PFAS (Polyfluoroalkyl Substances) and Utah Agriculture

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Raising the Alarm on PFAS

For farmers around back in 1960s, DDT became infamous as the pollutant in sheep's clothing, leading to widespread health and environmental degradation. Today, PFAS, or polyfluoroalkyl substances, are a major concern in the agricultural industry.

PFAS are also known as forever chemicals. These compounds are manufactured to resist breakdown and have been created for use in firefighting foam, non-stick pans, fast food packaging, personal care products, and even some pesticides. PFAS consist of a highly fluorinated carbon chain, which can vary in length and is attached to one of many different functional groups. There are >5,000 PFAS compounds.

As PFAS are highly resistant to breakdown and stay in the environment, PFAS travel through the atmosphere, water, soil, are taken up by plants, animals, and humans then consume them, accumulating at each level in the food chain resulting in toxic effects. PFAs also transfers to waste, which can then recirculate in the environment.

PFAS Human Health Impacts

PFAS pollution results in a contaminated food chain, which leads to a myriad of human health issues. PFAS has been shown to harm hormone communications, metabolism, immune and circulatory systems, and lead to reproductive issues, cancer, and brain and central nervous system disfunction (Jha et al., 2021 Shurson, 2025; Xiao et al., 2024). Adverse health effects from PFAS exposure start in-womb, and can lead to reduced fertility (Fenton et al., 2020). Human breastmilk has also been shown to accumulate PFAS.

PFAS In Agriculture

PFAS can enter a farming system through multiple sources, including contaminated irrigation water, soil amendments such as biosolids, contaminated feed sources, and the atmosphere. PFAS can be up taken by plants and animals, accumulating in byproducts of the food chain including meats, dairy, fruits, and vegetables.

PFAS in Livestock

Animals accumulate and eliminate PFAS differently depending on the chemical compound and species. Shorter-chain PFAS compounds such as PFOS and PFOAs are excreted more rapidly than longer chain PFAS. Animals excrete PFAS through eggs, urine, feces, and milk. Eggs and milk are major sources of PFAS in the food chain, containing high transfer of PFOS and PFOAs. Consumption of contaminated drinking water, feed sources, bedding, and ingested soil are some primary sources of PFAS.

Lessons from Maine and New Mexico

Two major examples of dairy PFAS contamination have occurred in Maine and New Mexico. In 2016 and 2020, PFOS was detected at high concentrations in milk from multiple dairy farms in Maine which had historically applied biosolids to the farmland. This resulted in groundwater contaminated with PFAS and forage contamination.

In New Mexico, 2018, PFAS contamination at the Highland Dairy was found to be due to groundwater contamination originating from Cannon Air Force Base. In this case, the entire herd was euthanized.

Fish are especially prone to accumulation of PFAS. Farmed fish and fresh water fish are prone to have higher PFAS accumulation.

PFAS in Crops

PFAS accumulation varies by the crop species, and the part of the plant. Plants primarily uptake PFAS through their roots, with shorter-chain PFAS compounds being more mobile than longer-chain PFAS. PFAS are then transported through the plant tissue, accumulating in parts of the plant at differing rates. PFAS accumulate more in leaves and roots, such as vegetables, than in the reproductive tissues such as grains and fruit.

National Efforts

In 2024, National Primary Drinking Water Regulations were released by the EPA. Maximum containment levels of 4 parts per trillion PFOS and PFOA were upheld as part of the drinking water standards. Monitoring will begin in 2027, and public drinking water systems will be required to be in compliance by 2031. Research on mitigation strategies and technologies continues to be investigated by the USDA and other parties.

Federal financial assistance is available to Utah agricultural producers affected by PFAS contamination. Through the Environmental Quality Incentives Program (EQIP), the Natural Resources Conservation Service (NRCS) provides assistance for PFAS testing of agricultural water or soil through Conservation Evaluation and Monitoring Activity (CEMA) 209. This activity supports sample collection and laboratory analysis using EPA-approved or state-approved methods. It is available to impacted producers subject to funding availability and program eligibility requirements. In addition, eligible dairy producers nationwide, including those in Utah, may receive compensation through the Farm Service Agency's (FSA) Dairy Indemnity Payment Program (DIPP) for losses associated with PFAS-contaminated milk, milk products, or dairy cows.

What You Can Do as a Producer

- Investigate PFAS levels in any biosolids that are applied on your property. Biosolids are a wonderful way to add nutrients and improve soil health, but depending on the waste stream, biosolids can contain high levels of PFAS. Request that the entity providing biosolids share any PFAS testing with you.
- If contamination is suspected, the Utah Department of Environmental Quality should be contacted for a list of certified testing labs, such as Chemtech-Ford Laboratories or the Utah Public Health Laboratory.
- Test private well water if PFAS contamination is suspected.
- Where possible, choose pesticides which do not contain PFAS. Learn more about using combined approaches to pest and weed management to reduce application of control products that may contain PFAS agents. In many situations physical, chemical, and biological control strategies together can be practically implemented to suppress pests and weeds for an economically sound agricultural operation.

References/Additional Resource

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