

Evaluation of PFAS contamination on dairy farms and analysis of PFAS data in animals

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Research objectives

The overarching goal of the UMaine PFAS dairy team was to identify PFAS mitigation strategies and inform future research.

This goal began with the following objectives:

1. Investigate potential feed binders to sequester PFAS under rumen-like conditions.
2. Identify factors influencing PFOS and PFOA in mammal serum via a literature review.
3. Learn about the implications of PFAS contamination on dairy farms via interviews with impacted dairy farmers in Maine.

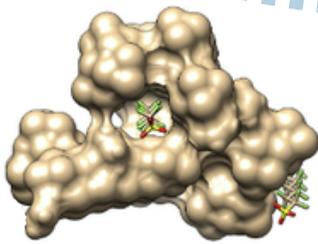


Figure 1: PFOS strongly bind to a positively charged resin. In the image the PFOS are the colored structures, and the resin is the tan structure. We are able to trap PFOS in the simulated rumen environment with the resin.

Research findings

Preliminarily we have found that:

1. There is a resin binder that can potentially bind PFOS (Johnson et al. 1984; Poblete et al. 2023).
2. Factors which influence serum PFOS include: sex, exposure time, level of PFOS, and treatment.
3. Farmer Interviews helped us understand how to manage contamination after a dairy farm has identified PFAS contamination.

Recommendations

1

Test.

If contamination is a concern, testing of water, feed, and soils for PFAS will allow farmers to identify contamination and potentially mitigate the effects.

Transition to PFAS-free feed.

If feed is confirmed to contain PFAS, transitioning to PFAS-free feed from external sources is crucial to reduce the exposure of livestock to these contaminants.

2

3

Implement water filters.

Farmers should implement water filtration systems; and encourage animals to drink from filtered water troughs instead of nearby ponds or streams.