from respondents that could guide further actions from WPWC.

The PFAS literacy questions were designed to assess understanding, awareness, and knowledge. Presentations about PFAS were provided by the WPWC in 2024; it was important to learn if they had been effective.

## AUTHOR SPOTLIGHT

### Gail Oneal RN, PhD

*served 43 years as RN, in active patient care for 32 years, and taught/did research in the areas of community and environmental health and rural populations.*

### Bob Lutz, MD MPH

*is a local public health professional who supported ATSDR's PFAS exposure assessment of Airway Heights, WA in 2019.*

### Reid Oakes

*is a Healthcare Technology industry executive, leading global digital health transformation, standards, product innovation, and government advocacy programs.*

### Laura Flanagan, ND, MPH

*is a naturopath in private practice in Spokane.*

### Liz Goodwin-Oakes, BA

*has worked with non-profits in the arts and has been active in holistic healing for several decades. She recently completed a BA in Psychology*

### Masha Cole, MS, CHW

*of the Oregon Public Health Institute, specializes in providing technical support in data reporting and visualization for advocacy and community impact.*

Questions about water quality asked about types of water sources, well testing, filters, and home location respective to Hayford Road.

Habits/behaviors were asked to determine what changes, if any, had been made about well water contamination. Questions covered garden practices, livestock and pet water sources, and food consumption.

Health effects were an important area to explore, since there had been many comments and questions about PFAS and their associations with disease. Several questions asked about testing for PFAS levels and medical provider knowledge and actions.

**Survey Distribution** The online survey was advertised on the WPWC website, a local press release, and Facebook page. The survey was active from November 11, 2024 through January 31, 2025. Several reminders to participate were sent out in December and January. Although addresses were not collected, the majority of respondents lived in the West Plains area, based on household information.

**Analysis** Results were sent to an OPHI staff member as a CVS file, and analyzed using Excel (https://office.microsoft.com/excel) for descriptive statistics including frequencies, means, medians, ranges, and crosstabs. Crosstabs for this survey were completed using Excel Pivot Tables. Data were rechecked by OPHI and the Health Committee for accuracy.
Tables and charts showing results as counts, percentages and crosstabs were developed using only completed responses (See Appendix B).

## Results

A total of 117 people participated. Although there was no question about affiliation, it was evident from the responses that most were on the WPWC email list (n=479). A number of text responses indicated attendance at WPWC presentations. While respondents (n=111) indicated a range of ages for household members, the greatest number were adults 65+. Notably, there were 45 household members less than 18 years of age.

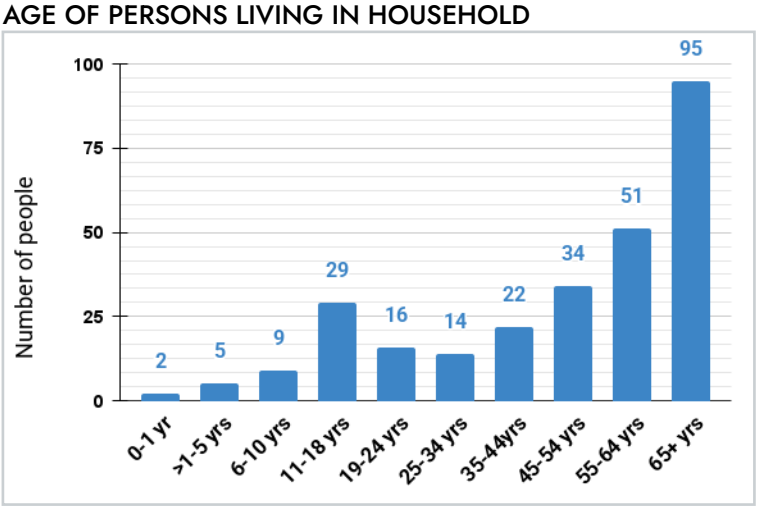


*Figure 3. Q28 What ages are represented of household members?*

**PFAS Literacy** The majority of respondents who answered the question of hearing the term

"PFAS" were aware of water contamination on the West Plains (113 of 117).

**TABLE 1 QUESTIONS 1 AND 2**

| Responses (n=17) | Q1: Heard the term PFAS prior to survey | Q2: Aware of West Plains PFAS contamination |
|---|---|---|
| YES | 113 (97%) | 113 (97%) |
| NO | 4 | 4 |

Only 57% answered the question about when they first learned about PFAS water contamination; however, there was an association between knowledge of PFAS in well water and timing of media coverage about Airway Heights and the Air Force base in 2017 (n=12) and again in 2024, when it was found that the international airport also had contaminated wells (n= 27).

Sixty-eight percent of respondents knew their primary source of drinking water was impacted by PFAS (Q3), and 77% reported they had high confidence in their level of knowledge of PFAS and the potential impacts. Only one percent answered they had never heard of it.

**PERCENTAGE OF IMPACTED, OUT OF 112 RESPONDANTS**

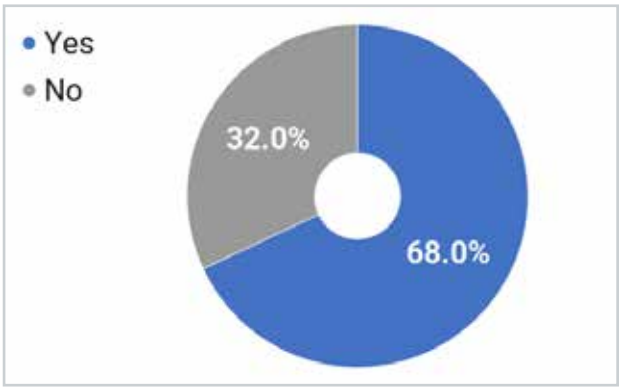


*Figure 4 Q3. Has your primary source of drinking water been impacted by PFAS?*

**Water Quality** Choices were about main sources of drinking water and included municipal tap water, unfiltered well water, filtered (for PFAS) well water, and bottled water. Respondents commonly provided multiple answers since some households used both bottled water and filtered or unfiltered water. Six respondents reported they were on municipal water, with four acknowledging they were on municipal water before 2017. Sixty percent (n=99) reported they live west of Hayford Road, in the area where the Air Force has tested many wells and is providing filter systems for affected households.

**TYPE OF FILTERED WATER**

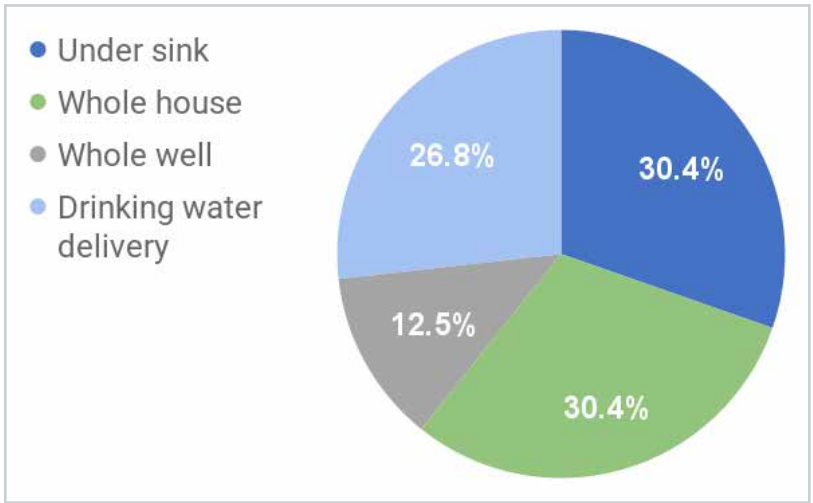


*Figure 5.Q10a. List types of filtered water*

Out of 111 respondents, 89% percent reported that they have had their wells tested for PFAS and 76% noted awareness of PFAS present in their well results. Well depths ranged from 40 feet to 1250 feet.

**Habits/Behaviors** Only 54 people out of 113 respondents reported adding filtered water to their water sources. Of those with

filters, seventeen listed point of use (POU) under-sinks filters. Seventeen have point of entry (POE) whole house filter systems and seven have point of entry at the well head. Fifteen households use bottled drinking water delivery.

***Of those who commented about changing their use of well water for activities, many mentioned not being able to garden or selling livestock and concerns for family and pets making comments such as: "No vegetable garden for the first time in 37 years." "Using water from home for animals." "Got rid of cattle and chickens. Stopped gardening." "Scared to use for pet, in flowers and to eat produce from our garden"***

Only 72 responded about where they get filters or filtered water, with 54% reporting they buy their own bottled water. (The DoD is providing water for 100+ homes. The Department of Ecology is assisting with bottled water and some filter systems.

Well water usage covered several activities. Seventy-nine percent of households report using well water for gardens or watering/feeding livestock. Fifty-four percent are consuming food products grown or raised with their well water and 70% for their pets.

Relying on the grocery store for food as prevention and waiting for filters were also revealed. When asked if they intended to sell agricultural food products, only 5% answered "yes."

**Health Effects** Nine questions covered the possible concerns of health effects due to PFAS exposure, including interactions with medical providers and concerns of PFAS-associated health conditions. One hundred fifteen respondents answered the question about their concern about PFAS in their drinking water. Most (85%) rated themselves as extremely or moderately concerned.

For the eight respondents who answered "not concerned" (n=4) or "slightly concerned" (n=4) to this question, their answers were compared to several other survey questions regarding well tests and having filters. Only one ("not concerned") reported having a well test and filtered well water for PFAS. Out of the remaining seven respondents, five answered they have unfiltered well water as their drinking water source, had well tests, and also answered yes to knowing they have PFAS in their well water. One respondent reported having no well test and no awareness of PFAS in their water, and one reported no awareness of PFAS in their water and did not answer about a well test.

When respondents were asked if they had discussed PFAS contamination with their medical provider, only 33 % (n=38) reported positively. Twenty-three (61%) of those respondents rated provider awareness as poor or very poor. Eleven (29%) thought they were treated poorly or very poorly by their medical provider when trying to discuss PFAS contamination and their health.

In Washington, blood tests for PFAS can be ordered by individuals without a medical provider order. When asked if they had ordered a test themselves, only 12 of 114 respondents (7%) had done so. Ten had abnormal test results and two had additional tests ordered as a result. Barriers to testing by their medical provider were reported for four of the 12 respondents. Free text comments included: "doctor didn't know about it and we both reached to find the accurate way to order the test" and "required out of system testing which resulted in a referral."

***Thirty-seven respondents (33%) reported there was a household member who was immunocompromised.***

The last question in this section asked respondents to list their health concerns related to PFAS. A list of known associations between PFAS and health issues was provided, based on current and ongoing research in both the US and Europe.[8,9] Responses were provided by 98 individuals, of whom thirteen answered they had no concerns of any PFAS-related health conditions. Single answer responses were given by three respondents for immune system effects and by one for high cholesterol levels/obesity risk. Three respondents listed "other" as their only response from the list but did submit a free text answer.

Multiple responses were received from the remaining 78 respondents. Immune system changes was the biggest individual concern overall (66%). Cancer concerns including kidney cancer at 57%, prostate cancer at 49%, and testicular cancer at 48%. Free text replies included breast cancer (2), bone cancer (1), pancreatic cancer (1), cervical (1) and ovarian (1) cancer, chronic lymphocytic leukemia (1), and general cancer and its complications (4). Increased cholesterol levels/obesity risks were reported by 61%, thyroid disease by 58%, and liver changes by 56%. Decreased fertility was reported by 14%, increased blood pressure during pregnancy by 11% and decreased growth and development in the fetus/infant at 14%. Other free text responses included: Parkinsons (2), brain tumor (1), acoustic neuroma (1), dog with brain cancer (1) hypertension (1), acid reflux (1), erectile dysfunction (2), gut health (1), and Ankylosing Spondylitis (1).

However, when all types were taken together, cancer was the main concern of most respondents at 35%.

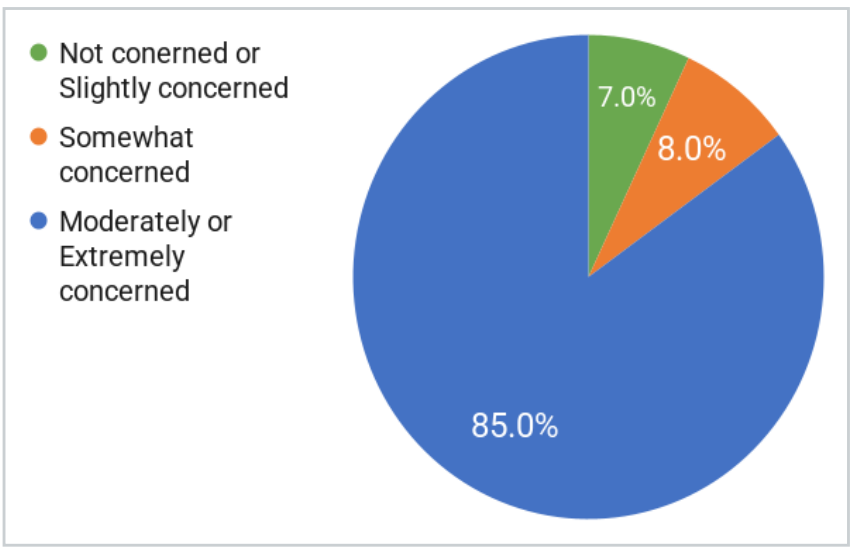


*Figure 6. Q17 How concerned are you about PFAS in your drinking water?*

**Cross-tabulation** Cross-tabulation (Crosstabs) uses tables to show the number (frequency) of respondents that have certain characteristics described in the cells of the table, in this case the responses to each question. Results may show the relationships or associations of the separate questions.

**REPORTED HEALTH CONCERNS**

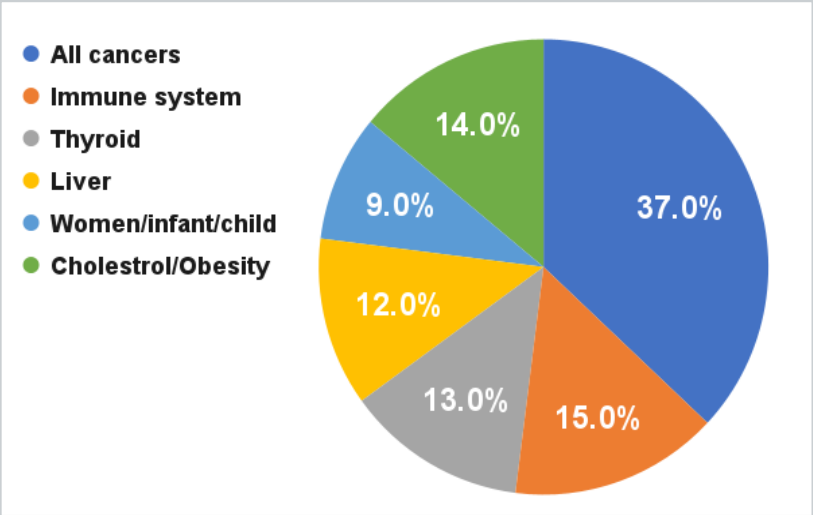


*Figure 7. Q25. Percentages of health concerns listed. Cancers include free text responses. Fertility/pregnancy/infant include decreased fertility, increased blood pressure in pregnant women, and decreased infant growth and development.*

Strong associations were seen between knowledge about water contamination (Q2) and PFAS in well water (Q8) with well testing (Q7), meaning those who were aware of water contamination and also of PFAS in their well water were more likely to have a well test. Of the 77% of respondents that chose the highest level of knowledge and about PFAS and their impacts (Q4 "Please describe your level of knowledge of PFAS?"), cross-tabulation with Q10 "Have you added filters or filtered water to your water sources?", found 36% had added some type of filtration compared to 41% that did not.

Cross tabulation of Q4 ("Please describe your level of knowledge of PFAS?") with Q12 ("Do you use well water for your garden or feeding livestock?"), Q14 ("Are you consuming food products that you grow or raise with your well water, from gardens, eggs, or livestock, or from your neighbors?"), and Q16 ("If you have pets, are your pets drinking your well water?) was performed.

Of those who reported the highest level of knowledge for Q4, 65.2% (n=70/112) were also using their well water for their gardens and livestock compared to those reporting the same level of knowledge who were not (14.29%, n=16/110). A

similar pattern was seen for those that chose either the highest level ("know about it and the impacts") or next highest level of level of knowledge ("know about it") for Q4 compared to Q14, 50% (n=55/110) reported consuming food products from their well water contrasted to those who chose the same levels of knowledge who were not consuming products from well water (37.28%, n=41/110). This pattern was repeated for Q4 compared to Q16, using well water for their pets. Respondents who chose the same two highest levels of knowledge (58.88%, n=63/107) reported giving well water to pets more than those at the same knowledge levels than reported they were not using well water for those activities (28.03%, n=30/107).

Respondents were asked if they had seen a medical provider to discuss PFAS contamination (Q18). This question was compared to their concern about PFAS in their drinking water (Q17). A total of 98 responders out of 114 (86%) expressed extreme or moderate concern by 31 (27.19%) who had seen a medical provider.

# DISCUSSION

Overall, respondents are aware and knowledgeable about PFAS water contamination in the West Plains. WPWC has provided many public presentations by experts in PFAS issues. Results suggest the Coalition has been successful in educating the local residents about general issues, such as water sources, private wells and testing, causes of the local contamination, and agencies involved in assisting the community. There is significant concern about ensuring clean water and health issues related to PFAS. There is need for further education in certain, areas such as medical provider knowledge, how to obtain screening blood tests, targeting specific resident groups that are experiencing certain barriers or continuing risk behaviors, and filter system access.

PFAS exposure is increasingly recognized as having significant health effects. Despite a majority of respondents a high level of PFAS knowledge, well testing, and awareness of PFAS in their drinking water, there are still many households without a filter system. This is concerning, given that 76% of respondents are aware of PFAS in their well water, and that WPWC had a filter expert and local filter company representatives at a public meeting in order to provide material about reducing exposure risks and using the right types of filters for different activities. There is need to continue to provide filter system information and also to discover the barriers that might be preventing more households from getting a filter system.

It is known that, although most of the survey respondents reported having their well tested (99/111), there are an estimated 1400 private water wells in the West Plains area.[4] Since the public report in 2024 that the Spokane International Airport contributed to PFAS contamination, those respondents, along with others who did not take the survey, that live east of Hayford Road (the Air Force sampling boundary), have not had as long to have well testing compared

to those who live west of Hayford Road, where testing started in 2017. The amount of time that the Department of Ecology was able to test wells in the extended sampling area was restricted, so only 411 wells were tested. This highlights the need for more wells to be tested to better understand the full extent of PFAS exposure in people, animals, and soils.

One question asked how the household was obtaining filtered water. Although there were only 72 responses, 39 reported they were buying bottled water. The Air Force is installing filter systems in homes with PFAS-contaminated wells, and the Department of Ecology is providing bottled water and under-sink filters for those in the newer sampling area. It may be that there are a number of people are still not aware of those resources or that they choose not to deal with governmental agencies, as has been voiced at WPWC presentations. Additionally, well testing and filters are expensive; it may be that some households buy water as a prevention measure, even without well testing. Perhaps finding different methods of communication and wider reach such as working with other community leaders may encourage people to access the resources that are available now.

Six households reported being on municipal water as the primary water source. However, four were on it prior to 2017, when PFAS were discovered in the Airway Heights municipal water system. Three of the four respondents have not discussed possible PFAS exposure with a medical provider. One respondent reported meeting with a medical provider, had a blood test, and had results that were abnormal. Households with municipal water use in the West Plains before 2017 may be unaware they are at risk of previous PFAS exposures. Given a median of 16 years living in the West Plains, continued information about historical causes of exposure is necessary, as PFAS had been used since the 1970s.

There is a growing younger population moving to the West Plains; census data reporting identifies the median age as 28.5 years and the number of youth (from 0-18 years) at 44.39%.[10] This is significant because of the strong associations of detrimental PFAS effects to fetal, infant, and young children's growth and

development as well as other health problems.[11,12,13] More information is needed to explain the risks to pregnant women and families with children, and to childcare workers, so that they are aware of the problem and possible need for a filtered water system.

According to data from the 2021 National Health Interview Survey, the US national average for immunocompromised populations is 6.6%.[14,15] Thirty-three percent of respondents reported someone in the household who was immunocompromised. Further clarification of this result is needed.

It is important to know If people are changing any behaviors or habits in their homes or with activities due to PFAS, so that WPWC can provide information or find expert answers to reduce exposures and increase safety in daily endeavors. A follow-up survey or focus group meetings may offer insights to current and future needs.

**Limitations** We did not ask for many demographic characteristics. Having more information, such as economic status, ages of respondents, education levels, and/or gender may have given a clearer picture about how different groups perceive the problems of PFAS and health concerns. The study invitation mostly advertised on the West Plains Water Coalition website and Facebook page. It was geographically directed to the immediate test areas known to have contamination; most respondents did not live in areas where they had access to municipal water. More information from actual Airway Heights residents who are now on municipal water but had PFAS contamination in water before 2017 may have provided more information about health issues and concerns, especially since 333 residents had blood tests two years after the change to water from the city of Spokane, with all reported to have PFAS in their blood up to 56 times the national averages.[16] Due to a computer software error, one question (#29) asking about other concerns related to PFAS did not show up on the online survey.

# NEXT STEPS

Results will help develop more educational presentations for advocacy messaging, and to increase PFAS awareness in local and state health organizations. The Spokane Regional Health District may use the results to partner with community leaders and help WPWC access funding

for local safety measures, such as regular PFAS filter disposal and sewage PFAS testing.

Targeted messages will be developed for people with PFAS exposures and the need for risk reduction and screening tests. Additional efforts will help medical providers understand health concerns and issues regarding PFAS exposure. Further study is needed about the high percentage of immunocompromised household members.

The coalition will work with the community and state and local agencies to advocate and identify barriers to obtaining filters and increase water filter use. Additionally, it will be important to provide education to a wider audience that has not yet participated in WPWC public presentations or realized the degree and area of water contamination.

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# APPENDIX A: SURVEY INSTRUCTIONS AND QUESTIONS

## Participate in the West Plains Water Coalition Community Survey, developed by the WPWC Health Committee

**About us:**
The WPWC Health Committee is made up of people with interests and background in the environment and community health issues and includes two doctors with degrees in public health, a nurse with years of experience in patient care and health research, a healthcare technology executive working on better health initiatives, and non-profit expert with a background in health and behaviors. We were spurred to action because we live or have involvement in the West Plains area, believe in "the fair protection from environmental and health hazards, as well as equal access to the decision-making processes behind environmental policies and development" (goldmanprize.org), and we also have and/or know people who have contaminated wells from PFAS.

**What we do:** The Health Committee develops health education information and projects as health research becomes available, to help community members become more informed and pro-active about their health regarding water quality and our current PFAS situation. It informs WPWC board members of our work, allowing WPWC to increase community education, to inform policy leaders of the types of support community members need, and to develop future projects that help all of us.

**Why this survey:** The purpose of this survey is to learn more about the effects of PFAS on health and lifestyle from your own perspectives, not from those of the news reporters or politicians. We need your input so we can help our own community meet its needs.

**Who should do the survey:** People who live in the West Plains area and are concerned about PFAS and contaminated well water. The survey is online and takes about 15-20 minutes of your time. Again, participation is completely voluntary. You do not have to answer every question and responses are anonymous.

**Unsure?** We are available to answer questions you may have about the survey. Please reach out to WPWC if you are on the fence about participating.

# SURVEY QUESTIONS

## PFAS Literacy

> *"The goal of this survey was to gather information about the issues our community has encountered due to PFAS. Participation is completely voluntary. You do not have to answer every question. Individual responses will be kept anonymous. Survey results will help the WPWC better understand the community's lived experience of the PFAS problem and to identify where the community needs help."*

**1.** I have heard the term "PFAS" prior to this survey. (Yes or No)
**2.** Are you aware of water contamination in the West Plains area? (Yes or No)
**3.** If yes, when did you learn about the water contamination taking place in the West Plains? (month and year collected)
**4.** To your knowledge has your primary source of drinking water been impacted by PFAS? (Yes or No)
**5.** Please describe your level of knowledge of PFAS? How much do you know? (Multiple choice options: I've never heard of it what it is, I've heard of it but don't know what it is, I think I know what it is, I know what it is, I know what it is and the potential impacts)

## Water Quality

**6. What is your main source of drinking water now?** (Multiple choice: municipal tap water {If true: Were you on Municipal Water prior to 2017?}, Unfiltered well water, well water filtered for PFAS, Bottled water, Other {text write-in})
**7.** I live... (Multiple choice: East or West)... of Hayford Road (the designated boundary for Fairchild air Force Base).
**8.** Has your well water been tested for PFAS? (Yes or No)
**9.** Are you aware if PFAS are present in your water test results? (Yes or No)
**9a.** Do you know the depth of your well? (Yes, with number of feet deep or No)

## Habits/Behaviors

**10.** Have you added filters or filtered water to your water sources? (Yes: under sink, whole

house, whole well, drinking water delivery or No)

**11. If you have filters, do you get water from:** (Multiple choice: WA Department of Ecology Department of Defense (Air Force), Buy our own)

**12. Do you use well water for your garden or feeding livestock?** (Yes or No)

**13. Have you made any changes to the use of water for your garden or livestock due to water contamination?** (Yes: please describe how you have changed use of water for garden and livestock or No)

**14. Are you consuming food products that you grow or raise with your well water, from gardens, eggs, or livestock, or from your neighbors?** (Yes or No)

**15. Do you sell, or intend to sell, crops or livestock products you've grown?** (Yes or No)

**16. Are your pets drinking your well water?** (Yes or No)

**17. How concerned are you about PFAS in your drinking water?** (Multiple choice: Not concerned, Slightly concerned, Somewhat concerned, Moderately concerned, Extremely concerned)

**18. Have you discussed PFAS contamination with your medical provider?** (Yes or No)

**19. How would you rate your provider's awareness about your exposure to PFAS?** (Multiple choice: Excellent, Good, Average, Poor, Very poor)

**20. How do you think you were treated by your provider regarding PFAS questions?** (Multiple choice: Excellent, Good, Average, Poorly, Very poorly)

**21. Have you or members of your household had a blood test for PFAS?** (Yes or No)

**21a. If yes, were the results higher than normal?** (Yes or No)

**22. As a result of having a PFAS blood results, were additional tests ordered?** (Yes or No)

**23. Did you experience any barriers in getting a blood test for PFAS?** (Yes, please describe or No)

**24. Is anyone in your household immunocompromised?** (Yes or No)

**25. What PFAS related health conditions are you concerned about for yourself or household members?** (Yes + If yes, please check all that apply: Testicular cancer, Kidney cancer, Prostate cancer, Changes in liver enzymes or liver damage, Decreased fertility, Increased blood pressure in pregnant women, Changes in the body's immune system to fight infections, including reduced vaccine response, Increased cholesterol levels and/or risk of obesity, Thyroid disease Decreased infant and fetal growth and development, Other fill in, or No)

**26. How long have you lived in the West Plains area?** (Number of years & months)

**27. How many people live in your household?** (Total number)

**28. What ages are represented in your home?** (Number in each category: 0-1yr, 1-5 yrs, 5-10 yrs, 11- 18 yrs, 19-24 yrs, 25-34 yrs, 35-44 yrs, 45-54 yrs, 55-64 yrs, 65 or above)

**29. Are there any other issues or concerns you would like us to know about?** (Free form text field)

# APPENDIX B:
# TABLES AND CHARTS OF RESULTS

## Characteristics

### HOW MANY YEARS HAVE YOU LIVED IN WEST PLAINS?

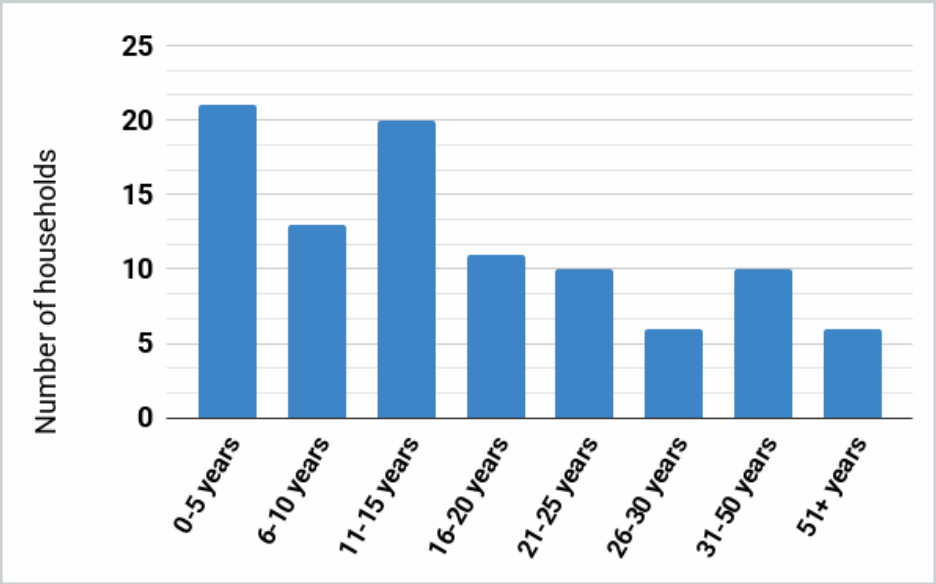



*Figure 1. Q26 How long have you lived in the West Plains (years)? Respondents (n=97) Indicated they had lived in the West Plains from 6 months to 71 years (median of 16 years, mean of 21 years.*

### HOW MANY PERSONS PER HOUSEHOLD?

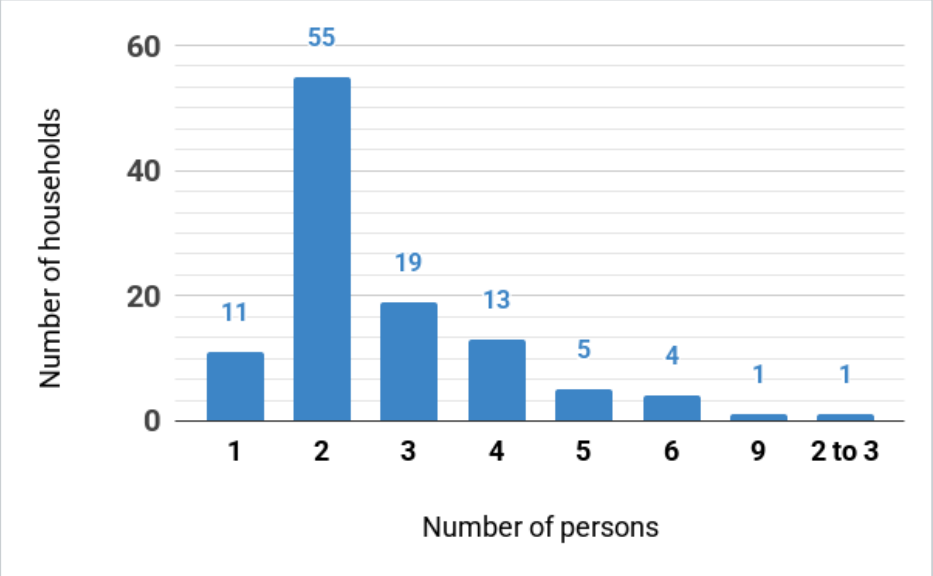


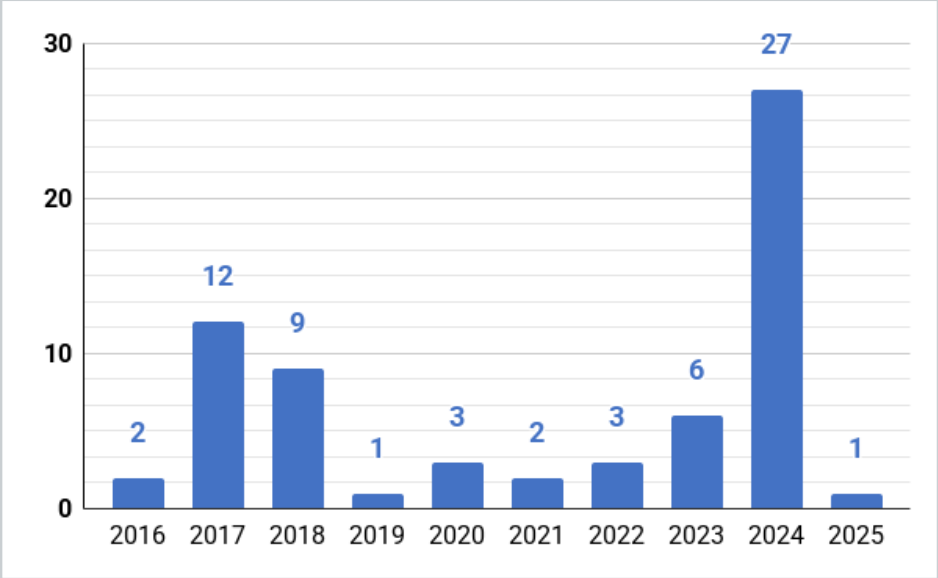

*Figure 2. Q27 How many people are in your household?*

# PFAS Literacy

TABLE 1 PFAS LITERACY AWARENESS AND KNOWLEDGE

| REPONSES | N | % |
|---|---|---|
| Question 1: Heard the term PFAS prior to survey? N-117 | | |
| YES | 113 | 97% |
| NO | 4 | 3% |
| Question 2: Aware of West Plains PFAS contamination? N=117 | | |
| YES | 113 | 97% |
| NO | 4 | 3% |
| Question 3: Knowledge that your primary source of water has been impacted by PFAS? N=112 | | |
| YES | 76 | 68% |
| NO | 36 | 32% |

QUESTION 2A. WHEN DID YOU LEARN ABOUT PFAS CONTAMINATION? (N=117)




*Range: 5/30/2016-1/13/2025*

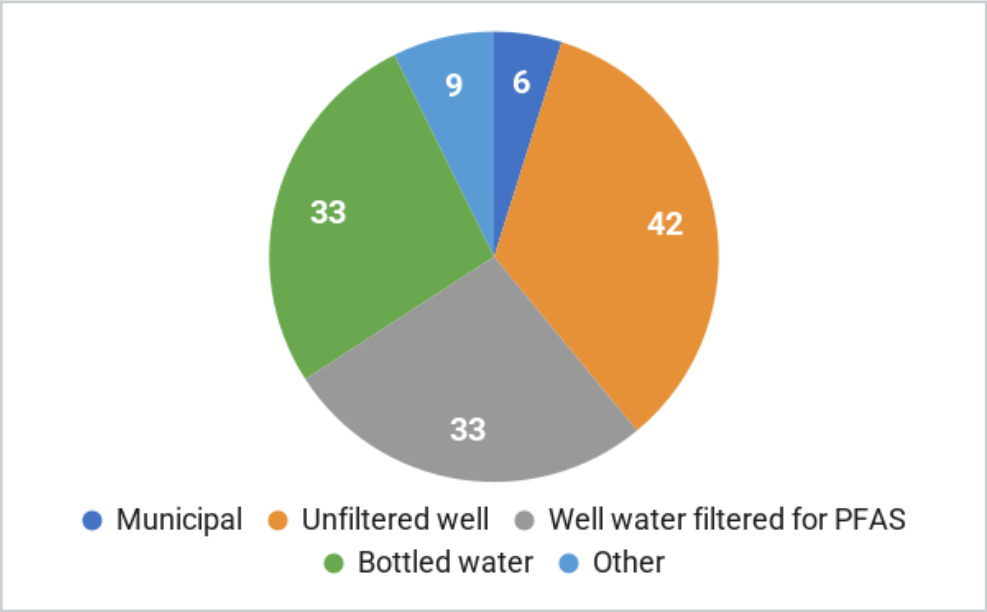
*The majority of respondents learned of PFAS water contamination in 2024, which correlates to the news of Spokane International Airport contamination.*

QUESTION 4 DESCRIBE LEVEL OF KNOWLEDGE OF PFAS

| REPONSES | N | % |
|---|---|---|
| Question 4: Describe your level of knowledge of PFAS N=115 | | |
| I've never heard of it | 1 | 1% |
| I've heard of it but don't know what it is | 7 | 6% |
| I think I know what it is | 6 | 5% |
| I know what it is | 12 | 11% |
| I know what it is and the potential impacts | 86 | 77% |

# Water quality

### QUESTION 5 MAIN SOURCE OF DRINKING WATER? (N=114)




*There were 2 responses for filtered water for PFAS + bottled water, 1 for water pitcher for PFAS filtration, 1 for unfiltered + bottled water. Nine respondents chose "other" without any explanation*
*Comments given: Filtered water but not for PFAS; Double filtered but not for PFAS; Reverse osmosis unit; carbon filters; Well not detectable for PFAS; Live in city of Spokane boundary-municipal water; tap water now from Spokane*

### QUESTION 5A HAVE BEEN ON MUNICIPAL WATER BEFORE 2017? (N=4)

All reported yes and they are also currently on municipal water.

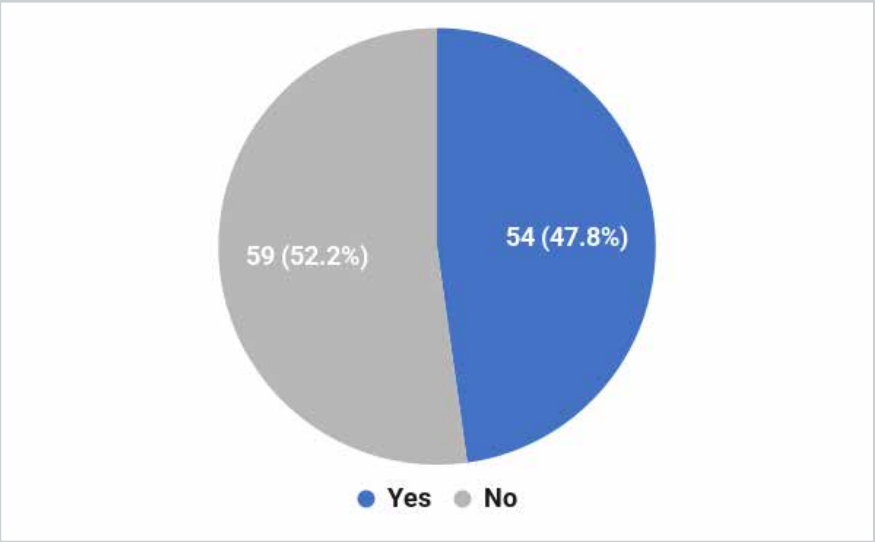
### QUESTIONS 6-9 WELL LOCATION AND AWARENESS

| REPONSES | N | % |
|---|---|---|
| **Question 6: I live__of Hayford Rd. (Air Force boundary) N=114** | | |
| EAST | 46 | 40% |
| WEST | 68 | 60% |
| **Question 7: Your well tested for PFAS? N=111** | | |
| YES | 99 | 89% |
| NO | 12 | 11% |
| **Question 8: Are you aware of PFAS in your water test results? N=111** | | |
| YES | 84 | 76% |
| NO | 27 | 24% |
| **Question 9: Know your well depth? N=114** | | |
| YES | 80 | 70% |
| NO | 34 | 30% |

*Q9. Some reported more than one well for a total of 88 wells. Range of depths reported: 40 ft. to 1250 ft. Range: 40 ft. to 1250 ft.*

# Habits/Behaviors

QUESTION 10 ADDED FILTERS OR FILTERED WATER TO WATER SOURCES (N=113) (Y=54 N=59)




QUESTION 11 IF YOU HAVE FILTERS OR FILTERED WATER, WHERE DO YOU GET THEM?

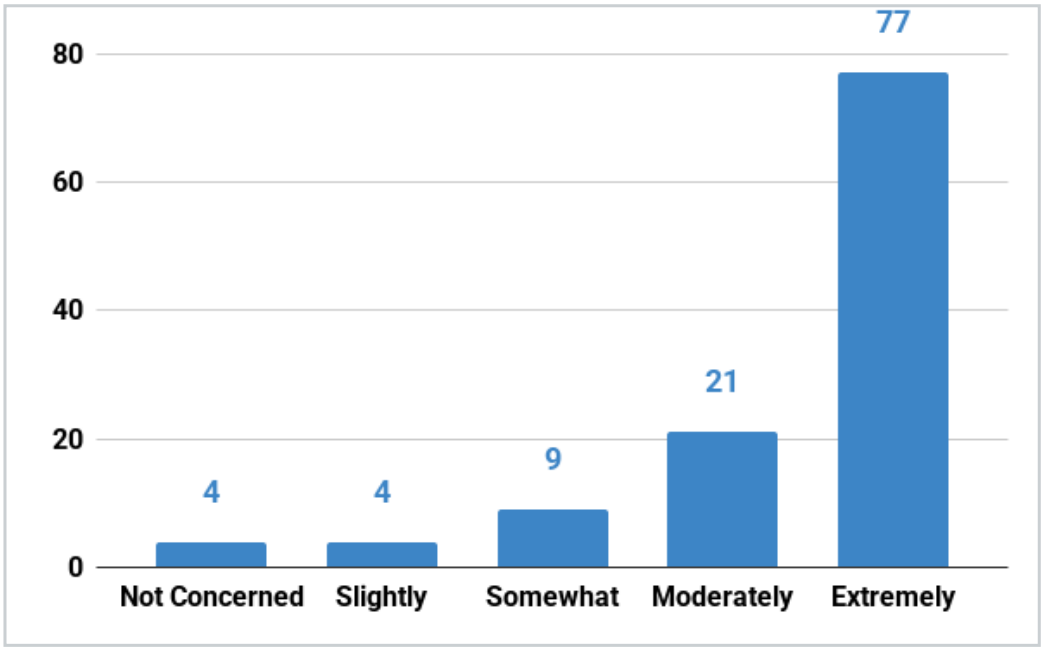
| REPONSES | N=72 | % |
|---|---|---|
| DEPARTMENT OF ECOLOGY | 25 | 35% |
| DOD (AIR FORCE) | 8 | 11% |
| BUY YOUR OWN | 39 | 54% |

QUESTIONS 12-16 USES OF WELL WATER

| REPONSES | N | % |
|---|---|---|
| Question 12: Use well water for your garden or livestock? N=114 | | |
| YES | 90 | 79% |
| NO | 24 | 21% |
| Question 13: Made any changes to the use of well water for gardens/livestock? N=112 | | |
| YES | 25 | 22% |
| NO | 87 | 78% |
| Question 14: Consuming food products grown or raised with well water? N=112 | | |
| YES | 64 | 57% |
| NO | 48 | 43% |
| Question 15: Sell or intend to sell crops or livestock products you grew? N=113 | | |
| YES | 6 | 5% |
| NO | 107 | 95% |
| Question 16: Pets drinking well water? N=109 | | |
| YES | 76 | 70% |
| NO | 33 | 30% |

# Heath Effects

### QUESTION 17 CONCERN ABOUT PFAS IN DRINKING WATER

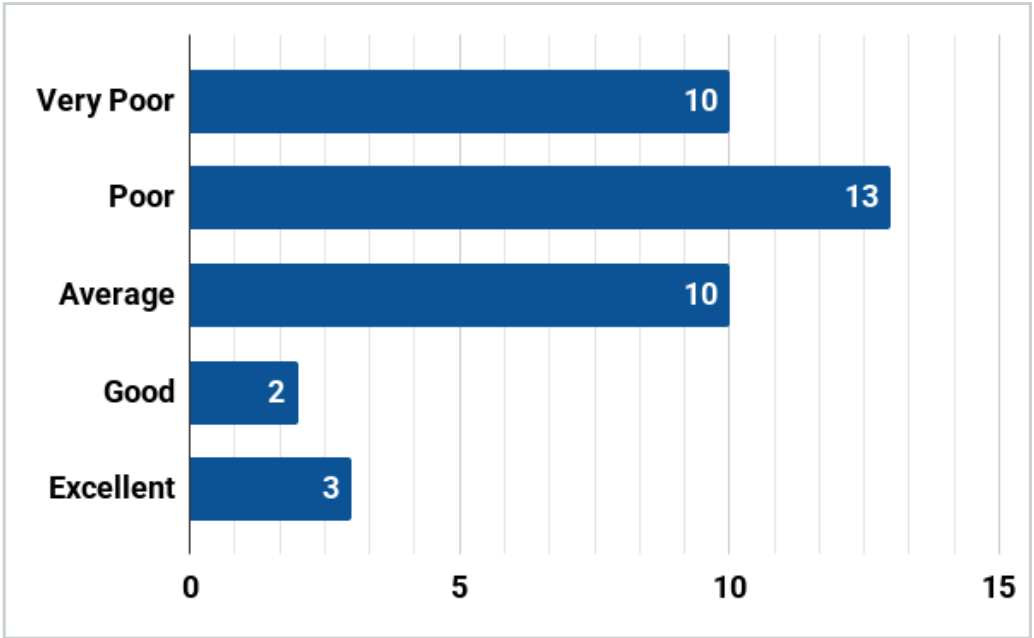



*Percentages: Moderately + Extremely= 85% of respondents*

### QUESTION 18 HAVE YOU DISCUSSED WITH A MEDICAL PROVIDER?

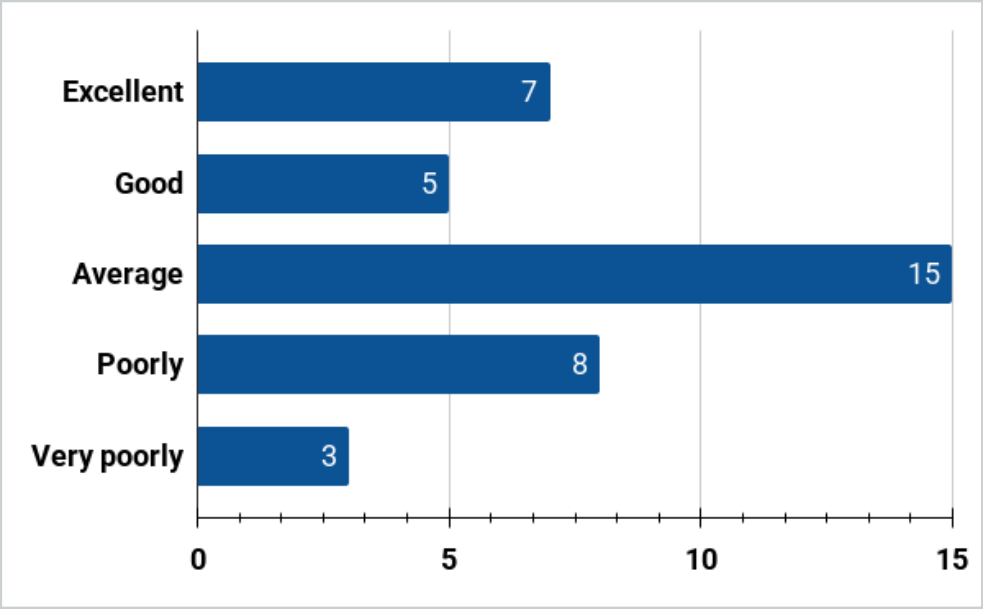
| REPONSES | N=114 | % |
|---|---|---|
| YES | 38 | 33% |
| NO | 76 | 67% |

### QUESTION 19 RATE PROVIDER'S AWARENESS OF PFAS




*61% of the 38 respondents rated providers at poor or very poor*

## QUESTION 20 HOW WERE YOU TREATED?




*29% thought they were treated "poorly" or "very poorly", 39% treated "average", and 32% "good" or "excellent"*

## QUESTIONS 21-23 BLOOD TESTING

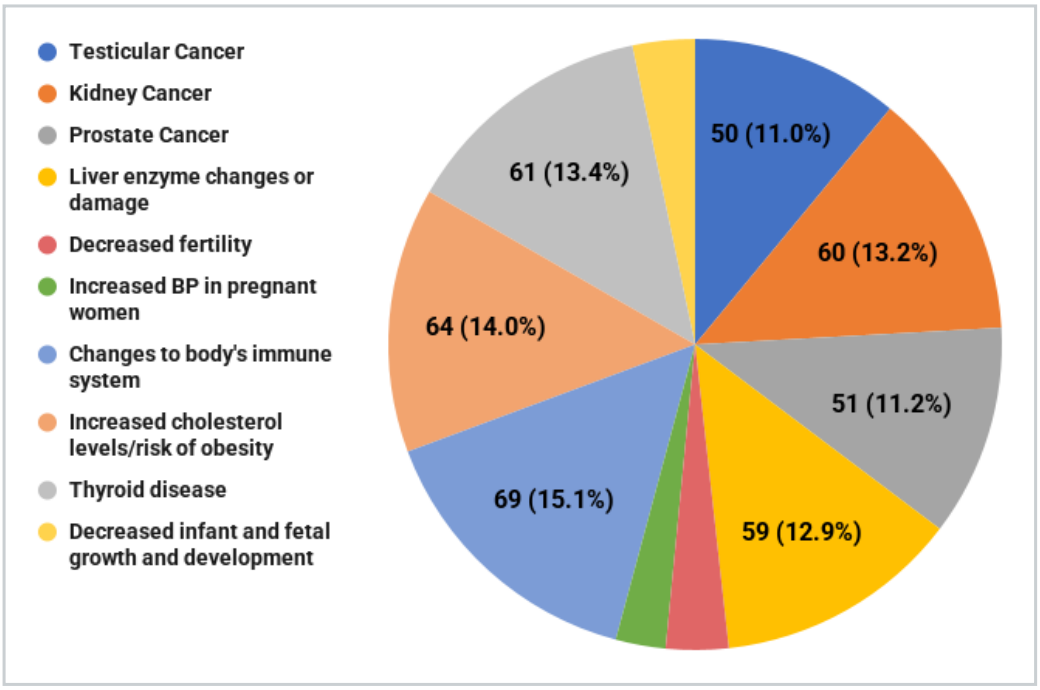
| REPONSES | N | % |
|---|---|---|
| Question 21: Had a blood test? N=114 | | |
| YES | 12 | 7% |
| NO | 102 | 93% |
| Question 21a: Results higher than normal? N=12 | | |
| YES | 10 | 83% |
| NO | 2 | 17% |
| Question 22: Additional tests ordered as result of blood test? N=12 | | |
| YES | 2 | 17% |
| NO | 10 | 83% |
| Question 23: Experienced barriers to getting blood test? N=12 | | |
| YES | 4 | 33% |
| NO | 8 | 67% |

*Comments about barriers: "Doctor didn't know about it and we both researched to find the accurate way to order the test", "Doctor had to go and research what he needed to do then he insurance provider changed what tests were allowed", "Required out of system testing which resulted in referral"*

## QUESTION 24 ANYONE IN THE HOUSEHOLD IMMUNE-COMPROMISED?

| REPONSES | N=113 | % |
|---|---|---|
| YES | 37 | 33% |
| NO | 76 | 67% |

QUESTION 25 WHAT PFAS-RELATED HEALTH CONDITIONS ARE YOU CONCERNED ABOUT? N=108




*Multiple responses allowed. Decreased infant and fetal growth and development (yellow) was 15 at 3.3%, decreased fertility (red) was 15 at 3.3% and increased BP in pregnant women (green) was 12 at 2.6%.*

## Cross-Tabs (using total percentages)

HAS WELL BEEN TESTED*AWARE OF WATER CONTAMINATION

| COUNT | Q2 Aware of water contamination | | | | TOTAL | |
|---|---|---|---|---|---|---|
| Q7 Well tested | YES | % | NO | % | NUMBER | PERCENT |
| YES | 97 | 87.4 | 2 | 1.8 | 99 | 89.2 |
| NO | 10 | 9.0 | 2 | 1.8 | 12 | 10.8 |
| TOTAL | 107 | 96.4 | 4 | 3.6 | 111 | 100 |

HAS WELL BEEN TESTED*AWARE OF PFAS IN YOUR WATER

| COUNT | Q8 Aware of PFAS in your water | | | | TOTAL | |
|---|---|---|---|---|---|---|
| Q7 Well tested | YES | % | NO | % | NUMBER | PERCENT |
| YES | 82 | 75.2 | 15 | 13.8 | 97 | 89.0 |
| NO | 2 | 1.8 | 10 | 9.2 | 12 | 11.0 |
| TOTAL | 84 | 77.1 | 25 | 22.9 | 109 | 100 |

USE WELL WATER FOR GARDENS/LIVESTOCK *ADDED FILTERS OR FILTERED WATER TO WATER SOURCES

| COUNT | Q10 Added filters | | | | TOTAL | |
|---|---|---|---|---|---|---|
| Q12 Use well water for gardens & livestock | YES | % | NO | % | NUMBER | PERCENT |
| YES | 41 | 36.6 | 47 | 42 | 88 | 78.6 |
| NO | 12 | 10.7 | 12 | 10.7 | 24 | 21.4 |
| TOTAL | 53 | 47.3 | 59 | 52.7 | 112 | 100 |

CONSUME PRODUCTS USING OWN WELL WATER *ADDED FILTERS OR FILTERED WATER TO WATER SOURCES

| COUNT | Q10 Added filters | | | | TOTAL | |
|---|---|---|---|---|---|---|
| Q14 Consuming products own well water | YES | % | NO | % | NUMBER | PERCENT |
| YES | 30 | 27.3 | 32 | 29.1 | 62 | 56.4 |
| NO | 23 | 20.9 | 25 | 22.7 | 48 | 43.6 |
| TOTAL | 53 | 48.2 | 57 | 51.8 | 110 | 100 |

USING WELL WATER FOR PETS * ADDED FILTERS OR FILTERED WATER TO WATER SOURCES

| COUNT | Q10 Added filters | | | | TOTAL | |
|---|---|---|---|---|---|---|
| Q16 Well water for pets | YES | % | NO | % | NUMBER | PERCENT |
| YES | 31 | 29 | 43 | 40.2 | 74 | 69.2 |
| NO | 20 | 18.7 | 13 | 12.1 | 33 | 30.8 |
| TOTAL | 51 | 47.7 | 56 | 52.3 | 107 | 100 |

LEVEL OF CONFIDENCE OF KNOWLEDGE ABOUT PFAS * ADDED FILTERS OR FILTERED WATER TO WATER SOURCES

| COUNT | Q10 Added filters | | | | TOTAL | |
|---|---|---|---|---|---|---|
| Q4 Level of confidence know about PFAS | YES | % | NO | % | NUMBER | PERCENT |
| I know what it is and the potential impacts | 40 | 36.04 | 46 | 41.44 | 86 | 77.48 |
| I know what it is | 4 | 3.6 | 7 | 6.31 | 11 | 9.91 |
| I think I know what it is | 4 | 3.6 | 2 | 1.81 | 6 | 5.41 |
| I've heard of it but don't know what it is | 3 | 2.7 | 4 | 3.6 | 7 | 6.3 |
| I've never heard of it | 1 | 0.9 | 0 | 0 | 1 | 0.9 |
| TOTAL | 52 | 46.84 | 59 | 53.16 | 111 | 100 |

LEVEL OF CONFIDENCE OF KNOWLEDGE ABOUT PFAS * USE WELL WATER FOR GARDENS/LIVESTOCK

| COUNT | Q12 Use well water for gardens & livestock | | | | TOTAL | |
|---|---|---|---|---|---|---|
| Q4 Level of confidence know about PFAS | YES | % | NO | % | NUMBER | PERCENT |
| I know what it is and the potential impacts | 70 | 62.5 | 16 | 14.29 | 86 | 76.79 |
| I know what it is | 8 | 7.14 | 4 | 3.57 | 12 | 10.71 |
| I think I know what it is | 4 | 3.57 | 2 | 1.79 | 6 | 5.36 |
| I've heard of it but don't know what it is | 5 | 4.46 | 2 | 1.79 | 7 | 6.25 |
| I've never heard of it | 1 | 0.89 | 0 | 0 | 1 | 0.89 |
| TOTAL | 88 | 78.56 | 24 | 21.44 | 112 | 100 |

LEVEL OF CONFIDENCE OF KNOWLEDGE ABOUT PFAS *CONSUMING PRODUCTS FROM OWN WELL WATER

| COUNT | Q14 Consuming products own well water | | | | TOTAL | |
|---|---|---|---|---|---|---|
| Q4 Level of confidence know about PFAS | YES | % | NO | % | NUMBER | PERCENT |
| I know what it is and the potential impacts | 47 | 42.73 | 37 | 33.64 | 84 | 76.37 |
| I know what it is | 8 | 7.27 | 4 | 3.64 | 12 | 10.91 |
| I think I know what it is | 5 | 4.55 | 1 | 0.9 | 6 | 5.45 |
| I've heard of it but don't know what it is | 2 | 1.82 | 5 | 4.55 | 7 | 6.37 |
| I've never heard of it | 1 | 0.9 | 0 | 0 | 1 | 0.9 |
| TOTAL | 63 | 57.27 | 47 | 42.73 | 110 | 100 |

LEVEL OF CONFIDENCE OF KNOWLEDGE ABOUT PFAS *USING WELL WATER FOR PETS

| COUNT | Q16 Well water for pets | | | | TOTAL | |
|---|---|---|---|---|---|---|
| Q4 Level of confidence know about PFAS | YES | % | NO | % | NUMBER | PERCENT |
| I know what it is and the potential impacts | 52 | 48.6 | 29 | 27.1 | 81 | 75.7 |
| I know what it is | 11 | 10.28 | 1 | 0.93 | 12 | 11.21 |
| I think I know what it is | 6 | 5.61 | 0 | 0 | 6 | 5.61 |
| I've heard of it but don't know what it is | 5 | 4.68 | 2 | 1.87 | 7 | 6.55 |
| I've never heard of it | 1 | 0.93 | 0 | 0 | 1 | 0.93 |
| TOTAL | 75 | 70.1 | 32 | 29.9 | 107 | 100 |

CONCERN ABOUT PFAS IN YOUR WATER*CONSUMING PRODUCTS FROM OWN WELL WATER

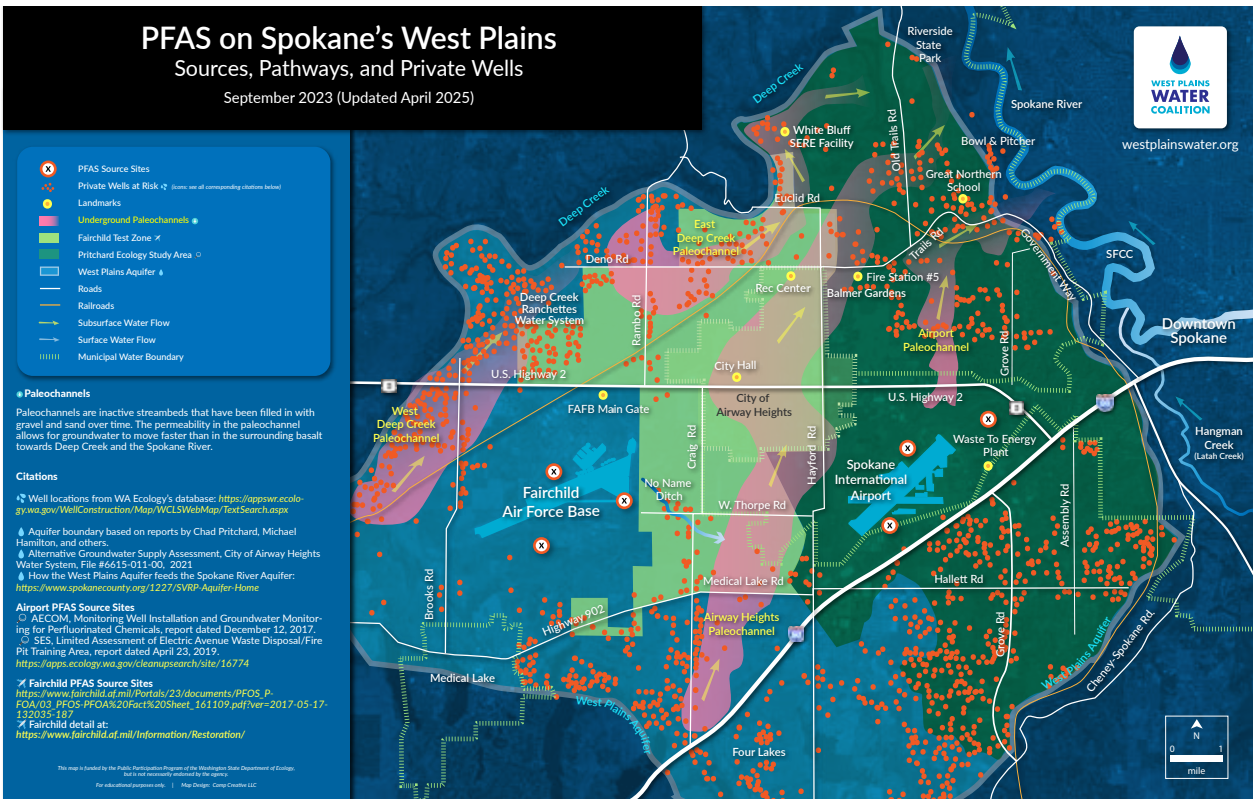
| COUNT | Q14 Consuming products own well water | | | | TOTAL | |
|---|---|---|---|---|---|---|
| Q17 Concern about PFAS in your water | YES | % | NO | % | NUMBER | PERCENT |
| Extremely concerned | 42 | 37.5 | 33 | 29.46 | 75 | 66.96 |
| Moderately concerned | 11 | 9.82 | 10 | 8.93 | 21 | 18.75 |
| Somewhat concerned | 6 | 5.36 | 2 | 1.79 | 8 | 7.15 |
| Slightly concerned | 2 | 1.79 | 2 | 1.79 | 4 | 3.57 |
| Not concerned | 3 | 2.68 | 1 | 0.89 | 4 | 3.57 |
| TOTAL | 64 | 57.14 | 48 | 42.86 | 112 | 100 |

## CONCERN ABOUT PFAS IN YOUR WATER*DISCUSS WITH MEDICAL PROVIDER

| COUNT | Q18 Discuss with medical provider | | | | TOTAL | |
|---|---|---|---|---|---|---|
| Q17 Concern about PFAS in your water | YES | % | NO | % | NUMBER | PERCENT |
| Extremely concerned | 31 | 27.19 | 46 | 40.36 | 77 | 67.55 |
| Moderately concerned | 4 | 3.51 | 17 | 14.91 | 21 | 18.42 |
| Somewhat concerned | 1 | 0.88 | 7 | 6.14 | 8 | 7.02 |
| Slightly concerned | 2 | 1.75 | 2 | 1.75 | 4 | 3.5 |
| Not concerned | 0 | 0 | 4 | 3.51 | 4 | 3.51 |
| TOTAL | 38 | 33.33 | 76 | 66.67 | 114 | 100 |

## CONCERN ABOUT PFAS IN YOUR WATER*HAD BLOOD TEST

| COUNT | Q 21 Had blood test | | | | TOTAL | |
|---|---|---|---|---|---|---|
| Q17 Concern about PFAS in your water | YES | % | NO | % | NUMBER | PERCENT |
| Extremely concerned | 10 | 8.77 | 67 | 58.77 | 77 | 67.54 |
| Moderately concerned | 1 | 0.88 | 20 | 17.54 | 21 | 18.42 |
| Somewhat concerned | 1 | 0.88 | 7 | 6.14 | 8 | 7.02 |
| Slightly concerned | 0 | 0 | 4 | 3.51 | 4 | 3.51 |
| Not concerned | 0 | 0 | 4 | 3.51 | 4 | 3.51 |
| TOTAL | 12 | 10.53 | 102 | 89.47 | 114 | 100 |



# TAKE ACTION TODAY

**Get your home well tested**

If the result is high, **get a filter system**

**Save your paperwork:** results, correspondence, and receipts

**Talk to your doctor:** a blood test may be indicated

**Talk with your family** & neighbors about PFAS

**Visit** http://westplainswater.org for activities & opportunities

**Visit** https://doh.wa.gov/community-and-environment/contaminants/pfas for health info

**Join the Coalition** as a member, volunteer, or contributor

## PLEASE PASS THIS REPORT TO SOMEONE YOU KNOW!

WESTPLAINSWATER.ORG/2025-SURVEY-RESULTS/

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