August 14, 2025

David Tobias
Health and Ecological Criteria Division
Office of Science and Technology, Office of Water
U.S. Environmental Protection Agency
1200 Pennsylvania Ave, NW
Washington, DC 20460

Submitted via www.regulations.gov

RE: Draft Sewage Sludge Risk Assessment for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonic Acid (PFOS), Docket ID No. EPA-HQ-OW-2024-0504

Dear Mr. Tobias:

The undersigned Illinois agricultural organizations appreciate the opportunity to provide comments to the U.S. Environmental Protection Agency (EPA) on the proposed risk assessment entitled: "Draft Sewage Sludge Risk Assessment for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonic Acid (PFOS)."

Our organizations represent many of the farmers and ranchers in Illinois raising row crops and livestock. The livelihood of farmers and ranchers in Illinois and around the country depends on healthy soil and groundwater. For that reason, we support EPA's underlying goal of addressing widespread contamination of the environment caused by historic use of PFOA and PFOS. As farmers and ranchers are passive receivers of PFAS chemicals, they should be fully aware of what is in the biosolids that they are accepting, as they want to ensure that any land application is not going to contribute to contamination of air, water, or land. We view a risk assessment as the first step towards setting up a system that will provide more information to landowners and allow farmers and ranchers to make more informed decisions. However, we are concerned about the findings creating uncertainty and confusion, potentially jeopardizing the practice of land applying biosolids on agricultural land. As EPA has long supported and encouraged the application of biosolids to agricultural land, many farmers have beneficially used biosolids.

Per- and polyfluoroalkyl substances (PFAS), such as PFOA and PFOS, are unlike any other compounds/chemicals that EPA has conducted risk assessments in relation to biosolids. As PFAS are unlike anything else, we have serious concerns regarding the methodology used in the "Draft Sewage Sludge Risk Assessment for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonic Acid (PFOS)" (Draft Biosolids RA) to conduct this proposed risk assessment.

The Draft Biosolids RA analyses are based on extreme assumptions that are not congruent with real-world practices and inadequately published reference data on the chemicals. The sites that were used to validate the model were primarily or all (depending on category) sites with highly contaminated biosolids or contaminated with PFAS from other sources. For example, the single study used to model uptake into forage which ended up as one of the pathways of concern was a survey sampling of grasses grown in soils where biosolids contaminated by industrial discharges from a 3M plant had been applied (Yoo et al., 2011). Another study

mentioned was forage uptake for plants grown in historically contaminated soils in Maine (PFOS concentrations ranging from 44-232 ng g) (Simones et al., 2024).

An abundance of research that is new or nearing completion conducted on typical biosolid applications must be drawn upon in a revised assessment. There is a national survey underway with Phase I results (Pepper et al.) as well as a publication of groundwater in IN (Lee et al.). There is ample data on plant uptake from biosolids amended fields, for movement to groundwater and surface waters for biosolids that are not excessively and historically contaminated by PFOA and PFOS.

Fate and Transport Model Issues

It is important to consider that fate and transport models simulating the migration of PFOA and PFOS through environmental media are reliant on specific assumptions involving critical modeling factors such as the area of land application, number of biosolids applications, meteorological conditions, soil type, depth to groundwater and depth and locations of drinking water wells. For example, the biosolids model is based on biosolids applications of 10 metric tons (MT) dry weight per hectare of field area, occurring once per year on April 1 for 40 years for the crop and pasture scenarios. In another example, drinking water wells are assumed to be located 5 meters from the edge of the application area. The fate and transport modeling conducted by EPA is critical to the risk assessment because the models are used to derive and predict the concentration at which humans are exposed to PFOA and PFOS as the result of land application of biosolids.

The fate and transport models are also reliant on over 100 input parameters, as shown in Appendix B of the Draft Biosolids RA. These parameters are related to the physical and chemical characteristics of environmental media (soil, surface water, groundwater) and chemicals (PFOA and PFOS) responsible for specific fate and transport considerations, and the dynamics of these chemicals as they potentially move through different soil types, groundwater, surface water, and air, among others. Parameter inputs are generally derived from published values/studies or default values included in the model. However, several of these parameters are not well established in published studies. As EPA indicates in the Draft Biosolids RA, "Establishing chemical-specific values for some of these parameters can be challenging for PFOA and PFOS because these chemicals present different characteristics than are typical for other organic chemicals," and, "For many of the fate, transport, and uptake parameters, there are no relevant existing assessments that can be used for parameterizing model inputs needed for this assessment. In these cases, the EPA searched and reviewed the available peer-review literature." Thus, several of the model parameters add to uncertainties in the model simulations and outcomes.

In addition, as discussed in the Draft Biosolids RA, there are numerous sites with specific chemical and physical conditions that differ from the conditions associated with the model parameter values. As stated in the document, "this assessment is not designed to capture site-specific conditions or outcomes but rather give an estimate of the range of realistic outcomes that are possible across a variety of common scenarios that exist in the U.S. and inform potential future risk mitigation actions." Thus, it is critical to consider site-specific conditions when using the model results for risk-based decision-making.

Another consideration with respect to the fate and transport of PFOA and PFOS is the conservativeness of certain parameters used to determine groundwater concentrations at drinking water wells, where carcinogenic risk and non-carcinogenic hazards associated with PFOA exceeded risk thresholds. As discussed above, the Draft Biosolids RA assumes that drinking water receptors have wells that are placed in the center of a buffer, five meters from the edge of the agricultural field or surface disposal unit and centered around the highest concentration in the groundwater plume below the water table. If a homeowner had a deeper well or a well located on the fringe of the plume, rather than in the center of the plume, they would have lower drinking water concentrations and lower risks.

Plant and Animal Uptake Model Issues

Exposure to PFOA and PFOS in the edible tissues of produce and animals (milk, meat, eggs, fish) was evaluated using a series of models that utilize the concentrations of PFOA and PFOS in contaminated media derived from the fate and transport models to then calculate the concentrations in crop and animal feed, animal products, and fish via various uptake factors; the methodology was from the Health Risk Assessment Protocol (HHRAP; US EPA, 2005b), which was developed for hazardous waste combustion facilities. As mentioned above, PFOA and PFOS have chemical characteristics that are atypical of other organic contaminants (e.g., surfactant qualities), and therefore, predicting their fate and transport from such parameters as the octanol-water partition coefficient (Kow) may not be accurate. Additionally, as previously mentioned, no data is available on PFOA and PFOS bioavailability to livestock from feed, water, or soil, the assessment assumes 100% bioavailability using a bioavailability factor of 1. Assuming 100% bioavailability for soil-to-plant transfer grossly overestimates the risk when considering exposure to livestock from feed and subsequent human exposure through contaminated animal products.

EPA's use of a single value of soil-to-plant bioconcentration (BCFs) factors from lettuce to estimate crop concentrations from PFOS, and the subsequent cancer risk levels and hazard quotients, introduces great uncertainties as plants exhibit species-specific bioaccumulation tendencies influence by factors such as tissue protein content, transpiration rates, and biological barriers like Casparian Stripes.

Conclusion

Our organizations appreciate EPA's acknowledgement in the preamble that there will be variability due to site-specific factors (e.g., geology, hydrology, and climate) along with disparity in agricultural practices and the concentration of PFOA and PFOS in municipal biosolids to begin with, and that "[n]ot all farms or disposal sites where sewage sludge containing PFOA or PFOS have been used or disposed of are expected to pose a risk to human health." The presence and concentration of PFAS varies throughout communities across the state and across the country. Moving forward, EPA must emphasize the universe and toxicity levels of Per- and Polyfluoroalkyl Substances is so broad that not all biosolid material is harmful.

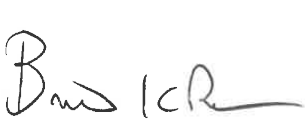
It is imperative that the EPA spend more time obtaining well designed field studies to acquire data that is lacking for many of the model parameters. Suggested data for a more accurate risk assessment includes the following:

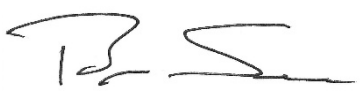
1) The frequency, amount and source of biosolids being amended in the US.
2) The biosolids concentration data for PFOA and PFOS from municipal wastewater treatment plants.
3) Since the biosolids matrix can have a significant effect on mobility and transport, more high-quality data are needed for absorption (Kd values) from different soil types. Field studies are needed to assess leaching potential of PFOA and PFOS under field conditions.
4) A sensitivity analysis should be performed in those compartments that require Kd values as inputs.
5) The depth to groundwater is also important for transport and should be reported for the three study sites.
6) High quality data on plant concentrations and uptake factors as the current assessments' limited data leads to a high degree of uncertainty when predicting the fruit and vegetable PFOA and PFOS concentrations.
7) Lastly, sites that have received highly contaminated sludge from industrial sources should not be used in the assessment.

And, several well-designed field studies are currently underway, some even being funded by EPA. For example, the University of Illinois received funding from EPA to study "Plant Uptake and Mitigation of PFAS Associated with Sewage Effluent and Biosolids Application in Tile-Drained Fields." Finalizing the risk assessment prior to the availability of data from the numerous ongoing studies would be premature, as it may lead to incomplete or potentially misleading conclusions. Comprehensive and evidence-based evaluation requires incorporating the latest empirical findings. The undersigned encourages EPA to continue to invest in research obtaining scientific data accurately assessing risk. The undersigned organizations also encourage EPA to continue to investigate cost effective disposal and/or remediation methods.

Given the above-mentioned uncertainties, the undersigned organizations request the withdrawal of the draft risk assessment. We appreciate your thoughtful consideration of these comments.

Sincerely,





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