

Communicating the Risks of PFAS: Colorado Department of Public Health and Environment

Background and Health Department Activities

The Colorado Department of Public Health and Environment (CDPHE) is one of the few joint state health and environmental departments in the United States. Due to its unique configuration, CDPHE is well-positioned to handle a wide range of environmental health threats. From drinking water contamination to air quality, CDPHE tackles issues that most states share between two separate agencies. CDPHE also has a decentralized relationship with local health departments in the state. In recent years, cases where drinking water supplies have become contaminated with per- and polyfluoroalkyl substances (PFAS) have garnered increased attention from CDPHE and Colorado's residents. CDPHE first became involved with the issue in early 2016 after the U.S. Environmental Protection Agency (EPA) released the results from their Unregulated Contaminant Monitoring Rule sampling, showing elevated levels of PFAS in the water supply of the Security, Widefield, and Fountain areas in El Paso County. PFAS chemicals identified in Colorado include perfluorobutanesulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA), perfluorooctanoic acid (PFOA), and perfluorooctanesulfonic acid (PFOS).¹

Protecting our drinking water supplies from PFAS and other emerging contaminants is a complex issue that requires input from a wide variety of stakeholders. The public, risk communication experts, public health professionals, engineers, and clinical practitioners are just a few of the groups involved. Likewise, multiple divisions within CDPHE are working to address the issue, including the water quality control division, the office of communications, the hazardous materials and waste management division, and the disease control and environmental epidemiology division.

Officials responsible for large water systems in several south Colorado Springs communities first discovered PFAS in the groundwater after they performed routine testing in 2013 and 2014 for unregulated chemicals to comply with EPA's Unregulated Contaminant Monitoring Rule.² These data were released in the fall of 2015, and CDPHE became involved with the issue in early 2016. CDPHE worked with EPA to determine the best plan of action to address this issue. Since these chemicals were unregulated, the water utilities needed to work voluntarily with state and federal health agencies to help mitigate the issue. CDPHE and its partners held multiple stakeholder meetings in the area to bring together the many people affected by this issue. They engaged communities to help them understand what it meant to have these chemicals detected in their groundwater sources, including hosting discussions around possible health effects.

While CDPHE is not currently undertaking PFAS biomonitoring investigations, the department acknowledges that this could be useful down the road to establish a baseline value of PFAS concentrations in people's bodies. CDPHE also worked with the Peterson Air Force Base, specifically around its fire training activities. Firefighting foam made from PFAS chemicals, specifically aqueous film-forming foams, is a suspected source of groundwater contamination. The three large water systems with detectable levels of PFAS also worked diligently to mitigate the presence of PFAS in their water supplies. Two of the systems moved to a new water supply source, while the third system used ion exchange treatment for PFOA and PFOS, as well as management best practices to remedy the issue.

Development of Health Advisories

CDPHE did not develop its own health advisory values for PFAS. Instead, the department used the 2009 Provisional EPA Health Advisory values, followed by EPA's 2016 Drinking Water Health Advisory values for PFOA and PFOS, two common PFAS that were among those found in groundwater in the Security, Widefield, and Fountain areas of the state. EPA released the 2016 Drinking Water Health Advisories six months into CDPHE's response to the PFAS contamination in the Security, Widefield, and Fountain communities.

While it was challenging for CDPHE to adapt its risk communication strategy to match the new EPA Drinking Water Health Advisory values, the agency recognized the advantages of housing both health and environmental divisions. This structure allowed CDPHE to unify its messaging across the entire agency. CDPHE also worked with local health departments, the Air Force, the EPA Region 8 office, and the Colorado School of Mines to assist with developing risk communication materials in line with EPA's new health advisories. [EPA's Supporting Documents for Drinking Water Health Advisories for PFOA and PFOS](#) were especially helpful in understanding and incorporating the 2016 EPA Drinking Water Health Advisory information into current CDPHE risk communication materials. The state also used resources from CDC, the Agency for Toxic Substances and Disease Registry (ATSDR), the New Hampshire Department of Health and Human Services, the Minnesota Department of Health, and the Michigan Department of Health and Human Services.

Rollout and Dissemination of Advisory and Relevant Resources

CDPHE [developed](#) a website to serve as the central hub for information and resources on PFAS, including five CDPHE-developed factsheets for the general public and an interactive geographic information system (GIS) map that gives address-specific information on PFAS drinking water contamination. CDPHE directed the public to this website for answers to most PFAS-related questions. Initially, CDPHE was fielding public inquiries daily about the PFAS contamination in the state. These inquiries eventually tapered off to a few per week, but returned to a daily cadence when EPA released the 2016 Drinking Water Health Advisories. Since then, inquiries have decreased to approximately one per month. CDPHE also communicated with and educated the governor's office on the PFAS contamination situation. Other channels of risk communication regarding PFAS included press releases geared toward the media, community meetings, and press conferences. In an effort to reach more community members, public water system representatives placed inserts with PFAS information into customer's bills, utilized social media to help spread the word, and disseminated flyers at local libraries. The nearby local health department, El Paso County Public Health, also knocked on the door of every private well owner residing in the affected areas to inform them of possible PFAS contamination in their wells. CDPHE assisted El Paso County Public Health financially, enabling it to offer free water testing to private well owners. Finally, CDPHE and El Paso County Public Health alerted the medical community about the PFAS contamination through the Health Alert Network.

Key Messages for the Public

- Assessing human PFAS toxicity is an emerging science. There is still much we do not know about how the human body reacts to the small concentrations found in drinking water.
- In Colorado, the PFAS drinking water contamination is currently in an isolated area, with a limited number of people affected. CDPHE knows exactly where this contamination occurred and worked with multiple partners and stakeholders to address it.

- Residents should find out as much as they can about their specific water provider and the source(s) they use to supply their customers with drinking water, especially with regard to its PFAS contamination status.
- If necessary, take personal steps to limit exposures. CDPHE recommends switching to bottled water or installing a reverse osmosis filtration system.³
- Private well owners should have their water tested for PFAS contamination and seek an alternate source of drinking water or install filtration technology if their well is contaminated. Residents in the affected area who are on private wells can call El Paso County Public Health to set up a free water test.
- Residents living in the affected area should use the CDPHE interactive online map to check if their water is above the 2016 EPA Health Advisory values.

Gaps and Challenges

CDPHE identified numerous gaps in information and challenges when communicating with the public about PFAS contamination. First, the term “PFAS” applies to several thousand chemicals. Most resources are developed in response to the two most widespread PFAS, PFOA and PFOS. However, as different PFAS are created and substituted for PFOA and PFOS, more information will be needed on these substitutes, including data relating to their toxicity and environmental fate. Next, risk communication training is needed at the state level, especially as it relates to emerging contaminants. Many health communicators are not trained in risk communication and could greatly benefit from more training. Finally, social media can often make controlling the flow of credible information difficult. Misinformation can often spread through social media channels quickly, adding additional challenges to risk communication.

Federal, state, and nonprofit public health agencies need to prioritize research on the lesser known PFAS chemicals, such as PFBS, PFHpA, PFHxS, and PFNA. All of these substances were found in Colorado’s drinking water supplies.^{4,5} The public health community should focus its efforts on developing resources around risk communication practices in a rapidly changing media environment. The public is constantly obtaining information through online outlets and social media, and not all of it is credible. State health and environmental agencies could greatly benefit from resources on how to best communicate risk in this new informational age.

Colorado PFAS Quick Facts	
Advisory Values Utilized ⁶	PFOA – 70 parts per trillion (ppt); PFOS – 70 ppt; PFOA and PFOS combined – 70 ppt
Collaborators	U.S. EPA, ATSDR, CDC, El Paso County Public Health, U.S. Air Force, Colorado School of Mines, New Hampshire Department of Health and Human Services, Minnesota Department of Health, Michigan Department of Health and Human Services
Languages for Materials	English
GIS Mapping	Yes
Website	https://www.colorado.gov/pacific/cdphe/pfcs

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For more information, please contact:

Mike Van Dyke, Ph.D., CIH

Chief, Environmental Epidemiology, Occupational Health, and Toxicology Branch

Colorado Department of Public Health and Environment

mike.vandyke@state.co.us

¹ Colorado Department of Public Health and Environment. “PFCs in Colorado.” Available at <https://www.colorado.gov/pacific/cdphe/PFCs/about/Colorado>. Accessed 5-1-2018.

² Ibid.

³ Colorado Department of Public Health and Environment. “PFCs- Health recommendations.” Available at <https://www.colorado.gov/pacific/cdphe/PFCs/health/advisory>. Accessed 5-1-2018.

⁴ Colorado Department of Public Health and Environment. “PFCs in Colorado.” Available at <https://www.colorado.gov/pacific/cdphe/PFCs/about/Colorado>. Accessed 5-1-2018.

⁵ Colorado Department of Public Health and Environment. “Learning About PFCs.” Available at https://www.colorado.gov/pacific/sites/default/files/WQ_PFCs-Learning-About-05-23-16.pdf. Accessed 5-1-2018.

⁶ U.S. Environmental Protection Agency. “Fact Sheet. PFOA and PFOS Drinking Water Health Advisories.” Available at https://www.epa.gov/sites/production/files/2016-06/documents/drinkingwaterhealthadvisories_pfoa_pfos_updated_5.31.16.pdf. Accessed 5-1-2018.