

# Colorado's approach for addressing PFAS



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# Overview

- What is PFAS and why are we concerned
- The department's PFAS Action Plan
- Action Plan progress



# Per- and polyfluoroalkyl substances (PFAS)

- Family of thousands of human-made substances
- “Forever chemicals” that don’t break down in our bodies or environment
- Used in products that resist heat, oil, stains, grease and water
  - Class B fire-fighting foams
  - Raincoats, shoes, popcorn bags, pizza boxes, Teflon pans
- Found in 99% of people’s blood
- Primary concern is drinking water since leads to higher PFAS levels in blood



# PFAS and health



- High cholesterol
- Liver damage
- Decreased vaccine effectiveness
- Asthma
- Thyroid disease
- Decreased fertility
- Pre-eclampsia
- Lower birth weight
- Possible kidney and testicular cancer

EPA drinking water health advisory of 70 parts per trillion for PFOA and PFOS combined

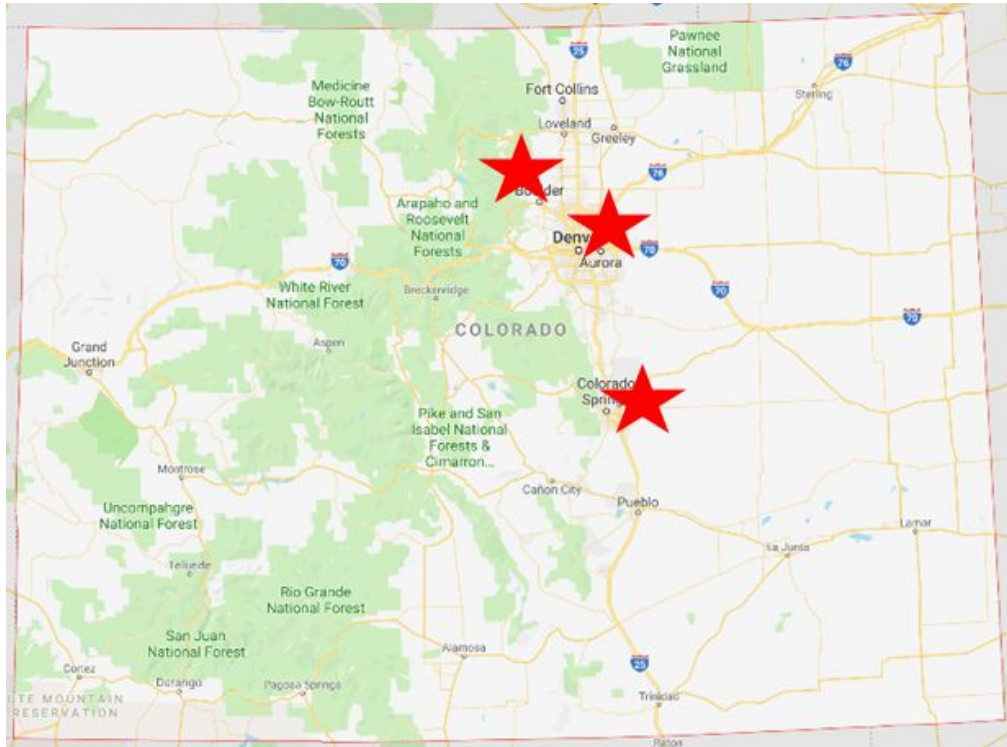
One part per trillion is one drop of detergent in enough water to fill a line of railroad cars 10 miles long



# Federal actions to address PFAS

- EPA to regulate PFOA and PFOS in drinking water
- EPA published guidance on disposal of PFAS materials
- DoD to phase out PFAS foams by Oct 2024
- Phase out of PFAS in consumer products
- Nationwide drinking water monitoring in 2023
- PFAS releases reported to EPA's Toxics Release Inventory
- Research health/environmental effects, remediation, replacement foams, testing methods, impacts to agriculture

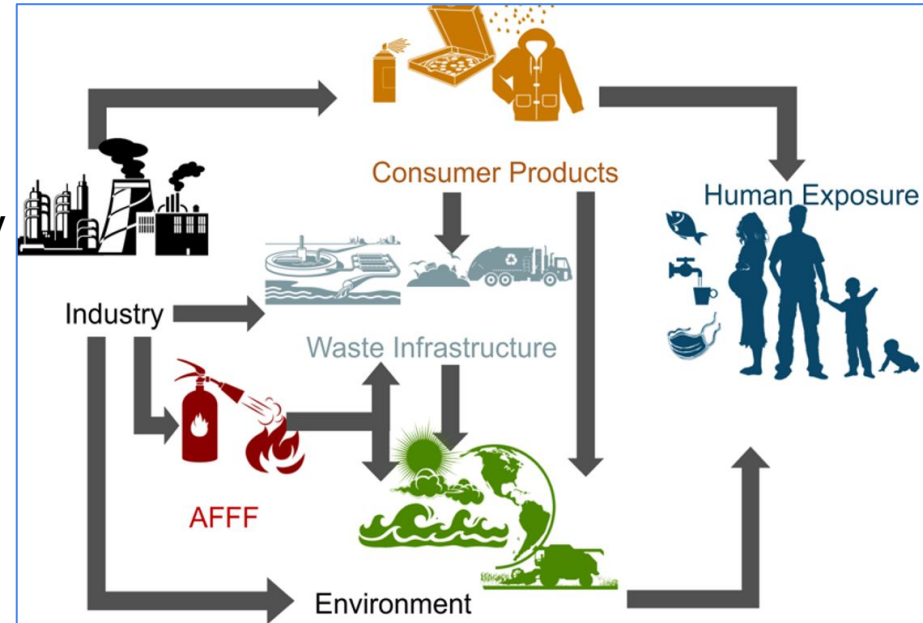
# The need to take action: What we knew about PFAS contamination impacting Colorado water supplies



- Contamination of drinking water sources impacting ~100,000 people in El Paso, Boulder, Adams Counties
- PFAS levels in blood of residents from El Paso County
  - Colorado School Public Health's PFAS AWARE<sup>1</sup> study
  - PFOS, PFOA, and PFHxS 2-12 times higher than national levels

# Department's PFAS Action Plan to break chain of exposure

- Identify impacted drinking water
- Develop contaminated sites inventory
- Reduce exposure above health advisory
- Regulatory authority, BMPs, resources
- Proper PFAS disposal
- Engage at national level



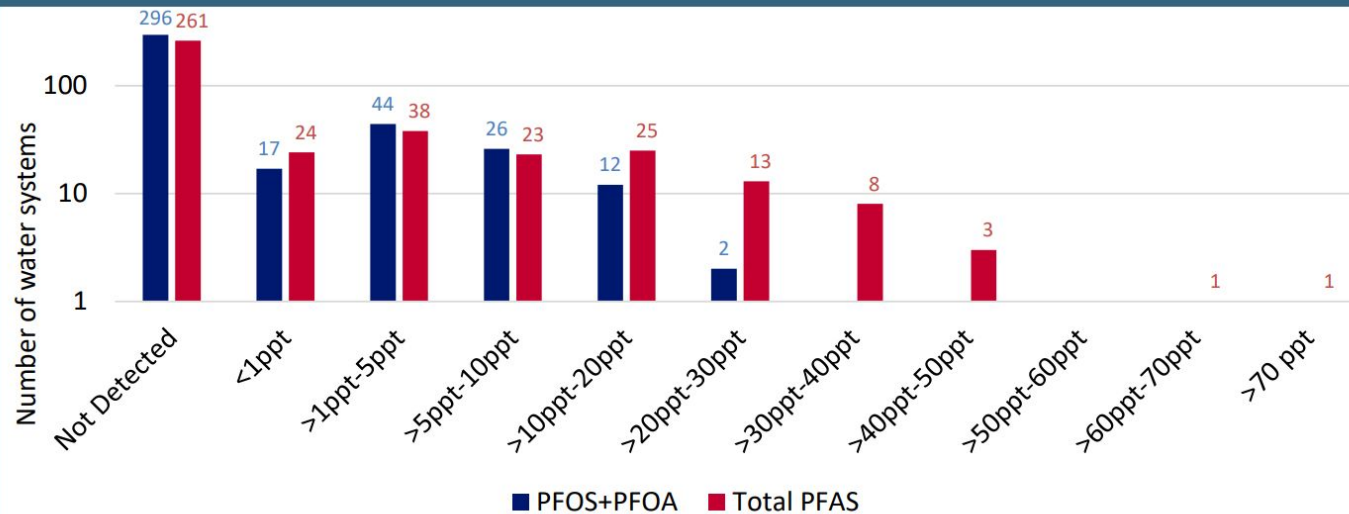
# 2020 PFAS drinking water sampling project

- \$500,000 from state legislature to help communities learn if residents are at risk
- Offered free testing to public water systems with their own sources serving communities, schools, and workplaces and also to fire districts with wells
- 2020 PFAS drinking water sampling project findings
  - 400 water systems (50% of our community systems)
    - No treated drinking water above EPA health advisory
    - 2 water systems with source water above EPA health advisory
  - 15 fire districts
    - 2 fire districts with source water above health advisory
  - 71 surface water sites
    - Detects at all sites, mouth of Sand Creek above EPA health advisory
  - PFOS, PFOA, PFHxS, PFBS, PFHxA and PFHpA showed the highest levels and were the most prevalent with detections in greater than 20% of the samples
  - Replacement compounds GenX and ADONA detected in 2 samples at low levels



# 2020 sampling project results and follow up

## PFAS Concentrations in Treated Drinking Water Systems (number of water systems= 397)



### 2020 PFAS Sampling Effort

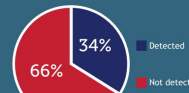


In the fall of 2019, the state legislature awarded the department \$500,000 to investigate potential impacts to drinking water from PFAS, pervasive chemicals that originate from toxic firefighting foam and other sources. The department used this money to facilitate voluntary statewide sampling of 400 water systems, 15 firefighting districts, and an additional 43 streams. The sampling included about half of the community public drinking water systems in the state serving around three-quarters of the population. The results are posted in an online dashboard at [www.colorado.gov/pacific/cdphe/pfas](http://www.colorado.gov/pacific/cdphe/pfas).

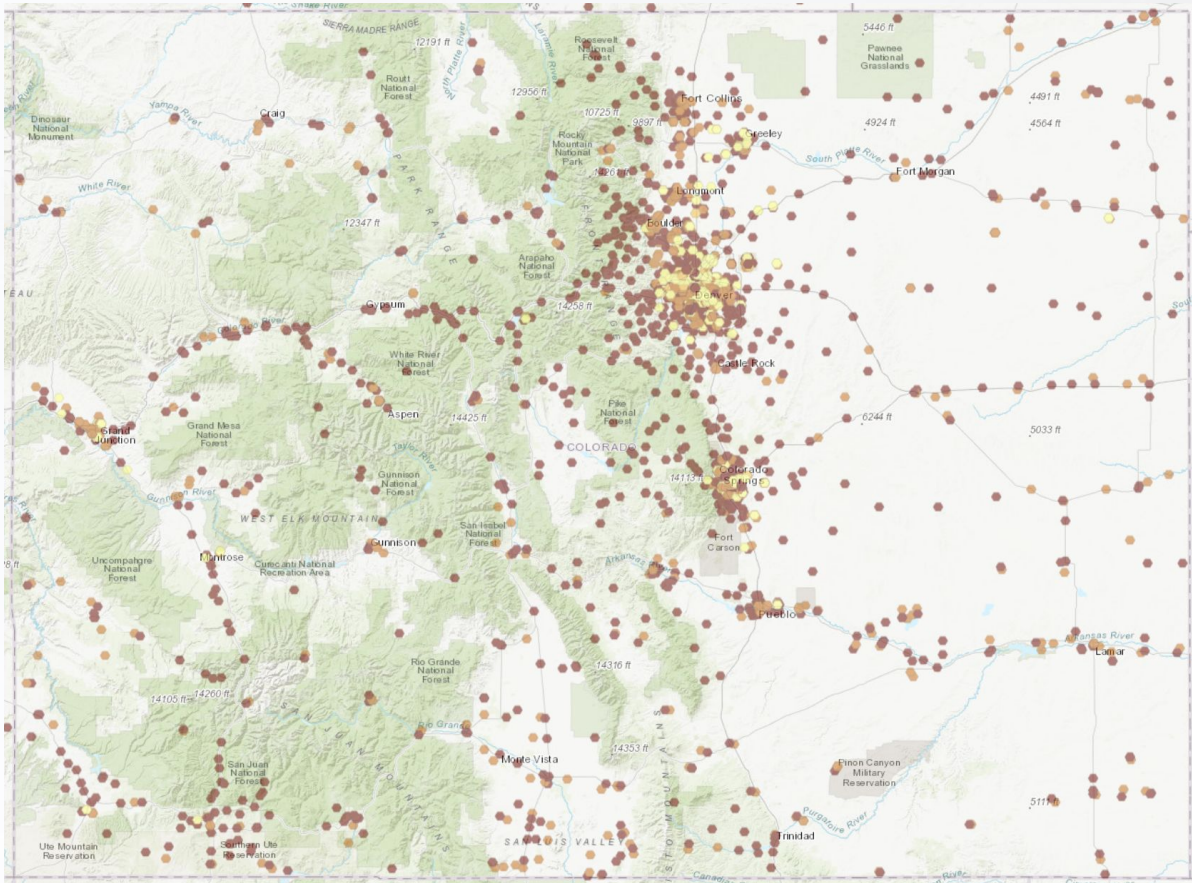
#### Key findings

- None of the treated drinking water tested was above the EPA's health advisory level.
- Four entities that tested source water had sample results that exceeded the EPA health advisory. Three of the four entities had already tested for the chemicals in previous years and have notified the public of those results. Those drinking water systems are Stratmoor Hills Water and Sanitation District, Security Water and Sanitation District located in El Paso County, and Sugarloaf fire district located in Boulder County. The entities are either not using that source water or treating the water to remove the chemicals before using it as drinking water. The additional entity that exceeded EPA's health advisory level is the Fourmile Fire District.
- Fourmile Fire District, located in Teller County, had not previously tested for the chemicals and found high levels in a well at one of their stations but the state was informed the firefighters do not drink this well water. Even though the well is primarily used to wash trucks and handwashing, the fire district has proactively installed treatment to remove PFAS from this well. Residents that live near the Four Mile station have been notified of the results and what steps they can take if they are concerned. Although the nearest private wells are located about a half mile from the station's well, the fire district, local public health agency, and state are examining the geographical area and will take additional samples to ensure residents living nearby aren't impacted.
- All of the samples taken from lakes and rivers had some detectable level of the chemicals. The sample collected at the mouth of Sand Creek in Commerce City was above the EPA drinking water health advisory, but the state isn't aware of anyone directly drinking this affected water. Nonetheless, high levels of the chemicals in streams can impact downstream drinking water supplies since they don't break down.
- The data indicate that industrial entities that have permits to discharge wastewater into rivers and streams may play a large role in the buildup of the chemicals. The state sampled Sand Creek twice, one sample upstream of Commerce City on the east end of Aurora and one downstream before it flows into the South Platte. A number of industries treat and discharge wastewater in that area. The upstream sample result was 13 parts per trillion (ppt) for PFOA and PFOS combined, and the chemical amount increased downstream to a level of 77 ppt for the combined chemicals, exceeding EPA's drinking water health advisory.
- The state tested 18 PFAS chemicals with each sample and the most prevalent chemicals were PFOS, PFOA, PFHxS, PFBS, PFNA, and PFTrCA with detections in greater than 20 percent of the samples. PFNA was detected in more than 10 percent of the samples.
- Only the samples that exceeded the EPA health advisory exceeded Policy 20-11 transition levels, the state's policy that guides how to limit these toxins going into Colorado waters through discharge permits.

34% of the drinking water systems that participated in the project had some level of PFAS chemicals in their drinking water. No sample was above the EPA health advisory level.



# PFAS vulnerability map and sampling with EPA R8



- Share data with EPA R8
- Identify at risk water systems and private wells
- Partner with EPA on sampling efforts
- Help systems with source water protection



# Resources and tools



**COLORADO**  
Department of Public  
Health & Environment

## Drinking Water PFAS Assessment, Prevention and Response Toolbox

This toolbox helps public water systems assess and prevent PFAS contamination and guides response to test results when compared to EPA's drinking water lifetime health advisory level of 70 ng/L for PFOA and PFOS.

### Proactive tools for assessing and preventing PFAS contamination

- Use [CDPHE website](#) to understand background PFAS levels in Colorado
- Assess risk to source water
  - Proximity to potential sources
    - Industrial facilities that produce, use, store, or dispose of chemicals or products
    - Areas where fluorine- or chlorine-containing substances are used, or released such as dry cleaning, metal plating, or paint
    - Waste management facilities
    - Wastewater treatment plants, including sludge application, with more frequent sludge application and more wastewater discharge
  - Source water vulnerability to PFAS
  - If you need source water protection information, contact [cdphe.wqswap@state.co.us](mailto:cdphe.wqswap@state.co.us)
- Implement measures to reduce risk to source water
  - Evaluating potential approaches
  - Raising awareness of PFAS contamination
  - [Contacting facilities](#) with potential PFAS contamination for use/storage/disposal for better management
- Sample treated water and at risk sources
  - [List of labs approved by EPA through 2015](#) – please note that not all labs are approved for PFAS testing

## IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

[*system name*] (PWSID COXXXXXX)

In an effort to be proactive, [*water system name*] recently conducted voluntary testing for a group of unregulated chemicals scientifically known as per- and polyfluoroalkyl substances or PFAS. These chemicals are commonly found in firefighting foam, manufacturing processes, household products, and other items. Too much exposure may result in negative health effects. Out of an abundance of caution and given our commitment to keep you informed, we want you to know our water sample results received on [*date*] showed a combined level for two types of these chemicals, PFOA and PFOS at [*level*] parts per trillion. This is below EPA's health advisory level of 70 parts per trillion which means health impacts are not expected to occur. All of our PFAS test results are available at: [www.colorado.gov/pacific/cdphe/PFCs/2020-Sampling-Project](http://www.colorado.gov/pacific/cdphe/PFCs/2020-Sampling-Project).

### What are PFAS and the potential health effects from exposure?

PFAS are a family of human-made chemicals that have been used for decades in products like food packaging, carpets, non-stick products, other household items, medical supplies, and firefighting foam due to their ability to resist heat, oil, stains, grease, and water. According to EPA, studies indicate exposure to PFOA and PFOS over certain levels may result in adverse health effects. For example, developmental effects on fetuses during pregnancy or to breastfed infants can occur over weeks of exposure (e.g., low birth weight, accelerated puberty, skeletal variations). Years to decades of exposure can lead to liver damage, negative immune and thyroid effects, and other health impacts. We know the most about PFOA and PFOS but there are other chemicals in the PFAS family such as PFHpA, PFHxS, PFBS, and PFNA. These chemicals may have similar impacts on humans. The health impacts of PFAS is the current focus of much research. As new studies become available, our understanding of the health impacts of these chemicals in humans will continue to grow.

### What do these test results mean for my health and do I need to do anything?

Toxicity information supporting EPA's health advisory suggests that drinking water with PFAS levels below

## CHEMICALS FROM FIREFIGHTING FOAM AND OTHER SOURCES



## Answers to Frequently Asked Questions





# Policy 20-1: Limit PFAS entering state waters

- Water Quality Control Commission adopted policy in July 2020 to limit PFAS contamination entering surface water and groundwater
- Monitoring requirements (25 PFAS compounds) for facilities likely to discharge PFAS to state waters
- Provides guidelines for setting wastewater discharge permit limits

**PFOA+PFOS+PFNA**  
+ any parent compound



Developmental toxicity  
**70 ppt**

**PFHxS**  
+ any parent compound



Endocrine toxicity  
**700 ppt**

**PFBS**  
+ any parent compound



Renal toxicity  
**400,000 ppt**



# Firefighting Foams Control Act: House Bill 19-1279

- Prohibits use of PFAS foam for training
- Prohibits sale of PFAS foam by August 2021 unless exempt
- Requires CDPHE to survey fire departments every 3 years on amount of PFAS foam held, used, and disposed of
  - First survey report published January 1, 2020
  - 89 of 331 fire departments, airports, and industries responded
  - 60% currently possess PFAS foam
  - Interest in takeback program and fluorine free foams



# Two new bills addressing PFAS

## House Bill 20-1119:

Authority to regulate PFAS



- Allows PFAS foam testing for airport hangers and registered entities that follow capture and disposal standards
- Creates certificate of registration of entities using or storing PFAS
- Sets penalties for non-compliance

## Senate Bill 20-218:

Fees to help impacted communities



- \$25 fee per truckload of fuel products
- Fees provide critical resources for:
  - Sampling and health assessments
  - Takeback and disposal program
  - Assist impacted water systems with treatment

# Thank you! What are your questions?

Action Plan and resources available at: [www.colorado.gov/cdphe/PFCs](http://www.colorado.gov/cdphe/PFCs)

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