

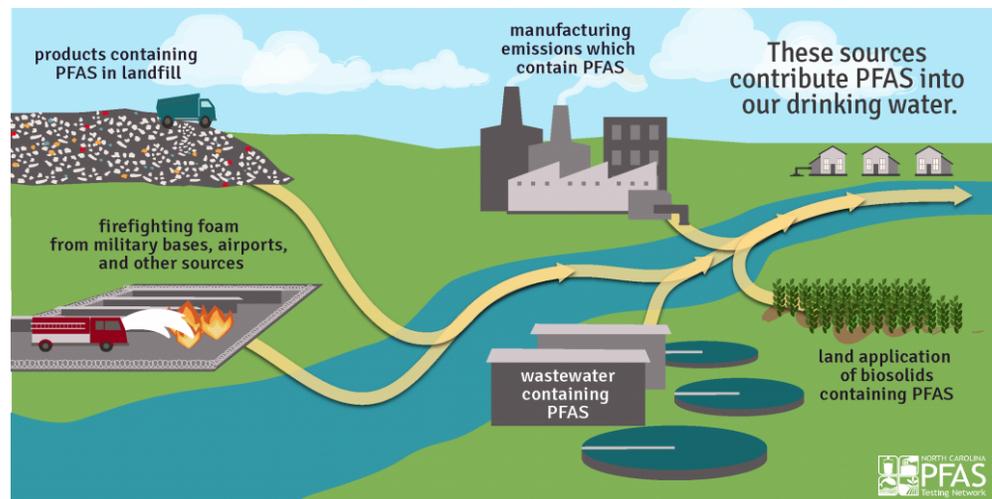
PFAS chemicals in Virginia's drinking water: Where have they been detected and how can they impact people's health?

PFAS chemicals have been detected in Virginia's groundwater and drinking water

PFAS, or per- and polyfluoroalkyl substances, are a family of thousands of synthetic chemicals. They are commonly found in products meant to repel water, heat, and oil, such as nonstick cookware, stain- and water-resistant fabrics and carpets, food packaging, and firefighting foam, which is frequently used at military facilities.¹

PFAS chemicals are often referred to as “forever chemicals” because they have very strong chemical bonds and do not easily break down in the environment. As a result, when firefighting foam, for example, is washed into storm gutters or facilities that manufacture PFAS discharge wastewater, the chemicals persist, entering surface waters and groundwater that many people rely on for drinking and cooking. Unfortunately, many wastewater treatment plants and public utilities do not have the technology to adequately remove PFAS chemicals from water.²

While PFAS chemicals are not regulated by the federal government or the state of Virginia, the U.S. Environmental Protection Agency (EPA) has established a non-enforceable health advisory of 70 nanograms per liter (ng/L) for combined levels of two common PFAS chemicals—PFOA and PFOS—in



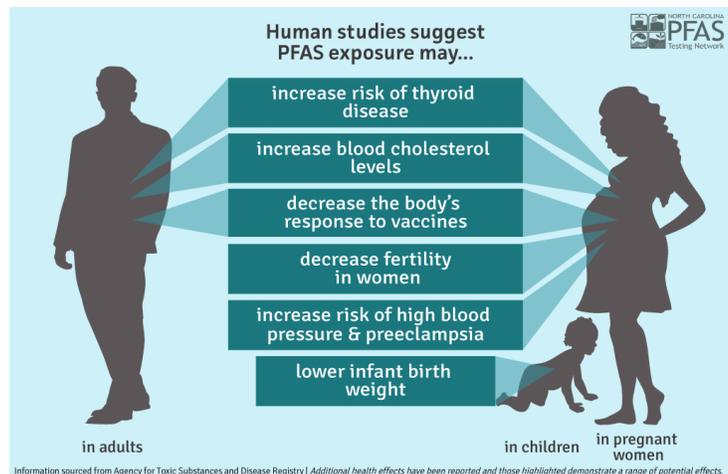
drinking water.³ Many jurisdictions have adopted EPA's health advisory but data suggest this level may not be adequately protective. In 2018, the Centers for Disease Control and Prevention's (CDC) Agency for Toxic Substances and Disease Registry established a minimal risk level (MRL)—the level below which a chemical is not expected to have adverse health impacts—for several PFAS chemicals. The MRLs for children are as low as 14 and 21 ng/L.⁴ Several states, such as Wisconsin, have also gone beyond EPA's advisory and set stricter, enforceable limits.

Thus far, six types of PFAS have been detected in groundwater and drinking water in Virginia. Sampling under EPA's Unregulated Contaminant Monitoring Rule detected two types of PFAS in the drinking water supplied by the Prince William County Service Authority's East End Service Area and the Washington County Service Authority between 2013 to 2015.⁵ In 2018, the U.S. military reported PFOA and/or PFOS levels above EPA's health advisory level at or near five Virginia installations, and the chemicals have also been detected in the groundwater near Richmond International Airport.^{6,7}

Exposure to PFAS chemicals is associated with serious health conditions

People are most likely to be exposed to PFAS chemicals through contaminated water and food.⁸ They can also be transferred to fetuses and infants through the umbilical cord and breastmilk.⁹ In addition to being persistent in the environment, PFAS chemicals are bioaccumulative, meaning that they can build up in human and animal tissue. A CDC assessment detected PFAS chemicals in the blood of 97 percent of a sample of U.S. residents, suggesting that exposure is widespread in the population.¹⁰ Studies have also found certain PFAS chemicals in fish.¹¹

PFAS exposure is linked to a variety of adverse health outcomes among adults and children, especially during the early phases of development. Ingesting high levels of PFAS has been associated with increased cholesterol levels, changes in liver enzymes, increased risk of thyroid disease, increased risk of high blood pressure and pre-eclampsia in pregnant women, lower infant birth weight, and increased risk of kidney and testicular cancer.¹² Studies have also found an association between higher levels of PFAS exposure and suppressed antibody response to vaccination, especially among children, raising concerns in light of the ongoing COVID-19 pandemic.¹³ While evidence is still emerging, some studies suggest there may also be a relationship between exposure to certain types of PFAS and obesity, gestational diabetes, and asthma.¹⁴ Facilities that manufacture or use PFAS chemicals are disproportionately located near communities with a higher proportion of low-income and non-white families, suggesting that these harmful effects are primarily felt by communities already burdened by social and environmental stressors.¹⁵ Further research is necessary to understand the extent to which exposure may worsen existing health disparities.



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