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Via online comment form

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RE: New Statewide General Permit for Biosolids Management

I am a retired career EHS professional that is extremely concerned about the historic, current, and future impact of the Washington State General Permit for Biosolids and its impact on people, ecosystems, and the environment. I retired in January 2019 after 42 years with DuPont and a spin-off company, Axalta Coating Systems, as their Global Environmental Competency Leader. I am a Chemical Engineer with a BS and MS in Hazardous Materials Management by education and a health and environmental manager by career. Since May 2019, I have been the Sierra Club – Michigan Chapter, Toxics & Remediation Specialist.

I have reviewed the Draft Statewide General Permit for Biosolids Management and the Ecology “Per- and Polyfluoroalkyl Substances [PFAS] Draft Chemical Action Plan” and have the following comments.

1. The use of the General Permit format on the whole and for biosolids specifically, is not conducive for use by the people having to implement two separate permits for the same discharge. My industrial experience/perspective on the need for WWTPs to meet conditions from two permits vs just one individual NPDES permit is that it is cumbersome, overly burdensome, and consequently, more difficult to maintain compliance to all provisions from both permits. The use of general permits like this is not common practice across the US for a reason, they are not as effective as integrating all applicable requirements into one individual NPDES permit. I strongly suggest that Ecology consider rescinding the use of general permitting for WWTP biosolids and integrate applicable provision into individual NPDES permits.

The rest of my comments are focused on the urgent need for the Washington Department of Ecology [Ecology] to include provisions for and in consideration of PFAS in WWTP discharge and biosolids and to respond to the numerous erroneous, inaccurate, and misleading statements made in the Per- and Polyfluoroalkyl Substances [PFAS] Draft Chemical Action Plan.

2. In response to Ecology’s stance that they will not require sampling for biosolids because there “is no validated method for the analysis of PFAS in biosolid”.
 - o Other states require that WWTPs use an isotope dilution method like Method 537.1, ASTM D7979-19M, or CWA Method 1600 for PFAS analysis of biosolids in the interim and until EPA completes its work. As with drinking water guidelines, states cannot afford to sit and wait for EPA to determine and put protections in place. The environment and people’s health are in significant risk by waiting when there are perfectly acceptable methods for analyzing for PFAS out there that are used globally. EPA’s website for current research and validation information is at this [link](#). Such methods are reliable for biosolids because they use an isotope-dilution method to measure sample extraction recoveries and correct for matrix suppression effects in the LCMSMS. Ecology should allow the use of these methods as do other states.

- Another approach would be to use language such as Massachusetts permit language in the interim. “If EPA’s multi-lab validated method is not available by ____ months after the effective date of this Final Permit, the Permittee shall contact _____ for guidance on an appropriate analytical method.” Or, better “If EPA’s multi-lab validated method is not available by ____ months after the effective date of this Final Permit, continue to use the interim CWA Method 1600 or other Method generally accepted by EPA.”
3. There are numerous and baseless assumptions in the Biosolids Section of the Action Plan. For example: “Since there is no known industrial production of PFAS in Washington, biosolids exposure pathways in Washington are primarily from homes and consumer products. Secondary manufacturers may be a source of some contamination in municipal waste streams, but **primary exposure is largely from consumer products.**” And conditions in other scientific studies that have evaluated PFAS from land-applied biosolids, “are not reflective of the rates, likely concentration, or availability of PFAS in Washington biosolids under current rules.”
- How can Ecology know if they have yet to sample and analyze Washington State biosolids? These statements are simply subterfuge and speculative assumptions and clearly an attempt to fool people that do not know any better. The facts are that all industrial activities that include PFAS-containing products, even secondary manufacturers, have been found to significantly contribute to PFAS in WWTP influent. PFAS-contaminated effluent from industry, airports, and military bases from historic and current use of fluorinated AFFF and landfill leachate are also significant sources of PFAS to WWTPs.
 - Results from a recent Sierra Club and Ecology Center study that sampled and analyzed commercial biosolids-derived fertilizers and soil amendments, found that the Tacoma Central Wastewater Treatment Plant soil conditioner TAGROMix, contains significant levels of total inorganic fluorine and Levels of PFAS, including PFOA and PFOS. Actual TAGRO results: Total Inorganic Fluorine (13,000 ppt), Pre- and Post-TOP: Total PFAS 87 ppt and 457 ppt respectively. For reference, this is similar to concentrations found in fish collected in highly polluted areas and thousands of times higher than the amounts that are regulated in drinking water. PFAS from highly contaminated sludges from industrial sites have been determined to contaminate local water supplies and agricultural products. We are concerned that the concentrations of PFAS in fertilizers and compost made from sludge-biosolids could lead to accumulation in food plants grown in fertilized beds in home gardens or agricultural fields. Ecology should consider the numerous composting facilities in the State where private citizens are unknowingly purchasing and using potentially PFAS-contaminated compost for home and garden use.
4. Another ludicrous statement in the Action Plan, Section 8.5 is that “In general, the chemistry of biosolids is reflective of the chemistry of people’s daily lives, as is the dust in homes (Haug et al., 2011; Hundal, Lakhwinder, Kumar, & Basta, 2011). Washington residents are exposed to PFAS from carpets, food packaging, personal care products and cosmetics, surface coatings on textiles, paints, lubricants, waterproof fabric, ski wax, and a wide variety of other sources.” It is irresponsible to make such an assumption without data. The impact of PFAS in biosolids is much more significant than what people typically are exposed to in their daily lives. The levels of PFAS in biosolids are much higher than “dust in homes”. There is significant impact to people from drinking water contaminated with PFAS or, more likely, from eating vegetables, dairy, seafood, and fish. Land application of PFAS-contaminated biosolids contributes to all of these routes of exposure. If Ecology does not require testing

for PFAS in WWTP effluent and biosolids, there is no way of knowing if PFAS is present and no way to control land application of highly impacted biosolids or use of these biosolids in commercially available compost and fertilizer.

- Levels of PFAS exposure to people that work with biosolids (e.g., WWTP operators, compost facility employees, sludge haulers/appliers) are extremely high and must be taken into consideration when states look at levels of PFAS in biosolids. Exposure to farmers and their neighbors during land application needs to also be factored in.
 - After discovering high levels of PFAS in milk produced from dairy cattle feeding on contaminated fields, Maine is measuring the amount of PFAS in biosolids and ensuring that the materials do not contaminate agricultural lands (Maine 2021). When biosolids exceed screening levels, the state requires modeling or testing to ensure the repeat application has not pushed agricultural fields over the screening level of 2.5 ppb for PFOA and 5.2 ppb for PFOS. Maine's testing of one contaminated dairy found that the PFOS and PFOA levels in milk exceeded the concentrations it measured in the soils themselves. Unfortunately, Maine still allows contaminated biosolids to be spread on other agricultural lands.
5. The Ecology Action Plan alleges that “there may be some industrial discharge, but the vast majority of perfluorinated compounds in Washington municipal wastewater would originate from domestic sources—our homes and consumer products. The Plan uses contamination such as that identified in Decatur, Alabama biosolids and infers that it is highly unlikely to occur in Washington. “The data for PFOA concentrations from Decatur sewage sludge are fragmentary but show high levels in 2005 and 2006: 528 ng/g and 683 ng/g in 2005, and 1,875 ng/g in 2006.” The facts are that even in a State like Michigan, where there also is no commercial production of PFAS compounds, levels of PFOS were found in one WWTP’s biosolids in 2018 at 3,100 ug/g. Filter cake from the same Treatment Plant contained 8,600 µg/Kg PFOS. The primary industrial PFAS discharger to the WWTP is an electroplating facility. To be clear, there is only one industrial discharger to this WWTP, and they had 3,100 ppb PFOS in their land applied biosolids. Control of this one source greatly reduced the levels of PFOS in receiving surface water and in the fish. Ecology should, at a minimum, survey all WWTPs that receive industrial effluent and/or landfill leachate and require them to sample their effluent for PFAS. Those that indicate levels of PFAS that will adversely impact surface waters, should also test their biosolids for PFAS and consider prohibiting land application if PFAS is above risk-based levels and until sources are controlled and PFAS is reduced to acceptable levels.
- How or why would Washington State be any different? If you do not test, you will not know what sources to control, and the State will never get to levels of PFAS in biosolids that will allow continued land application without harm to the environment and to people.
 - EGLE has conducted several rounds of sampling to evaluate the presence of PFAS in surface waters (streams and drains) in one Michigan area. Since 2018, a total of 209 surface water samples have been collected. The PFOS concentrations in these samples ranged from non-detect (<0.2 parts per trillion) to 11,000 parts per trillion (ppt). Overall, results suggest that some surface waters in the area have elevated levels of PFAS, specifically PFOS. In December 2019, EGLE confirmed one source of PFAS to surface waters in this area. The source was an agricultural field that received biosolids from a local municipal Wastewater Treatment Plant (WWTP) in the 1980s. Testing confirmed elevated PFAS levels, specifically PFOS, in soils and

surface water where the biosolids were applied. The levels of PFOS in surface water correspond to levels seen in prior surface water sampling events.

6. Ecology makes the following statement in the Action Plan: “While resistant to degradation, short-chain PFAS appear to be less bioaccumulative and to have fewer significant toxicological effects.” In general, newer generation—or “shorter-chain”—PFAS are more mobile in water, less removed by water filtration systems, and more readily taken up by plants than longer-chain compounds. One study of vegetables that included celery, peas, radishes, and tomatoes grown in PFAS-tainted water found that different PFAS chemicals accumulated in different parts of the plant (Blaine 2014). The FDA measured PFAS levels in the 20 to 200 ppt range for leafy greens grown near The Chemours Company’s Fayetteville site in North Carolina. PFAS may have come from contaminated soils, water, or air deposition. A follow-up study in the area measured high levels of one chemical, PFDA, in tomatoes and potatoes (Li 2021). Ecology must include consideration of the potential hazards of short-chain PFAS in WWTP effluent and biosolids.

- In respect to toxicological effects of short-chain PFAS, much more is becoming known every day. For example:
 - What health effects are associated with PFBS? Animal studies have shown health effects on the thyroid, reproductive organs and tissues, developing fetus, and kidney following oral exposure. Based on information across different sexes, lifestages, and durations of exposure, the thyroid appears to be particularly sensitive to oral PFBS exposure. The data are inadequate to evaluate cancer effects associated with PFBS exposure. ASTDR
 - Measures of individual exposures to immunotoxic PFASs included PFBA that accumulates in the lungs. Elevated plasma-PFBA concentrations were associated with an increased risk of more severe course of COVID-19. Given the low background exposure levels in this study, the role of PFAS exposure in COVID-19 needs to be ascertained in populations with elevated exposures. *

*Severity of COVID-19 at elevated exposure to perfluorinated alkylates

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Thank you for the opportunity to comment.

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