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October 15, 2021

Tiffany Skogstrom
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Submitted electronically via: tiffany.skogstrom@mass.gov

Re: Comments on Proposed Amendments to 301 CMR 41.00 to add certain PFAS to the Massachusetts TURA List of Toxic or Hazardous Substances

Dear Ms. Skogstrom:

The 3M Company (3M) appreciates the opportunity to review and provide comments on the amendments to the 301 CMR 41.00 *Toxic or Hazardous Substance List* adding Per- and Polyfluoroalkyl Substances not otherwise listed (PFAS NOL) to the list (Proposed Amendment). 3M is a science-based company with substantial experience, expertise, and product stewardship related to PFAS. It is with that background 3M offers comments on the Proposed Amendment.

Today's PFAS compounds are used by a broad range of customers and industries worldwide that enable critical products such as life-saving medical devices and low-emission vehicles. Regulatory policy must take these important applications into account. While the science behind PFAS can be complex and continues to evolve, science must be at the forefront of providing answers and solutions.

Treating all PFAS as a single group or category is not scientifically sound nor is it legally permissible in this instance. The twelve PFAS chemicals studied by the Science Advisory Board (SAB or Board) are not representative of all PFAS, and should not form the basis for such a broad categorical listing. In addition, the available peer-reviewed scientific literature do not support the health concerns cited by the Board. The evidence does not support the conclusion that any PFAS, individually or as a group, should be classified as a listed substance under the Toxics Use Reduction Act (TURA) List of Toxic or Hazardous Substances.

3M encourages the TURA Administrative Council (Council) and the Executive Office of Energy and Environmental Affairs ("OEEA") to reconsider the necessity and appropriateness of listing thousands of substances as an undifferentiated group. 3M requests that the Council consider and incorporate 3M's comments on the Proposed Amendment.

I. TURA DOES NOT ALLOW LISTING A GROUP OF HUNDREDS OF SUBSTANCES

Massachusetts law does not permit the listing of hundreds of PFAS in one broad act by including them as a "category." Except for changes to the CERCLA hazardous substance list, TURA limits the Council's authority to add or delete substances to "no more than 10 substances" for any one calendar year.[1] There is no legal authority for the agency to list "categories" of substances where the plain language of the statute limits the listing to no more than 10 "substances" annually. The proposed regulation allowing the listing of thousands of PFAS as a category would effectively render the statutory cap meaningless.

II. INCLUDING PFAS NOL AS A SINGLE CATEGORY IS NOT BASED ON SOUND SCIENCE

Even if it were legally permissible under TURA, there is no scientific basis for the SAB's definition of PFAS as a category. Initially, the Board recommended listing eleven individual PFAS compounds.[2] After two years, the SAB suddenly changed course and recommended listing the proposed category of PFAS, encompassing hundreds of other chemicals that SAB did not study.[3] The recommendation also included a PFAS chemical that the Board previously recommended *not listing,* citing lack of available data.[4]

The SAB defined the purported PFAS category as "those PFAS that contain a perfluoroalkyl moiety with three or more carbons (e.g., –CnF2n–, n ≥ 3; or CF3–CnF2n– , n≥2) or a perfluoroalkylether moiety with two or more carbons (e.g., –CnF2nOCmF2m− or –CnF2nOCmFm–, n and m ≥ 1)." TURI then excluded "chemicals already listed individually due to listing under the Toxics Release Inventory (TRI)" from the category, because such substances are already included on the Toxic or Hazardous Substance List.[5] In other words, TURI created a "catch-all" category that primarily included substances that "have not been studied with regard to health or environmental effects."[6]

The Policy Analysis claims that many PFAS in the listing category "are being discharged into the environment."[7] It provides no citation for this statement, and indeed it is unclear how TURI could know if this information true given that there is no validated testing methodology for the vast majority of substances included in the proposed listing category.

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[1] Mass. Gen. Laws Ann. ch. 21I, § 9(C).
[2] PFAS Information Reviewed by the Scientific Advisory Board, last accessed Oct. 6, 2021; *see also,* PFAS Policy Analysis, at Appendix D (May 2021) (SAB PFAS listing recommendations between January 11, 2017 and November 14, 2019).
[3] *Id.* (SAB PFAS category listing recommendation June 25, 2020).
[4] PFAS Policy Analysis, Appendix D (May 2021) ("Board agreed that ADONA followed the patterns of the other PFAS that the SAB has reviewed, such as liver effects, persistence, gender differences, corrosivity, and maternal toxicity. However, available data were not sufficient for a listing recommendation.")
[5] *See* 301 CMR 41.03(13).
[6] PFAS Policy Analysis at 3.
[7] *Id.*

A. Grouping PFAS as a category is scientifically flawed

PFAS refers to a broad category of compounds that encompasses thousands of materials with distinct and widely varying properties, profiles, and uses. As the United States Environmental Protection Agency ("EPA") has noted, "PFAS vary widely in chemical and physical properties, behavior, and potential risks to human health and the environment. Differences in the chemical structure, carbon chain length, degree of fluorination, and chemical functional group(s) of individual PFAS have implications for their mobility, fate, and degradation in the environment, as well as uptake, metabolism, clearance, and toxicity in humans, plants, and other animals."[8]

Different PFAS have different toxicological properties, bioaccumulation potentials, toxicity levels and effects. Persistence alone is not a sufficient basis for regulating a chemical as toxic or hazardous. The relevant analysis requires considering ultimate toxicity, which depends on both the toxicokinetic and toxicodynamic properties and those vary widely among different PFAS.

As a result, treating PFAS as a single group or category, as the Council attempts to do in the Proposed Amendments, is not scientifically sound or appropriate. 3M supports a rigorous, science-based dialogue among regulators, academic researchers, and manufacturers to determine how these materials could potentially be grouped in a scientifically sound way. Consistent with sound environmental policy, grouping certain constituents together should be based on the best available science and specific ways in which these substances may or may not impact human health and the environment. Such assessments should consider potential exposure routes and identified hazards, not simply structural similarities. The Proposed Amendments make clear that the Council and the Board have not conducted such an assessment.

The Board's recommendation to list PFAS as a category fails to meet the standard set by the Massachusetts Administrative Procedure Act (APA). Agency actions may be set aside under the APA if they are "unsupported by substantial evidence." Mass. Gen. Laws. Chapter 30A, § 14(7)(d). 3M requests that the Council identify what information it is using to classify hazardousness of the hundreds of PFAS that are subject to the Proposed Amendments based on its review of only twelve chemicals so that the public has an opportunity to participate meaningfully in the rulemaking process.

B. There is no support for listing PFAS as a group based on similar hazards

SAB listed certain health or environmental impacts it found associated with certain *individual* PFAS it examined, and extrapolated that data to apply to the entire category, noting that across the entire category of (12) PFAAs, "the SAB found many similar hazards."[9] Elsewhere the Board notes that of the chemicals SAB reviewed, "some" of the key health endpoints of concern have been documented for multiple chemicals, while other health effects

[8] EPA Multi-Industry Per- and Polyfluoroalkyl Substances (PFAS) Study – 2021 Preliminary Report ("EPA PFAS Study") at 3-1 (September 2021).
[9] PFAS Policy Analysis, at 7-10, 2.

have been documented for only one or two chemicals[.]"[10] Many of these thousands of PFAS have not been studied at all.[11]

Even among just a handful of the hundreds of PFAS captured by SAB's proposed definition, these materials' distinct and widely varying properties mean there is no scientific basis for evaluating PFAS as a monolith. Scialli et al. (2007) and Peters and Gonzalez (2011) independently evaluated the scientific feasibility of combining perfluoroalkyl exposures for risk assessment based on the critical concept of Toxic Equivalency Factors (TEFs), which was developed for dioxin-like compounds. Scialli et al. (2007) reviewed similar same-species studies performed with different perfluoroalkyls and they found large discordance in endpoints measured for PFOS, PFOA, PFBS, and PFDA.[12] Peters and Gonzalez (2011) also concluded that perfluoroalkyl exposure should not be combined for risk assessment purposes based on the following observations:

- lack of conclusive evidence demonstrating that a single receptor is required to mediate the toxicities of perfluoroalkyl chemicals;
- the potential influence of species differences in the response to PPARα ligands that would significantly limit this approach;
- inconsistent toxicities observed with different perfluoroalkyl chemicals; and
- a limited toxicological database for a number of perfluoroalkyls chemicals (e.g., perfluorinated sulfonamide polymers and perfluorinated sulfonamide-based phosphate fluorosurfactants).

Rigorous, reliable scientific evidence indicates there is not a sound basis to treat thousands of PFAS as a group. 3M welcomes the opportunity to continue to engage with the Council in science-based dialogue to determine how these materials potentially could be grouped in a scientifically sound way. However, there is not currently any technical support in the Proposed Amendment or supporting documents that justify listing the defined group.

C. The Board's deficient analysis does not support the category listing

The Board explains that it reviewed "representative chemicals" within each of the broad subcategories of the PFAAs.[13] It then reviewed at least one precursor for each of the OECD subcategories of PFAAs, and considered a number of breakdown pathways.[14] SAB "also reviewed PFAS definitions and class descriptions from other organizations in developing the PFAS category."[15] More specifically the Board states:

[10] PFAS Information Reviewed by the Scientific Advisory Board, last accessed Oct. 6, 2021.
[11] PFAS Policy Analysis, at 3.
[12] PFOS, PFOA, and PFBS are among the 12 substances considered by the SAB as "representative."
[13] PFAS Policy Analysis at 6 (May 2021).
[14] *Id.*
[15] *Id.*

> [i]n order to understand the characteristics of a range of PFAAs, the SAB began by examining eight substances of varying chain lengths: PFNA (C9); PFOS and PFOA (C8); PFHpA (C7); PFHxA and PFHxS (C6)iv; and PFBA and PFBS (C4).v The SAB then reviewed two ethers (GenX and ADONA), and phosphonic and phosphinic acids (PFPA and PFPiAs) of varying chain lengths.[16]

The Board does not adequately explain why this range of PFAAS is representative of the listing category. Further, the listing category appears so broad that virtually any PFAS chemical is included in *some* way.

Moreover, SAB's definition is over-inclusive because the range of substances encompassed by the definition includes substances with widely varying toxicity, fate and transport, and other characteristics. Data availability regarding health effects and occurrence varies significantly within the defined PFAS group, but SAB nonetheless lists the entire group based on review of a limited number of specific substances that may share few, if any, common characteristics.

The Board cited repeatedly to the Organization for Economic Cooperation and Development (OECD) "database" but then *ignored the groups and sub-groups* created by the OECD and drafted a definition that would encompass *all* of them, (with the exception of specific substances within each group with less than three carbons).[17] The Board acknowledged lack of data on even those PFAS it did examine. For example, for "ADONA, … the available data were not sufficient for an individual recommendation."[18] "For the PFAS substances with fewer than eight carbons, less information was available."[19] Some of the key health endpoints of concern have been documented for multiple chemicals, while other health effects have been documented for only one or two chemicals[.]"[20] Even if the health effects were associated with these PFAS to a reasonably certain degree, which they are not, some health endpoints associated with a few of the 12 chemicals it examined is not a sufficient basis to assume hundreds of other substances should be listed as hazardous.

EPA has also identified numerous groups and subgroups of PFAS. On September 16, 2021, EPA published the Multi-Industry Per- and Polyfluoroalkyl Substances (PFAS) Study – 2021 Preliminary Report. That report included an entire section describing the many significant differences between various PFAS.[21] As EPA notes, "[t]he thousands of chemicals that make up the PFAS family can be divided into two classes: nonpolymers and polymers. Each class may contain subclasses, groups, and subgroups."[22] Figure 1 of the EPA PFAS Study shows how EPA has divided the PFAS "family" into two classes (nonpolymers and polymers), five subclasses, five groups, and ten subgroups.[23] EPA then identifies specific substances that fall into each

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[16] *Id.* at 7.
[17] *Id.* at 5-6.
[18] *Id* at 9.
[19] *Id* at 8.
[20] PFAS Information Reviewed by the Scientific Advisory Board, last accessed Oct. 6, 2021.
[21] *See* EPA PFAS Study at 3-1 – 3-11.
[22] *Id.* at 3-1.
[23] *Id.* at 3-2.

subclass, group, and subgroup, with a description of general chemical structure.[24] SAB should consider these and other differences within the broad PFAS group, and develop definitions accordingly.

Going beyond its failure to explain how and why the individual PFAS it chose were representative of the entire category, SAB also did not explain why it was appropriate to list as hazardous an unknown number of chemicals for which the Board acknowledged there is no scientific data regarding health or environmental effects.[25]

Finally, the Board cited numerous studies and regulatory actions but failed to discuss any of the literature in detail or connect the studies or actions to its own conclusions. This creates the inaccurate impression that a vast body of scientific evidence supports the Board's decision. It does not.

D. Assuming Equal Properties Among Individual PFAS is Not Scientifically Supported

Available data demonstrate that there is a large spectrum of differences in the biological responses observed in laboratory animals under toxicological study conditions for most perfluoroalkyls evaluated. For example, the European Food Safety Authority (EFSA) recently applied equal toxicity potencies to a group of selected PFAS (PFOA, PFOS, PFHxS, and PFNA). The actual data, however, are inconsistent with that application. Qualitatively, it is true that these four perfluoroalkyls do have longer serum elimination half-lives in humans, however, there are distinct quantitative differences for the reported half-lives as well as in the categorical effects with animal data. Specific effects, such as dose response outcomes included health conditions and mortality in toxicological animal studies, are observed at largely different quantitative levels depending on the compounds and doses. The proposed definition of PFAS includes gaseous, liquid, and solid compounds with variation in properties such as volatility and water solubility. Therefore, it is scientifically inappropriate to assume they all have the same effects.

E. Generic Conclusions Provide Insufficient Support for the Hazard Listing

The lengthy bibliography attached to the Policy Analysis cannot replace adequate analysis. SAB mentions its review of "the literature" and "primary research publications" but it fails to discuss the literature or research in a way that allows a reader to examine the basis for the Board's summary conclusions. The Board also inaccurately presents data as conclusive, causal evidence of the risks potentially presented by PFAS.

The Policy Analysis summarizes three years of the SAB's work on per- and polyfluoroalkyl substances in approximately four pages. Rather than describe how it reached its conclusions regarding the purported health effects of just 12 PFAS out of the hundreds it proposes to list, the SAB provides overly general summary tables that provide no insight into the SAB's analysis. For example, the Board provides a table with the 12 PFAS chemicals on the x

[24] *Id.* at 3-5 – 3-6.
[25] *Id.*

axis, and the health effects on the y axis. Where the Board concluded that the literature showed some type of unknown association with a chronic health effect, an X is placed.

Similarly, the SAB does not explain or analyze why any particular study supports its decision. Instead, it cites to "Appendix B," another table, this time pairing literature with health effects.[26] Notably, the table is prefaced with a note that the "SAB's review included many additional studies … including studies that show effects *as well as studies that show no effect.*"[27] The Board did not explain or discuss the disparate results among studies, the strength of relationship or evidence, or any other reason why it chose to rely on one study versus another. The Policy Analysis lacks any discussion of correlation versus causation, and it does not discuss the probability or likelihood of any particular effect. Nor did the Board explain why it chose to rely on the studies that showed effects and exclude those that did not.

F. Other Agencies' Regulatory Activity is Not a Basis for the Proposed Listing

The Policy Analysis also includes a list of international, federal and state regulatory actions related to various PFAS chemicals. The Policy Analysis does not explain why each of these unique regulatory actions supports the grouping or the inclusion of the defined category of PFAS as hazardous. The regulatory actions cited relate to a wide range of issues, such as drinking water, products, air emissions, and food packaging. The Policy Analysis does not engage with any of the science underlying these actions, nor does it discuss why or how other agencies' regulatory proposals are connected to the one at issue here.

3M has commented extensively on many of the regulatory proposals cited in the Policy Analysis, including identifying concerns regarding a number of the studies the agencies relied on. The Policy Analysis treats other states' regulatory actions as evidence that it should list thousands of PFAS as hazardous, without identifying any relevant or similar action suggested by any one of the other measures. The Board should examine the regulatory action and the specific chemical at issue in a particular regulatory action it is citing, and explain why that action supports the Board's recommendation to include hundreds of PFAS collectively on the 301 CMR 41.00 *Toxic or Hazardous Substance List.*

III. THE BODY OF SCIENTIFIC EVIDENCE DOES NOT SHOW ADVERSE EFFECTS IN HUMANS FROM PFAS

The vast body of scientific evidence does not show that the proposed listed category of PFAS cause adverse health effects in humans. While there remains some uncertainty in the science, the evidence available today does not support the conclusions regarding health effects drawn in the Policy Analysis. 3M includes the following examples of its comments on the flawed science behind some regulatory actions.

Many epidemiological studies regarding PFOS or PFOA are cross-sectional by design. This type of study design cannot address temporality (i.e., time-dependent associations). This issue is important to acknowledge because confounding and reverse causation has now been

[26] *Id.* at 31.
[27] *Id.*

shown to be the explanation for several different health outcomes initially reported in cross-sectional studies as indicating an association between PFOS or PFOA exposure and the outcome.[28]

In its 2018 Draft Toxicological Profile for Perfluoroalkyls, ATSDR acknowledged that for PFAS there is no cause and effect established between health effects and exposure to humans, when it stated: "The available human studies have identified some potential targets of toxicity; however, cause and effect relationships have not been established for any of the effects, and the effects have not been consistently found in all studies."[29] In 2021, ATSDR again concluded that while some studies suggest an association between PFAS exposure and health outcomes, "*cause and effect relationships have not been established for these outcomes*."[30]

The Australian Expert Health Panel also concluded that "there is no current evidence that supports a large impact on a person's health as a result of high levels of PFAS exposure."[31] Like ATSDR, the Australian Expert Health Panel analyzed hundreds of studies when reaching this conclusion.[32]

The TURA Policy Analysis repeatedly cites information from the "C8 Health Project." This information is misleading and outdated. In 2020, scientists and collaborators who had formed the "C8 Science Panel" reviewed the current literature with respect to each of the health conditions potentially linked to PFOA.[33] These scientists concluded that epidemiological evidence remains limited and question the broader implications drawn from their prior work, noting that their work assessed a single population and that additional studies would be expected to vary. Their findings include:

- Increased blood cholesterol – the authors reviewed additional studies regarding the effects of PFOS and PFOA on serum cholesterol levels. While these more recent studies did generally support an association between exposure and increased levels of cholesterol, the magnitude of the cholesterol effect is inconsistent across different exposure levels in the epidemiologic studies and is not supported in the toxicological studies. The article notes there is not consistent evidence that exposure translates to an increase in cardiovascular disease risk. Furthermore, two workshop panels have recently recommended additional pharmacokinetic and mechanistic research be

[28] *See* 3M Comments on the New Hampshire Department of Environmental Services Development of Maximum Contaminant Levels and Ambient Groundwater Quality Standards for Perfluorooctanesulfonic Acid (PFOS), Perfluorooctannoic Acid (PFOA), Perfluorononanoic Acid (PFNA) and Perfluorohexanesulfonic Acid (PFHxS) at 5, (April 12, 2019).
[29] ATSDR 2018; pages 635-636.
[30] ATSDR *Toxicological Profile for Perfluoroalkyls*, May 2021 at 6, 26, 751, (emphasis added). Available at https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf
[31] Expert Health Panel for PFAS: Summary at 2 (emphasis added). Available at https://www1.health.gov.au/internet/main/publishing.nsf/Content/ohp-pfas-expert-panel.htm
[32] Expert Health Panel for Per- and Poly-Fluoroalkyl Substances (PFAS), March 2018 at 382-403. Available at https://www1.health.gov.au/internet/main/publishing.nsf/Content/ohp-pfas-expert-panel.htm
[33] *See* Kyle Steenland, Tony Fletcher, Cheryl R. Stein, Scott M. Bartell, Lyndsey Darrow, Maria-Jose Lopez-Espinosa, P. Barry Ryan, David A. Savitz, "Review: Evolution of evidence on PFOA and health following the assessments of the C8 Science Panel," Environment International, Volume 145, 2020 (available at https://doi.org/10.1016/j.envint.2020.106125).

conducted to understand the epidemiological association of low concentrations of PFAS and higher serum lipids, which is contrary to the toxicological research reported in some studies at much higher concentrations.[34]

- Ulcerative colitis – the authors reviewed four additional published studies and concluded that while the evidence still supports a possible link, more studies are needed to reach definitive conclusions.

- Thyroid function – the authors concluded the evidence of an association of PFOA with thyroid disease has, in fact gotten weaker. The review focused on studies of a 2019 Swedish community regarding exposure to PFOS and PFOA.

- Testicular cancer – based on their review, the authors concluded that as a general matter, the evidence does not support PFOA being considered carcinogenic for any given site. Specific to testicular cancer, the authors noted that the evidence for an association is suggestive but noted it is a rare type of cancer, limiting possible conclusions.

- Kidney cancer – likewise, the authors concluded the evidence for an association between exposure to PFOA and kidney cancer remains suggestive. They cautioned, however, that this determination is inconsistent with a 2014 study of high-exposure workers.

- Pre-eclampsia and elevated blood pressure during pregnancy – the authors determined the C8 Science Panel conclusions were relatively insensitive to potential errors in exposure and toxicokinetic models. Two new studies reviewed proved inconclusive as to an association between PFOA and pre-eclampsia.

Finally, the C8 panel focused only on PFOA and extrapolation of any conclusions by the panel to other PFAS is not warranted.

IV. CONCLUSION

3M appreciates the opportunity to provide comments on the proposed PFAS NOL listing. 3M requests that the Council reconsider its decision to list hundreds of PFAS in violation of TURA's requirements and without a sound basis in science

[34] See Styliani Fragki, et al. "Systemic PFOS and PFOA exposure and disturbed lipid homeostasis in humans: what do we know and what not?" Critical Reviews in Toxicology, April 15, 2021 (available at https://www.tandfonline.com/doi/full/10.1080/10408444.2021.1888073); and Melvin E. Andersen, et al. "Why is elevation of serum cholesterol associated with exposure to perfluoroalkyl substances (PFAS) in humans? A workshop report on potential mechanisms," Toxicology Volume 459, July 2021, 152845 (available at https://www.sciencedirect.com/science/article/pii/S0300483X21001682).

Tiffany Skogstrom
Executive Director of the TURA Administrative Council
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October 15, 2021

RE: Proposed Changes to the Toxic or Hazardous Substance List

Dear Ms. Skogstrom:

The American Chemistry Council (ACC) is a national trade association representing chemicals and plastics manufacturers in the United States, including member companies in the Commonwealth of Massachusetts. The chemical industry directly employs over 6,669 people in Massachusetts and indirectly supports another 7,929 jobs and generates over $104 million in state and local taxes, supporting the needs of Massachusetts and its residents.

ACC strongly opposes adding the per-and-polyfluoroalkyl substances not otherwise listed (PFAS NOL) category as a high hazard category on the Toxic or Hazardous Substance List because: 1) the vote is contrary to the Massachusetts Toxics Use Reduction Act ("TURA"); 2) is the result of a flawed administrative process; and 3) is based on flawed scientific principles[1].

1. The Proposed Regulatory Amendments Violate the TURA Statute

At the Administrative Council meeting on August 19, 2021, the proposed changes to the regulations were described as "clarifications" to the existing regulations. To be clear, they are not mere clarifications. The proposed changes, if approved, significantly expand agency's authority beyond what the TURA statute authorizes. Simply put, TURA does not authorize the listing of a "category" of "substances," and the proposed regulation would therefore violate TURA. TURA provides that

> the council may add or delete additional substances from the toxic or hazardous substance list. Except for those substances covered under subsection (B), no more than 10 substances may be added for any 1 calendar year, and no more than 10 substances may be deleted for any 1 calendar year.

It is self-evident that the purpose of the annual limitation on new listings was, at least in significant part, to limit the burden on the regulated community. However, while the proposed regulation would treat all PFAS compounds not otherwise listed as one "substance", the regulated community, in order to comply with the regulation, would still have to gather information on each individual molecule that meets the definition. In other words, the Council might pretend that it has added only one new compound to the listed, but the effect on the regulated community would be no different than if the Council were to add each PFAS compound individually. To the regulated community, this regulation will add hundreds or even thousands of new compounds to the list. TURA does not authorize the Council to do so, and that approach of turning hundreds of separate chemical molecules into one "substance" is an impermissible end run around the limitation on the Council's statutory authority.

[1] Detailed arguments related to flawed scientific principles are set forth in a separate filing. While this letter focuses only process deficiencies, ACC is also submitting technical comments that address the scientifically flawed principle of grouping PFAS as a class. ACC appreciates your review and consideration of both sets of comments.

The Massachusetts Legislature chose to add the limitation on the number of substances that the Council could add to the List annually. That limitation would have no meaning if the Council had the authority, at its discretion, to combine many individual compounds into one "category" and then list that single "category", the effect of which is to regulate hundreds of separate compounds.

In Massachusetts, a fundamental tenet of statutory interpretation requires that statutory language be given an effect consistent with its plain meaning and in light of the aim of the Legislature unless to do so would achieve an illogical result. Sullivan v. Town of Brookline, 435 Mass. 353, 360 (2001) (citing Cohen v. Commissioner of the Div. of Med. Assistance, 423 Mass. 399, 409 (1996)). The plain meaning of TURA limits the Council's authority to listing no more than 10 new substances each year. The Council has no authority to avoid that limit by grouping multiple separate chemical molecules into one "category."

Alternatively, a court will look to "the conventional tools of statutory interpretation" to determine "whether the Legislature has spoken with certainty on the topic in question." Goldberg v. Board of Health of Granby, 444 Mass. 627, 632-633 (2005). Here, the combination of the Legislature's decision not to authorize the Council to regulate categories of compounds, as was done in TSCA, with the explicit limit on the number of substances to be regulated annually, means that the Legislature has "spoken with certainty." The Council does not have authority to group hundreds compounds into one single "substance" in order to avoid the explicit annual limit on such regulations.

Even if a court were to determine that TURA is ambiguous, it will still reject any agency interpretation that does not give effect to the Legislative intent. Franklin Office Park Realty Corp., supra at 460; *see also* ENGIE Gas & LNG LLC v. Dep't of Public Utilities, 475 Mass. 191, 200 (2016). Under TURA, the legislative intent to avoid a massive new burden on regulated entities means that the proposed regulation cannot stand. Even if the Council regards all PFAS NOL as a single compound, regulated entities would have to comply, laboriously, individual compound by individual compound. The burden on them would be no different that if the Council explicitly regulated each PFAS NOL separately. The regulation thus does not comport with the Legislature's intent to limit the annual new burden on regulated entities.

2. The Administrative Process Leading to the PFAS Listing Was Flawed

One of the primary purposes of the TURA statute is for the addition or deletion of chemicals on a list of hazardous substances. The process envisioned by the statute is a multi-stage decision-making method with a "robust and dynamic process for discussion, analysis and stakeholder input[2]." The Science Advisory Board ("SAB") recommendation and TUR Administrative Council's vote to list PFAS NOL, all conducted via virtual platform, lacked these important precepts.

ACC expressed concerns over deficiencies in process in a series of letters, phone calls and meetings with the Governor's Office in May and June 2020. More specifically, ACC raised concerns regarding procedural deficiencies in virtual meetings conducted by the SAB, Advisory Committee and Administrative Council. While Zoom technology, when effectively deployed, can be a useful method of facilitating public comment that is consistent with the spirit of the Governor's Executive Order of maximizing public participation, the SAB's meetings prohibited such meaningful participation. Those deficiencies included:

(1) failure to provide periodic (at reasonably-timed intervals) opportunities for the public to respond;
(2) failure to ensure that public comments are allowed during the relevant portion of the debate and not at some point when they are no longer relevant to the discussion;

(3) failure to permit enabling of cameras and microphones by participants; and
(4) failure to consider public comment submitted electronically into the record and allowing the SAB members the opportunity to respond to public comment.

[2] "Decision Making Under TURA," Toxic Use Reduction Institute, Dec. 12, 2018, accessed Oct. 7, 2021. https://www.turi.org/Our_Work/Policy/Toxics_Use_Reduction_Act/Decision-Making_Under_TURA

Because the SAB's discussions are often technical in nature, the lack of robust, timely, and interactive discussion by participants, many of whom are experts in their fields, and SAB members, truncated important debate. This give and take among the experts has been a long-standing hallmark of SAB meetings and one that was nearly eliminated by the virtual platform, to the detriment of a well-balanced debate, fulsome administrative process, and sound scientific conclusions.

In addition to the procedural deficiencies described above, the SAB's vote merits further discussion and input from the Advisory Committee to the Administrative Council, also established under TURA, to consider and provide input into the full impact that vote has on Massachusetts' businesses. Although the issue was on an October 2020 agenda of the Advisory Committee, along with other issues, an issue of this magnitude deserves the full attention of the Advisory Committee and Administrative Council. As the Commonwealth emerges from the COVID-19 pandemic and many businesses are struggling, these decision-making entities should give greater scrutiny as to the ways in which this will disadvantage Massachusetts companies.

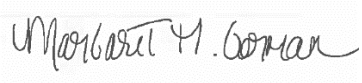
The effect of these combined procedural deficiencies resulted in the SAB's scientifically unsound vote on June 25, 2020, to recommend listing of certain PFAS substances. The SAB's flawed analysis was then advanced to the Administrative Council on August 19, 2021. After voting to change the definition of the term "substance," the Council then voted to approve the SAB's recommendation, the effect of which allows the listing of hundreds of substances used by manufacturers and businesses in Massachusetts, increasing their costs and reducing their competitiveness.

Because the regulations are not authorized by TURA and would in fact render the annual cap on new listings, --- meaningless, the regulations would exceed the Council's authority and would violate TURA.

3. Conclusion

The proposed regulatory amendments are in direct conflict with the letter and the spirit of TURA. In addition, the administrative process leading up to and including the adoption of the proposed amendments by the Administrative Council was flawed, and adversely affected ACC's rights as well as many of its members. Given these legal and procedural infirmities, the proposed amendments should be rejected. Please contact me if you have any questions or wish to discuss further.

Sincerely,



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cc: Honorable Charlie Baker
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October 15, 2021

RE: Proposed Changes to the Toxic or Hazardous Substance List

Dear Ms. Skogstrom:

My name is Stephen Korzeniowski. I am an Organic Chemist by training, an Industry Scientist and have over 30 years experience in the PFAS Fluorotechnology area. I am writing on behalf of ACC – American Chemistry Council. For the record, I attended the majority of the TURI SAB – Science Advisory Board PFAS meetings over the past 4 years, since 2017.

The American Chemistry Council (ACC) is a national trade association representing chemicals and plastics manufacturers in the United States, including member companies in the Commonwealth of Massachusetts. The chemical industry directly employs over 6,669 people in Massachusetts and indirectly supports another 7,929 jobs and generates over $104 million in state and local taxes, supporting the needs of Massachusetts and its residents.

ACC strongly opposes adding the per-and-polyfluoroalkyl substances not otherwise listed (PFAS NOL) category as a high hazard category on the Toxic or Hazardous Substance List because: the fundamental flawed principle behind this NOL Vote is that all PFAS compounds are treated as the same and they are all toxic and/or hazardous. We strongly oppose the concept and premise to “Group as One and Regulate as a Class.”

And now we have a new Category here: “List as One” using the NOL process MA has in place.
Many of you have been given a 50-page report to review that provides the SAB’s detailed assessment leading to this NOL Vote. I want to point out a handful of items in this report that I ask you to re-consider:

- Page 9 discusses fluoropolymers (FP’s) and provides a number of factually incorrect statements and assumptions – not all FP’s are made with PFAAs; in fact the majority of types are not made with PFAAs i.e PVDF. Given that most FP’s meet the Polymer of Low Concern criteria, residuals and leachables are not expected to be an issue. FP’s are industrial products, not consumer products. They are used in consumer products like your cell phones and in your automobiles (components and fuel lines) among other critical end-uses such as COVID-19 testing, PPE, medical devices and implants.

- Page 10 provides two Tables for your review – both of which provide a significantly unbalanced perspective leaving out many peer-reviewed papers and other articles that dispute some of these classifications, especially for PFHxA. Notably the studies left out were by the French agency ANSES and both the Luz et al and Anderson et al publications which provide RfD’s or reference dose values clearly showing that PFHxA has a safety margin many orders of magnitude higher than PFOA, for example. These concepts are illustrated in a chart given below from a talk I gave in 2019 at a SETAC meeting. In addition, the Michigan MCL for PFHxA is 400,000 ppt vs 8 ppt for PFOA.

- This report and the work done by the SAB team lack a true weight-of-evidence type approach. Appendix B on page 31 suffers from the same lack of balance.

- Figure 3 on page 20 provides you with perspective from both a MA and NHANES PFAS human blood level analyses. It is noteworthy that this Figure does not list PFHxA, yet it has been classified as bioaccumulative by the SAB team (in the cited Tables) despite the complete lack of human population evidence in blood.

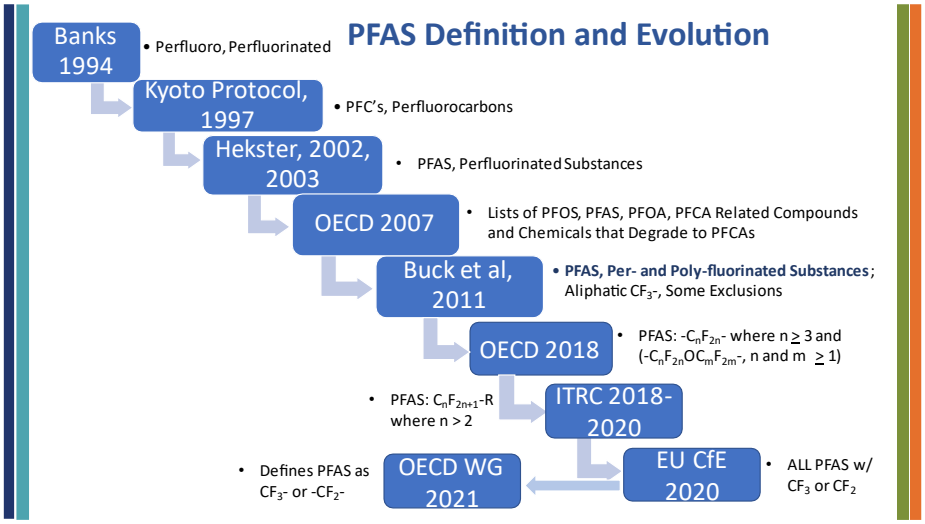
2019 SETAC Talk Chart:

Example Toxicity Values (or R_fD): Long and Short-Chains

	# Fluorinated Carbons		Tox Value (ng/kg-day)	Source	Species and Effect
Long-Chain	8	PFNA C9	**0.74**	NJDEP 2015	Mice: increased maternal liver weight
			3	ATSDR 2018 DRAFT*	Mice: decreased offspring body weight and developmental delays
	8	PFOS C8	**20**	USEPA 2016	Rat: reduced pup body weight
			2	ATSDR 2018 DRAFT*	Rat: thyroid follicular cell damage
	7	PFOA C8	**20**	USEPA 2016	Mice: developmental—reduced ossification, accelerated puberty
			3	ATSDR 2018 DRAFT*	Mice: altered activity and skeletal alterations in offspring
	6	PFHxS C6	**20**	ATSDR 2018 DRAFT*	Rat: thyroid follicular cell damage
Short-Chain	5	PFHxA C6	**250,000**	Luz et al. 2019	Rat: kidney papillary necrosis
			320,000	ANSES 2017	Rat: kidney papillary necrosis
	4	PFBS C4	**10,000**	USEPA 2018 DRAFT	Mice: thyroid—decreased serum T4 Rat: kidney papillary hyperplasia

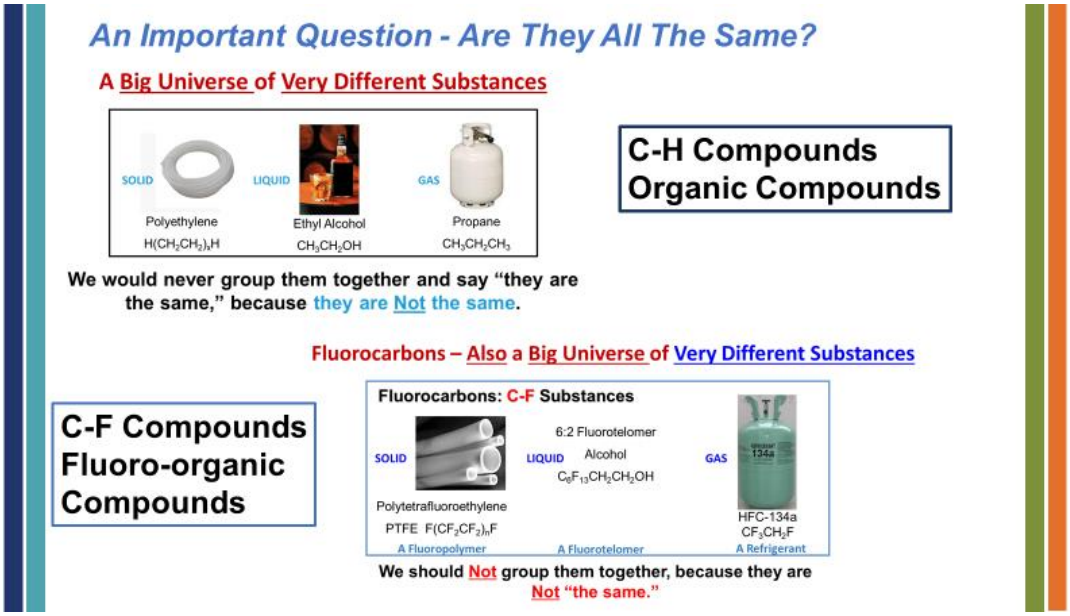
* Intermediate duration

The compounds included and number of compounds covered by this evolving definition has evolved. As the definition has evolved, so has the number of compounds covered – increasingly with the new definitions.

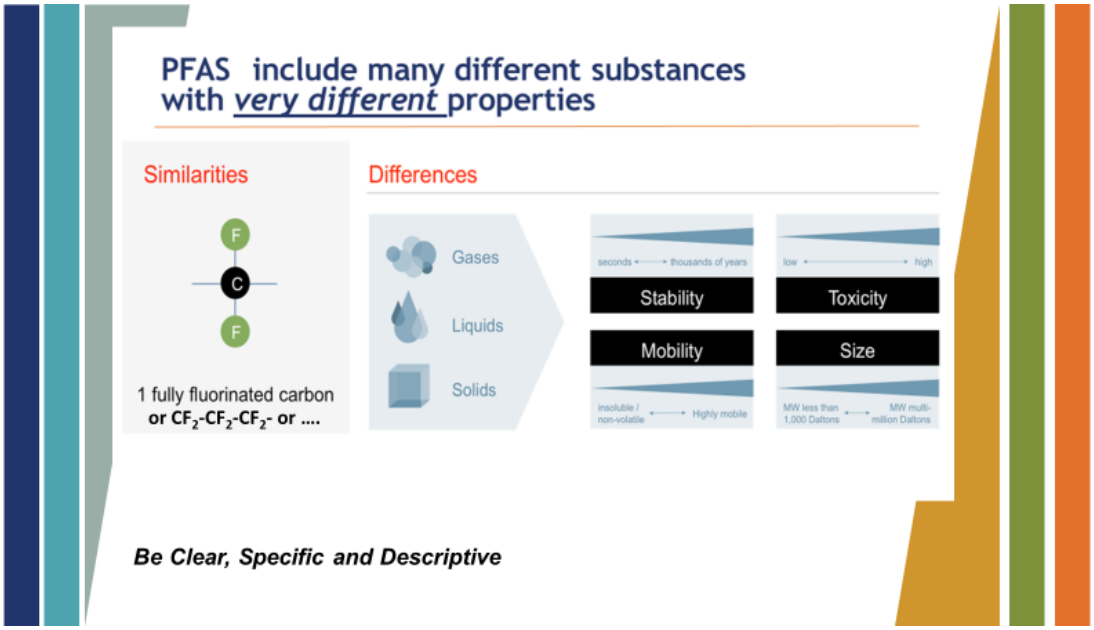


The peer-reviewed paper ACC published in May in Integrated Environmental Assessment and Management (IEAM) indicated that the number of Commercially Relevant" compounds is more likely in the hundreds not in the 10,000's. This means we can assess these compounds by classic risk assessments rather than by a 'Group as One'/List as One approach singled out by this proposed vote. We strongly Oppose this "LIST as One" or NOL approach.

The notion that all these compounds are the same because they have the same bond like a C-H or a C-F is a deeply flawed concept. As you look at the diagram we have included in our publication,



It should be readily obvious that these compounds, whether they are Organic Compounds or Fluoro-organic Compounds, encompass a huge universe of very different, diverse substances with vastly different properties and functions. One simply cannot group them as One and together because significant fundamental property differences exist.



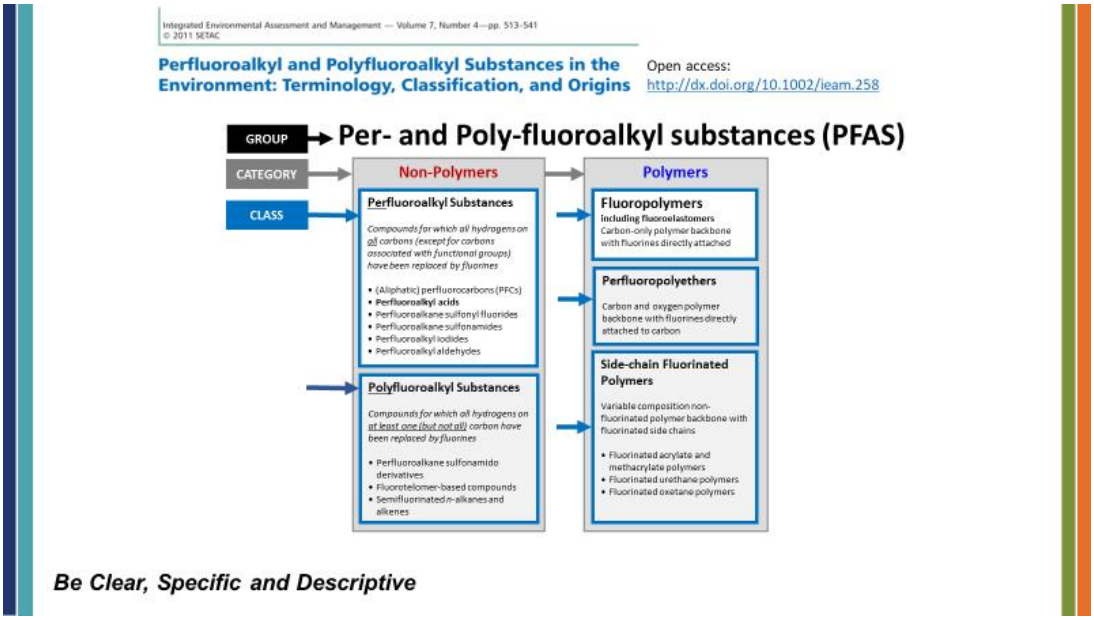
What may well be behind the NOL's Vote premise is that these compounds are all Persistent.
However, some considerations are warranted such as:

- Persistence alone is not an intrinsic hazard and does not in itself imply an adverse effect.
- Persistence of a substance does not eliminate the need for a risk assessment based on evidence of adverse effects and environmental releases.
- The C-F bond strength responsible for the persistence property provides exceptional chemical stability enabling high performance and durability for key applications – that alternatives cannot provide.

*P-sufficient Approach – REGULATE Only on Persistence**

- "…High persistence alone should be established as a sufficient basis for regulation of a chemical, which we term the 'P-sufficient approach'"*
- Considerations:
  - Persistence alone is not an intrinsic hazard and does not in itself imply an adverse effect
  - Emissions of persistent compounds should be monitored and minimized due to potentially increasing presence in the environment
  - Persistence of a substance does not eliminate the need for a risk assessment based on evidence of adverse effects and environmental releases
  - The C-F bond strength responsible for the persistence property provides exceptional chemical stability enabling high performance and durability for key applications – that alternatives cannot provide

***Why is high persistence alone a major cause of concern?**
Ian T. Cousins, Carla A. Ng, Zhanyun Wang and Martin Scheringer
Environ. Sci.: Processes Impacts, 2019,21, 781-792



Be Clear, Specific and Descriptive

Fluoropolymers have material properties, have C-F in the backbone and are large, stable, inert polymeric molecules that are too large to cross biological membranes. Fluoropolymers have little potential for human or environmental exposure. They are not water soluble, not found in sources of drinking water, are non-bioaccumulative and non-bioavailable; they are not considered to be mobile in the environment and do not have any known systemic toxicity.

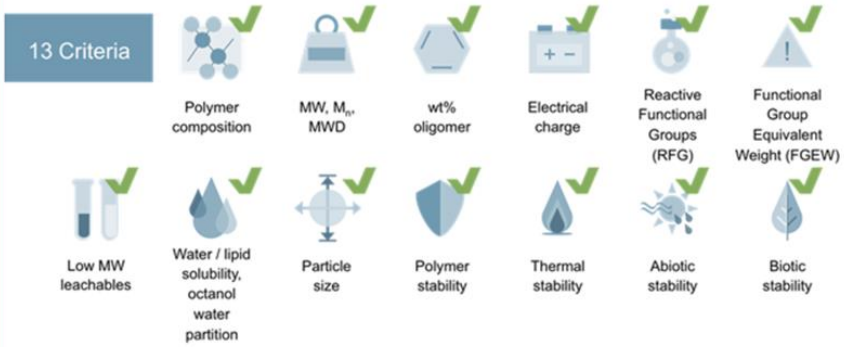
Many of today's Fluoropolymers meet a set of Polymer of Low Concern Criteria which indicate an extremely low concern for these fluorinated materials for the "In-Life" use in products and systems.

*(Fluoro)Polymers of Low Concern**

- Fluoropolymers have *material properties***, *have C-F in the backbone* and are large, stable, inert polymeric molecules that are too large to cross biological membranes and include Fluoroplastics and Fluoroelastomers
- Fluoropolymers have little potential for human or environmental exposure
  - They are not water soluble, not found in sources of drinking water, are non-bioaccumulative and non-bioavailable; they are not considered to be mobile in the environment and do not have any known systemic toxicity
- Path Forward: research, emissions reduction, as well as industry efforts and projects continue on both the beginning-of-life and end-of-life part of the overall fluoropolymer life cycle#

*A Critical Review of the Application of Polymer of Low Concern and Regulatory Criteria to Fluoropolymers
Barbara J Henry, Joseph P Carlin, Jon A Hammerschmidt, Robert C Buck, L William Buxton, Heidelore Fiedler, Jennifer Seed, and Oscar Hernandez
Integrated Environmental Assessment and Management , **2018**, Volume 14, Number 3—pp. 316–334
**Note that Side-Chain Fluorinated Polymers (SCP's) have surface properties and have a hydrocarbon polymer backbone
#Are Fluoropolymers Really of Low Concern for Human and Environmental Health and Separate from Other PFAS?
Rainer Lohmann, Ian T. Cousins, Jamie C. DeWitt, Juliane Glüge, Gretta Goldenman, Dorte Herzke, Andrew B. Lindstrom, Mark F. Miller, Carla A. Ng, Sharyle Patton, Martin Scheringer, Xenia Trier and Zhanyun Wang ES&T, **2020**, https://dx.doi.org/10.1021/acs.est.0c03244

(Fluoro)Polymers of Low Concern: In-Life Criteria



- The Henry et al paper* identified 4 fluoropolymers that met these 13 PLC criteria: PTFE, ETFE, FEP and PFA
- Work is underway to identify other fluoropolymers and fluoroelastomers that meet most, if not all, of these criteria (Publication in Preparation; 2021)

*A Critical Review of the Application of Polymer of Low Concern and Regulatory Criteria to Fluoropolymers
Barbara J Henry, Joseph P Carlin, Jon A Hammerschmidt, Robert C Buck, L William Buxton, Heidelore Fiedler, Jennifer Seed, and Oscar Hernandez
Integrated Environmental Assessment and Management, **2018**, Volume 14, Number 3—pp. 316–334

In summary: Not all PFAS are the same, and they have very different properties, and often critical and essential functions and benefits.
A recent publication calls out that the number of PFAS compounds in commerce or commercially relevant is actually in the hundreds – not thousands.
Fluoropolymers as PLC – when assessed opposite the published criteria – Fluoropolymers meet the test and need to be considered separately and **not** lumped/grouped as One/Listed as One.
The concept of all PFAS being hazardous and/or toxic is simply not scientifically sound
For these reasons - **we strongly oppose the PFAS NOL vote that was taken.**

Sincerely,
Steve Korzeniowski

cc: Honorable Charlie Baker
Massachusetts State House
Office of the Governor
Room 280
Boston, MA 02133

AdvaMed
Advanced Medical Technology Association

October 15, 2021

Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Director Skogstrom:

The Advanced Medical Technology Association (AdvaMed) writes to you concerned about 301 CMR 41.00: TOXIC OR HAZARDOUS SUBSTANCE LIST. If these rules are adopted by the Secretary of State, as approved by the Administrative Council, then Massachusetts users of the thousands of per-and-polyfluoroalkyl substances not otherwise listed (PFAS NOL) substances in that class will be subject to the rule and be required to pay user fees due to their listing as a high hazard substance. AdvaMed opposes these actions because listing PFAS NOL as a class authorizes the listing of thousands of substances used by manufacturers and businesses in Massachusetts, increasing their costs and reducing their competitiveness. As the Commonwealth emerges from the COVID-19 pandemic, and many businesses are struggling, this decision to impose additional fees associated with the listing/use will disadvantage Massachusetts companies.

AdvaMed is a trade association that represents nearly 450 of the world's leading innovators and manufacturers of medical devices, diagnostic products, digital health technologies, and health information systems. Medical devices made by AdvaMed members help patients stay healthier longer, expedite recovery, allow earlier detection of disease, and improve effectiveness and efficiency of treatment. As innovators and providers of the most critical lifesaving and life-enhancing equipment purchased in the United States and globally, we oppose legislative efforts that fail to recognize the significant importance of medical devices that use fluoropolymers.

Medical devices made with fluoropolymers, a compound of PFAS, have been available to patients for over 50 years, with tens of millions of devices used without demonstrating adverse health effects like carcinogenicity and reproductive, developmental, or endocrine toxicity. The health risks of these medical devices are thoroughly assessed by the U.S. Food and Drug Administration ("FDA") before they make it on the market and must undergo multiple tests to prove biocompatibility in compliance with international biocompatibility standard, ISO 10993. Furthermore, manufacturers and the FDA, in compliance with the FDA Quality System Regulation, continue to monitor the safety of these products even after they are marketed.

The Food and Drug Administration doesn't just monitor and control the medical devices and drugs used in the U.S.—it also ensures the packaging used is safe and effective at keeping the contents clean and germ-free. The packaging used to seal and deliver medical devices is tested to ensure it will protect the sterility of instruments and implants. The resilient packaging must also meet rigorous labeling standards which let the FDA trace devices in use.

Any blanket regulation of PFAS places at risk the ability of companies to manufacture and provide lifesaving and life-enhancing fluoropolymer containing medical devices to patients across the U.S. and the globe.

PFAS is a broad generic term encompassing classes of substances stretching from gases and liquids to small molecular weight solids and high molecular weight fluoropolymers. PFAS are defined based on small chemical structural elements that apply to a broad range of substances with such diverse properties and effects that it is impractical to regulate them as a single class. While some low molecular weight PFAS and some fluorinated polymers for paper and cardboard coating have been and are being phased out by the industry, working with the FDA, certain other distinct fluoropolymers are critical to the production of lightweight, flexible plastic packaging.

AdvaMed
Advanced Medical Technology Association

Fluoropolymers are a subset of fluorinated polymers. Fluoropolymers used as components in polymer processing additives (PPAs) are high molecular weight polymers, have low levels of residual monomers or oligomers, exhibit very low water solubility, and are non-reactive and thermally stable. As an indication for the low risk, they generally meet simplified regulatory criteria – like OECD criteria of polymer of low concern – which indicate the overall low risk of environmental impacts of polymers used in packaging. They are present in certain plastic packaging components in only very small amounts. There are no commercially available alternatives to these fluoropolymers.

Should medical devices made with fluoropolymers be withdrawn from the market because of the adverse impact of state legislation, thousands of patients' lives will be at risk for lack of available treatment and life-saving options. Today, in many cases, medical devices that use fluoropolymers are the "standard of care." Lack of access to these devices can result in significant decreases in clinical success, including higher morbidity and mortality rates. Massachusetts is a leading state for medical technology companies (one of the top five in terms of revenue and investment), but this regulation unfairly penalizes this important Massachusetts industry even though these same devices have gone through the rigor of FDA approval and been cleared as safe for patients.

We look forward to working with you on this important matter. AdvaMed appreciates the opportunity to provide these comments. Please contact Hasan Shah at hshah@advamed.org or 202-247-1615 if you have any questions.

Sincerely,

Greg Crist

Greg Crist
Chief Advocacy Officer, Head of External Affairs

MAURA HEALEY
ATTORNEY GENERAL

THE COMMONWEALTH OF MASSACHUSETTS
OFFICE OF THE ATTORNEY GENERAL
ONE ASHBURTON PLACE
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October 15, 2021

Submitted via email

Tiffany Skogstrom
Executive Director
TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114
tiffany.skogstrom@mass.gov

RE: Comments on Proposed Amendments to 301 C.M.R. §§ 41.00 *et seq.* to Add Per- and Polyfluoroalkyl Substances Not Otherwise Listed to the Toxic or Hazardous Substance List as a Substance Category Pursuant to the Massachusetts Toxics Use Reduction Act, G.L. c. 21I, § 9, and to Add a Definition of "Substance" to the Regulations

The Massachusetts Attorney General's Office (AGO) offers the following comments in support of the proposed amendments (Proposed Amendments) to the regulations at 301 C.M.R. §§ 41.00 *et seq.*, *Toxic or Hazardous Substance List* (List), to add a category of per- and polyfluoroalkyl substances not otherwise listed (PFAS NOL) to the List, and to define "substance" in the regulations to include related categories of chemicals, compounds or mixtures. The Proposed Amendments implement the recent changes made to the List by the Commonwealth's Administrative Council on Toxics Use Reduction (Council).[1]

As explained below, the AGO strongly supports the Proposed Amendments. The Toxics Use Reduction Act (TURA), G.L. c. 21I, §§ 1 *et seq.*, expressly authorizes the Council to add toxic or hazardous substances to the List to trigger reporting and toxics use reduction planning by Massachusetts manufacturers and processors in order to satisfy the Legislature's purpose of protecting public health and the environment. Here, the Council appropriately used its statutory discretion in carrying out this legislative mandate by voting to add PFAS NOL to the List and to add a definition of "substance" to the regulations; both decisions carry out the Council's mandate

[1] The Massachusetts Attorney General is a member of the TURA Advisory Committee, established by the Administrative Council pursuant to TURA Section 4(f), G.L. c. 21I, § 4(f). The Advisory Committee is not a decision-making body and serves only in an advisory capacity.

of identifying those toxic or hazardous substances that warrant reporting and planning under TURA. The Proposed Amendments implement the Council's authorized actions.

Exposure to perfluoroalkyl and polyfluoroalkyl chemicals (collectively, PFAS) poses a serious threat to the public health and the environment. Consistent with the Council's statutory charge, expanding the List to include PFAS NOL as a category of covered substances is a reasonable, health-protective measure that will helpfully increase the amount of information that will be reported to the Massachusetts Department of Environmental Protection (DEP) about PFAS and spur toxics use reduction planning efforts to reduce potential exposures to this notorious category of chemicals.

1. TURA's Purpose

TURA is designed to protect public health and the environment by requiring certain manufacturers and processors to report about the use of various toxic chemical substances in the Commonwealth and to engage in planning efforts to focus on avenues for reducing such use and the associated risks of exposure. All toxic or hazardous substances regulated under TURA and subject to the statute's reporting and planning requirements, with provision for certain triggering thresholds, are compiled into the List. The List initially incorporated two federal toxic or hazardous substance lists: Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA)[2] and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA),[3] and the Council is charged with incorporating any changes to those federal lists into the TURA List and otherwise to add to the List in furtherance of protecting public health and the environment.

2. TURA Expressly Authorizes the Council to Add to the List

The Council, chaired by the Secretary of the Executive Office of Energy and Environmental Affairs (EOEEA), is the governing body of the Commonwealth's TURA program and is authorized by statute to coordinate state enforcement of laws and regulations on chemical use and toxic waste generation and implement policies that promote worker health and safety, and safeguard public health.[4] The Council is expressly authorized by TURA Section 9 to add substances to the List beyond those otherwise required to be on the List, e.g., chemicals identified on the Toxic Chemical List established pursuant to Section 313 of EPCRA.[5]

On June 25, 2020, the TURA Science Advisory Board (SAB)[6] recommended that the Council add to the List the category of chemicals included in the Proposed Amendments: "those PFAS that contain a perfluoroalkyl moiety with three or more carbons (e.g., –CnF2n–, n ≥ 3; or CF3–CnF2n– , n≥2) or a perfluoroalkylether moiety with two or more carbons (e.g., –

[2] 42 U.S.C. §§ 11001 *et seq.*
[3] 42 U.S.C. §§ 9601 *et seq.*
[4] G.L. c. 21I, § 4.
[5] *Id.*, § 9.
[6] The SAB was established under TURA Section 6, G.L. c. 21I, § 6, to work with the Massachusetts Toxics Use Reduction Institute (TURI) to, among other things, consider petitions to add or delete chemicals from the TURA chemical list and make recommendations to TURI in this regard. SAB members have extensive professional experience and/or academic expertise in fields such as toxicology, epidemiology, occupational medicine, environmental science and chemistry.

CnF2nOCmF2m− or –CnF2nOCmFm–, n and m ≥ 1).”[7] The SAB’s recommendation to list this category followed three-and-a-half years of review by the board, including the SAB’s in-depth hazard review of the perfluoroalkyl acids (PFAA) and their salts (PFNA, PFOA, PFHpA, PFHxA, PFBA, PFOS, PFHxS, PFBS, GenX, and PFPAs and PFPiAs), its evaluation of the degradation/transformation of precursors to PFAAs, its extensive work identifying PFAA precursors, and its review of the Organisation for Economic Co-operation and Development’s (OECD)[8] methodology and PFAS list. The U.S. Environmental Protection Agency (EPA) leads this country’s engagement with OECD’s Environmental Policy Committee (EPOC) and related subsidiary bodies and recognizes EPOC’s long history of promoting effective policies to respond to important environmental concerns. Moreover, EPA’s Office of International and Tribal Affairs (OITA) coordinates across EPA offices and with other U.S. Government agencies to provide technical expertise supporting OECD analyses and reports.[9]

Based on the SAB’s extensive review and its expert recommendation, and the Council’s own analysis and deliberation, the Council voted on August 19, 2021 to add the PFAS NOL category to the List.[10]

3. The Proposed Amendments Fall Squarely Within the Council’s Mandate Under TURA

As reflected above, the Council’s decision to add the category of PFAS NOL to the List is well supported, and TURA clearly provides the Council the discretion to use its listing authority in the manner identified in the Proposed Amendments.

Massachusetts courts accord substantial deference to validly promulgated regulations and will “apply all rational presumptions in favor of the validity of the administrative action and not declare it void unless its provisions cannot by any reasonable construction be interpreted in harmony with the legislative mandate.” *Entergy Nuclear Generation Co. v. Dep’t of Env’t Prot.*, 459 Mass. 319, 329 (2011); citing *Salisbury Nursing & Rehabilitation Ctr., Inc.* v. *Division of Admin. Law Appeals*, 448 Mass. 365, 371-372 (2007), quoting *Massachusetts Fed’n of Teachers, AFT, AFL-CIO v. Board of Educ.*, 436 Mass. 763, 771 (2002).

TURA unambiguously provides the Council with the discretion to identify those toxic or hazardous substances to be added to the List to further the purposes of the statute to protect public health and the environment by requiring manufacturers and processors to report on their

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[7] *See TURA Science Advisory Board PFAS Recommendation Category Definition Based on OECD 2018 Methodology and Database* (June 30, 2020), *available at*: https://www.turi.org/content/download/13202/203345/file/TURA%20SAB%20PFAS%20category%20recommendation%2030JUN2020.pdf.

[8] OECD is an intergovernmental economic organization with nearly 40 member countries, including the U.S.

[9] *See* https://www.epa.gov/international-cooperation/epas-role-organisation-economic-cooperation-and-development-oecd.

[10] *See* proposed addition of subsection 301 CMR 41.03(14) to the regulations:

> For calendar year reporting period 2021 and thereafter, the toxic or hazardous substance list shall include the following substance category:
> The per- and polyfluoroalkyl substances not otherwise listed (PFAS NOL) category consists of these substances: those PFAS that contain a perfluoroalkyl moiety with three or more carbons (e.g., $–C_nF_{2n}–$, n ≥ 3; or $CF_3–C_nF_{2n}–$, n≥2) or a perfluoroalkylether moiety with two or more carbons (e.g., $–C_nF_{2n}OC_mF_{2m}–$ or $–C_nF_{2n}OC_mF_m–$, n and m ≥ 1), that are not otherwise listed.

use of chemical substances that pose significant risks of exposure or environmental contamination. Here, the Council's decision to add PFAS NOL to the List gives effect to the Legislature's intent to provide the Council and its members—the Secretary of EOEEA, the Commissioner of DEP, the Secretary of the Executive Office of Housing and Economic Development, the Commissioner of the Department of Public Health, the Secretary of the Executive Office of Labor and Workforce Development, and the Secretary of the Executive Office of Public Safety and Security—the discretion to carry out their statutory mandate pursuant to TURA Section 9 to add to or delete substances from the List.[11]

And listing the category of PFAS NOL as set forth in the Proposed Amendments fully squares with TURA's annual ten-substance limit for adding substances to the List. The Council reasonably exercised its discretion to consider the PFAS NOL, which consists of closely related chemicals or compounds, as a single substance, and reinforced its position by clarifying its interpretation of the term "substance" in the definition of the term in the Proposed Amendments. As described further in Section 4, *infra*, many PFAS have similar indicia of toxicity, environmental persistence, bioaccumulation, and ubiquity in the environment. One of the most consistent features of PFAS across formulations is that all PFAS are extremely resistant to environmental and metabolic degradation and can bioaccumulate in the water we drink, the air we breathe, and the food we eat.

Here, the Council, relying in part on the expertise of the SAB, decided to list PFAS NOL as a substance subject to TURA's reporting and planning requirements, a decision that reasonably fulfills its legislative mandate under TURA to protect public health and the environment by requiring reporting and planning as to ubiquitous and risky chemicals such as these.

In short, the Council made its decision following due deliberation in a manner consistent with its statutory charge, supported by substantial evidence, neither arbitrary, capricious, an abuse of discretion, nor otherwise unlawful.[12]

4. Adding PFAS NOL to the List as a Category Is Supported By the SAB's Recommendation and the Council's Analysis and Furthers the Commonwealth's and the Public's Strong Interest in Requiring Reporting About These Notoriously Toxic Chemicals

Exposure to PFAS poses serious threats to public health and the environment, and a category-based approach is the most effective way to gather information about PFAS and spur manufacturers and processors to perform toxics-use-reduction planning necessary to consider reducing their use. Moreover, gathering data with respect to the category of PFAS chemicals in the Proposed Amendments will allow the Commonwealth to gain a more complete understanding

[11] "Notwithstanding subparagraphs (A) and (B) [regarding mandated addition or deletions to the List], the council may add or delete additional substances from the toxic or hazardous substance list. Except for those substances covered under subsection (B), no more than 10 substances may be added for any 1 calendar year, and no more than 10 substances may be deleted for any 1 calendar year." G.L. c. 21I, § 9.
[12] *See* G.L. c. 30A, § 14(7).

of the potential threat this suite of chemicals poses and to devise appropriate regulatory measures to safeguard human health and the environment.[13]

Recognizing the serious threats posed by PFAS and the benefits of complete information on the entire suite of PFAS chemicals needed to protect health and the environment from the risks posed by PFAS, the Massachusetts Attorney General, together with multistate partners, has strongly advocated for EPA to require reporting for PFAS as a class of chemical substances under Section 8(a)(7) of the Toxic Substances Control Act, 15 U.S.C. §§ 2607(a)(7),[14] and for EPA to include PFAS as a class of chemicals in its Drinking Water Contaminant Candidate List 5 as a first step in the agency's process of setting standards for PFAS in drinking water.[15]

There is a growing body of evidence that many PFAS have similar indicia of toxicity, environmental persistence, bioaccumulation, and ubiquity in the environment. One of the most consistent features of PFAS is that, despite the diversity of PFAS, all are extremely resistant to environmental and metabolic degradation.[16] Due to their persistence, all PFAS bioaccumulate in water, air, sediment, soil, and plants.[17] There is also a growing body of evidence that shorter-chained PFAS have similar toxicological effects to the well documented adverse effects of longer-chained PFAS such as PFOA and PFOS.[18] Based on the characteristics shared by many PFAS and the number of individual chemicals, recent research plainly establishes the scientific

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[13] Cousins IT, DeWitt JC, Glüge J, Goldenman G, Herzke D, Lohmann R, Miller M, Ng CA, Scheringer M, Vierke L, Wang Z. Strategies for grouping per- and polyfluoroalkyl substances (PFAS) to protect human and environmental health. *Environ. Sci.: Processes Impacts*, 2020 Jun 4;22:1444–1460, 1452. *See* https://doi.org/10.1039/D0EM00147C.

[14] *See* Comments of New Jersey, Pennsylvania, Connecticut, Delaware, Hawaii, Illinois, Iowa, Maine, Maryland, Massachusetts, Minnesota, New Mexico, New York, Oregon, Rhode Island, Virginia, and Wisconsin, the City of New York and the District of Columbia on Notice of Proposed Rule, TSCA Section 8(a)(7) Reporting and Recordkeeping Requirements for Perfluoroalkyl and Polyfluoroalkyl Substances, 86 Fed. Reg. 33926 (June 28, 2021), Docket ID No. EPA-HQ-OPPT-2020-0549, *available at*: https://www.regulations.gov/comment/EPA-HQ-OPPT-2020-0549-0086.

[15] *See* Comments of Connecticut, Delaware, Iowa, Maine, Maryland, Massachusetts, Minnesota, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Virginia, and Wisconsin, and the District of Columbia on Drinking Water Contaminant Candidate List 5—Draft, 86 Fed. Reg. 37948 (July 19, 2021), Docket ID No. EPA-HQ-OW-2018-0594 (submitted Sept. 17, 2021), *available at*: https://www.regulations.gov/comment/EPA-HQ-OW-2018-0594-0076.

[16] Cousins IT, DeWitt JC, Glüge J, Goldenman G, Herzke D, Lohmann R, Ng CA, Scheringer M, Wang Z. The high persistence of PFAS is sufficient for their management as a chemical class. *Environ Sci Process Impacts.* 2020 Dec 16;22(12):2307-2312. *See* https://pubmed.ncbi.nlm.nih.gov/33230514/; Kwiatkowski CF, Andrews DQ, Birnbaum LS, Bruton TA, DeWitt JC, Knappe D, Maffini MV, Miller MF, Pelch KE, Reade A, Soehl A, Trier X, Venier M, Wagner CC, Wang Z, Blum A. Scientific Basis for Managing PFAS as a Chemical Class. *Environ. Sci. Technol. Lett.* 2020 Jun 30;7, 8:532-543. *See* https://doi.org/10.1021/acs.estlett.0c00255.

[17] Cousins IT, DeWitt JC, Glüge J, Goldenman G, Herzke D, Lohmann R, Ng CA, Scheringer M, Wang Z. The high persistence of PFAS is sufficient for their management as a chemical class. *Environ Sci Process Impacts.* 2020 Dec 16;22(12):2307-2312. *See* https://pubmed.ncbi.nlm.nih.gov/33230514/; Kwiatkowski CF, Andrews DQ, Birnbaum LS, Bruton TA, DeWitt JC, Knappe D, Maffini MV, Miller MF, Pelch KE, Reade A, Soehl A, Trier X, Venier M, Wagner CC, Wang Z, Blum A. Scientific Basis for Managing PFAS as a Chemical Class. *Environ. Sci. Technol. Lett.* 2020 Jun 30;7, 8:532–543. *See* https://doi.org/10.1021/acs.estlett.0c00255.

[18] Kwiatkowski CF, Andrews DQ, Birnbaum LS, Bruton TA, DeWitt JC, Knappe D, Maffini MV, Miller MF, Pelch KE, Reade A, Soehl A, Trier X, Venier M, Wagner CC, Wang Z, Blum A. Scientific Basis for Managing PFAS as a Chemical Class. *Environ. Sci. Technol. Lett.* 2020 Jun 30;7, 8:532–543. *See* https://doi.org/10.1021/acs.estlett.0c00255.

rationale for PFAS to be regulated as a class. For example, in a June 2020 article published in Environmental Science & Technology Letters, Carol F. Kwiatkowski and colleagues presented the scientific basis for managing PFAS as a class and recommended that they be regulated as a class.[19] Similarly, in a December 2020 article published in Environmental Science Process Impacts, Dr. Ian Cousins and colleagues also recommended that PFAS be managed as a chemical class and all nonessential uses be banned.[20]

Of course, it would be impractical both for the Council to list each PFAS NOL formulation separately, rather than as a category of closely related formulations as it has done here, and for DEP to review the submitted reports and planning on an individual basis, because such approach would be too resource intensive and it could take decades if not longer to obtain the information necessary to provide adequate protection to the public from these risky chemicals—a non-sensical outcome. In this context, the holistic, category-based approach reflected in the Proposed Amendments will best protect public health and welfare from the dangers of PFAS contamination,.

5. The Council Appropriately Decided to Add a Definition of "Substance" to the List

As with its decision to add PFAS NOL to the List, the Council's decision to add the definition of "substance" to the TURA regulations is clearly within the Council's express authority under TURA Section 9 to add substances to the List.[21] Here, the Council added the definition of "substance" to include categories or groups of chemicals that share similar, identifiable characteristics such as, but not limited to, elemental composition, chemical formula, chemical structure, chemical properties, physical properties, functional groups or chemical manufacture.[22] This addition to the regulations serves to provide guidance to the regulated community regarding the chemical substances the Council has determined are covered under the regulations and helpfully provides direction to manufacturers and processors of toxic and hazardous chemicals as to their TURA reporting and planning obligations. TURA contemplates reasonable, science-based decision-making about the appropriate listing approach, and the category-based approach followed by the Council is both reasonable and grounded in the best available science, including in this context reflecting over three-and-a-half years of related work by the SAB.

Conclusion

For the reasons described above, the AGO supports the Council's decision to add to the TURA *Hazardous or Toxic Substance List* the category of PFAS Not Otherwise Listed and to

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[19] *Id.*

[20] Cousins IT, DeWitt JC, Glüge J, Goldenman G, Herzke D, Lohmann R, Ng CA, Scheringer M, Wang Z. The high persistence of PFAS is sufficient for their management as a chemical class. *Environ Sci Process Impacts.* 2020 Dec 16;22(12):2307–2312. *See* https://pubmed.ncbi.nlm.nih.gov/33230514/.

[21] G.L. c. 21I, § 9.

[22] *See* proposed addition of subsection 301 CMR 41.02, Definitions, to the regulations:

> Substance means any agent or material including but not limited to: pure chemicals with a specific chemical and structural identity; and categories or groups of chemicals, compounds or mixtures that share similar, identifiable characteristics such as, but not limited to, elemental composition, chemical formula, chemical structure, chemical properties, physical properties, functional groups or chemical manufacture.

define "substance" under the regulations, and supports the promulgation of the Proposed Amendments to implement the Council's decision.

Sincerely,

/s/ I. Andrew Goldberg
I. Andrew Goldberg
Assistant Attorney General
Environmental Protection Division

ASSOCIATION OF HOME APPLIANCE MANUFACTURERS

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October 11, 2021

Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Proposed amendments to 301 CMR 41: Toxic or Hazardous Substance List (TURA List)

Dear Ms. Skogstrom:

The Association of Home Appliance Manufacturers (AHAM) respectfully submits the following comments to the proposed regulations by Office of Energy and Environmental Affairs (EEA) to add Per- and Polyfluoroalkyl Substances Not Otherwise Listed (PFAS NOL) to the Toxic or Hazardous Substance List.

AHAM represents more than 150 member companies that manufacture 90% of the major, portable and floor care appliances shipped for sale in the U.S. Home appliances are the heart of the home, and AHAM members provide safe, innovative, sustainable and efficient products that enhance consumers' lives. In Massachusetts, the home appliance industry is a significant and critical segment of the economy. The total economic impact of the home appliance industry to Massachusetts is $3.3 billion, more than 17,000 direct and indirect jobs, $418.5 million in state tax revenue, and more than $1.2 billion in wages. The home appliance industry, through its products and innovation, is essential to consumer lifestyle, health, safety and convenience. Home appliances also are a success story in terms of energy efficiency and environmental protection. The purchase of new appliances often represents the most effective choice a consumer can make to reduce home energy use and costs.

The approach that Massachusetts is following, which is to treat thousands of PFAS chemicals as a single class is overly broad and may have unintended negative consequences. AHAM urges Massachusetts to narrow its approach to regulating PFAS substances.

I. PFAS Use in Home Appliances

AHAM has conducted a member survey in a good faith effort to determine the extent to which PFAS is used in home appliances and some of those results are included in these comments. While AHAM members are still investigating the presence of PFAS in their supply chains, the industry has several concerns with the proposed rule.

A. Kitchen Appliances

AHAM members indicated other portable and major kitchen appliances contain PFAS chemicals but in trace amounts, ranging from as low as 0.001 to 0.07 lbs. per unit. In almost all cases, the use of PFAS was confined to internal components and parts, such as bolts and washers, plastic brackets, and wire terminals with no direct exposure to consumers during use. This material is added during the manufacturing process which reduces the potential for any consumer exposure during use or transmission to the environment. AHAM members did indicate for only certain models of portable cooking products, a non-stick coating may be used, containing trace amounts, and food could come into contact with the coating for brief periods.

B. Refrigerants and Foam Blowing Agents

One unexpected example of how the overly broad definition of PFAS will have unintended consequences is the possible inclusion of hydrofluoroolefins (HFOs) within the PFAS definition. HFOs are one of the more climate friendly alternatives for use as refrigerator insulation foam blowing agents. In fact, the U.S. Environmental Protection Agency (EPA) encouraged and effectively drove a transition to these and other low global warming potential (GWP) foam blowing agents through ozone depletion and climate focused phaseouts of CFC's, HCFC's, and HFC compounds. These chemicals were approved under *EPA's* Significant New Alternatives Policy (*SNAP*) program, which included an environmental review.[1] Several states have also enacted laws to require transition away from high GWP chemicals.

As a result of changes in federal and state refrigerant regulations, global demand for HFOs has substantially increased. It is critical that Massachusetts avoid inadvertently regulating other materials and substances that may be impacted by PFAS measures, when there is little to no consumer exposure.

Consumers will not come into contact with foam blowing agents during everyday use. In regards to exposure to employees during manufacturing and production, AHAM members indicated adherence to all federal and local worker safety regulations. This includes use of PPE and other hazardous protection equipment.

Massachusetts should narrow the definition of PFAS so that it does not include HFOs that contribute to slowing climate change. To do otherwise would contradict and undermine EPA's other actions.

II. Massachusetts Should Not Treat PFAS as a Single Class of Chemicals

The proposed PFAS expansion to include PFAS not otherwise listed are overly broad, burdensome on manufacturers, and difficult to manage for regulated entities including the EEA. By some definitions, the number of PFAS substances could include thousands of additional chemicals and EEA's choice of language makes a longer list possible. EEA should not treat this number of substances as a single class. AHAM understands that it is equally unrealistic to

[1] *See* Protection of Stratospheric Ozone: Listing of Substitutes Under the Significant New Alternatives Policy Program, Final Rule at 86 Fed. Reg. 24444.

address each PFAS chemical individually in a reasonable amount of time. Therefore, AHAM recommends that Massachusetts divide its list of PFAS chemicals into subclasses that share physiochemical or toxicological properties.

There is a precedent for this approach. EPA is collaborating with the Consumer Product Safety Commission (CPSC) to address organohalogen flame retardants (OFRs). Given the number of chemicals classified as organohalogens, CPSC commissioned a study from the National Academy of Sciences, which in turn concluded that OFRs cannot be treated as a single class for hazard assessment. The Academy went on to recommend that OFRs be divided into subclasses based on chemical structure, physical and chemical properties, and predicted biologic activity. The report identified 14 subclasses that CPSC could use to conduct a class-based hazard assessment of OFRs. EPA should use a similar approach with PFAS. This kind of approach will likely be more accurate, efficient, and less costly than the traditional approach of evaluating each chemical individually, and less burdensome to regulated entities than treating PFAS as a single class.

III. Massachusetts Should Apply Article and De Minimis Exemptions

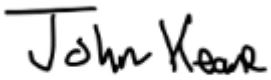
Under the proposed rule, articles containing PFAS, including imported articles containing PFAS (such as articles containing PFAS as part of surface coatings), are included in the scope of chemical substances. The Toxic Substances Control Act (TSCA) does not define articles, but the inclusion of articles puts this regulation, and others EPA recently proposed, at odds with common regulatory practice. The European Union's approach to regulating chemicals exempts articles and that has been EPA's practice until recently. EEA should exempt articles from regulations under TSCA unless it can demonstrate a clear need to remove the exemption. Withdrawing the exemption may be reasonable for specific uses that create exposure pathways, but there is no need eliminate the exemption for internal components where the risk of exposure to the public is minimal, or even non-existent.

This will become more and more of an issue as manufacturers develop methods to incorporate recycled materials in their products, which has environmental benefits. Without a de minimis exemption, circular manufacturing pathways are unattainable.[2]

AHAM appreciates the opportunity to submit these comments on Massachusetts EEA's proposed amendments to add Per- and Polyfluoroalkyl Substances Not Otherwise Listed (PFAS NOL) to the Toxic or Hazardous Substance List and would be glad to discuss these matters in more detail should you so request.

[2] This is also consistent with the European's REACH and RoHS programs, both of which allow for de minimis exemptions. AHAM understands that the permissible level may change depending upon the substance, but a de minimis exemption of 0.1% by weight seems reasonable for most chemical substances.

Respectfully submitted,



John Keane
Legislative & Regulatory Specialist

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By Email to tiffany.skogstrom@mass.gov

October 15, 2021

Ms. Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street
Suite 900
Boston, MA 02114.

Re: Comments of Associated Industries of Massachusetts relative to Proposed Amendments to 301 CMR 41.00 *Toxic or Hazardous Substance List*

Dear Ms. Skogstrom:

Associated Industries of Massachusetts (AIM) is pleased to comment on the proposed amendments to 301 CMR 41.00 *Toxic or Hazardous Substance List.* Comments are due by October 15, 2021.

AIM is the largest general trade association in Massachusetts. AIM's mission is to promote the prosperity of the Commonwealth of Massachusetts by improving the economic climate, proactively advocating fair, and equitable public policy, and providing relevant, reliable information and excellent services.

These regulations implement changes to the list of chemicals made by the Administrative Council on Toxics Use Reduction, pursuant to the statutory amendments to the Toxics Use Reduction Act (TURA, Chapter 21I) made in 2006.

On August 19, 2021, the Administrative Council voted to add the per- and polyfluoroalkyl substances not otherwise listed (PFAS NOL) category, which consists of: those PFAS that contain a perfluoroalkyl moiety with three or more carbons (e.g., –CnF2n–, n ≥ 3; or CF3–CnF2n– , n≥2) or a perfluoroalkylether moiety with two or more carbons (e.g., –CnF2nOCmF2m− or –CnF2nOCmFm–, n and m ≥ 1) that are not otherwise listed.

The Administrative Council also voted to add the following definition of the word "substance" to 301 CMR 41.02 to clarify usage of the term throughout 301 CMR 41.00.

> *Substance means any agent or material including but not limited to: pure chemicals with a specific chemical and structural identity; and categories or groups of chemicals, compounds or mixtures that share similar, identifiable characteristics such as, but not limited to, elemental composition, chemical formula, chemical structure, chemical properties, physical properties, functional groups, or chemical manufacture.*

Our comments will be directed at the addition of the definition of *substance* in the proposed regulations.

AIM opposes the addition of the definition of *substance* to the TURA regulations. The definition itself is arbitrary, overly broad, without regulatory precedent, and expands the scope of the TURA beyond its original intent without legislative authority. It is also unnecessary for the proper implementation of the TURA program.

Substance is a generic term and can have multiple uses, including some that are non-hazardous. Therefore, it is meaningless without a modifier. It is rarely, if ever, defined. A cursory review of state laws could not find any that define "substance" without a modifier, even outside the chemical area (i.e., toxic or hazardous substance, chemical substance, controlled substance) and even a cursory search of federal regulations (including some that are similar to TURA – i.e., EPCRA) could find no such definition.

Without regulatory precedent, the Administrative Council has essentially made up their own definition without the benefit of cited authorities. This has resulted in an all-inclusive bucket that is unnecessarily broad with virtually no definitional barriers. This will result in thousands of chemicals swept into the toxics or hazardous list even though they are not toxic or hazardous. In fact, there are several words within the new definition that are so ambiguous that arguably they need their own definitions and the use of the term "*not limited to*" twice indicates that this definition is to be taken as merely a starting point for a dubious justification for the addition of chemicals.

By adding this term, legislative intent surrounding the regulation of toxic and hazardous substances would be completely changed. The law clearly states that *"no more than 10 substances may be added for any 1 calendar year, and no more than 10 substances may be deleted for any 1 calendar year."* The legislature limited the addition to 10 for expediency purposes – so as not to create an onslaught of issues for either TURA or the regulated entities. With the new definition, this limit will be abandoned, and thousands of additional chemicals could conceivable be added, something not explicitly allowed in the law.

AIM was deeply involved in the 2006 TURA amendment process, and we have no recollection of a discussion around the addition of this term. Along with the original law, that would mean that the legislature had two chances (and EOEA also had two chances) to add this definition and chose not to. They chose not to add this definition because it was unnecessary for the effective application of the law and nearly 30 years after law was passed, there is no evidence such a definition is needed now for the effective operation of the program.

This is particularly true as the number of regulated entities has declined. In fact, with such a small universe of regulated entities in the TURA program, it is questionable why such a definition would be needed other than to continually disadvantage the declining numbers of businesses struggling to stay afloat in Massachusetts under terrible economic and competitive conditions.

By adding this definition, the Administrative Council is trying to do an end-run around legislative intent and usurping legislative authority with regulatory nuance. There are many changes that have been proposed to the TURA law that would simplify it and make it more effective, none of which have resulted in EOEA spearheading legislative changes. This type of change, without changes to the broader law, is a piecemeal approach to the law that will create confusion, particularly since there are no similar federal laws or regulatory citations that define this term the way it is proposed.

For the reasons listed above, AIM believes the addition of the term *substance* should not be included in the proposed regulations.

Thank you for allowing us to make these comments and we look forward to working with the stakeholder group throughout this process.

Should you have any questions please do not hesitate to contact me.

Sincerely yours,

Robert A. Rio, Esq.
Senior Vice President and Counsel
Government Affairs

Fri 10/15/2021 1:50 PM

Reply

To:

Skogstrom, Tiffany (EEA)

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi Tiffany,

Here are my comments for this proposal.

PFAS are forever chemicals, however often overlooked is that since they are forever, we don't have the data on cumulative effects over the years and how they will continue being aggregated in humans and animals for years to come. Also, many of its uses are not tracked, so they can show up unexpectedly. Unlike batteries, disposal of products with PFAS are just seen as waste and not treated like hazardous waste.

Best Regards,

Dave

Dave Arndt

roseca2010@gmail.com

240-328-7383

@davea2010

Pronouns: He/Him/His

Support for listing PFAS to state's Toxic and Hazardous Substances List

NA

Tue 10/12/2021 12:11 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Nina Aronoff
100 Bourne St
Jamaica Plain, MA 02130

Support for listing PFAS to state's Toxic and Hazardous Substances List

TA

Tue 10/12/2021 2:21 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Todd Atkins
71 Messenger St
Plainville, MA 02762

Support for listing PFAS to state's Toxic and Hazardous Substances List

DB

Tue 10/12/2021 9:18 PM

To:

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Deborah Barolsky
159 Scituate St
Arlington, MA 02476

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October 11, 2021

Secretary Kathleen A. Theoharides
Office of Energy and Environmental Affairs
100 Cambridge St. Suite 900
Boston, MA 02114

Dear Secretary Theoharides,

I have never written a letter like this before, but as the owner of a construction business, I am concerned about new regulations being considered on flourotechnology. "PFAS" is used in many of the products we use in our daily operations, including infrastructure materials, insulation, solar panels and even pipes.

As I understand it, if these new and far-reaching regulations are adopted, users of thousands of PFAS in Massachusetts will need to pay a prohibitive user fee because they are listed as a high hazard substance. Is this happens, my business as well as hundreds of small and medium-sized businesses and their vendors throughout the state will be affected.

I urge you and your office to recognize this and to not support these new regulations. Thank you for your attention and understanding.

Very truly yours,
Glenn Battistelli

Glenn Battistelli, president

Cc Governor Charles Baker
Massachusetts State House, #280
Boston, MA 02133

Comments on Proposed Amendments to 301 CMR 41

DB

Fri 10/15/2021 11:47 PM
To:

- Skogstrom, Tiffany (EEA)

Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street - Suite 900
Boston, Massachusetts 02114

I work with a wide range of industrial sectors in Massachusetts and across the US, including electronics, plastics, pharmaceuticals, specialty coatings, energy services, metal machining, equipment assembly, and others. All of my clients have investigated whether PFAS are present in their operations and/or products out of concern for the detrimental health and environmental impacts they may pose. In brief, my observations about this issue from industry's perspective include:

- It is difficult to get clear information from suppliers about the presence of PFAS in the materials used by industrial facilities. This may be due to the loss of information from one step of the supply chain to another, proprietary formulation claims, lack of toxicity assessments such that the individual PFAS is not yet classified as hazardous, fear of liabilities resulting from disclosure of PFAS content, etc.

- All of my clients prefer that no PFAS are present in their operations. Most do not have a specific need for the properties offered by PFAS. For those few that do, they are more than willing to accept alternatives, even if that means some changes in performance. Government support and customer tolerance of interim changes in product characteristics will be important if equally performing alternatives are not available immediately.

- There is widespread recognition that PFAS are bound to incur liabilities for industry in the future. Motivation to avoid liabilities is strong.

I also serve as an elected, volunteer Chair of my local Board of Health. A key role of the Board of Health is to preferably prevent or otherwise manage contamination of public and private drinking water wells in town. Under the MassDEP's on-going program for well testing, significant PFAS levels have been found in our groundwater. Given the mounting scientific evidence of toxicity across the class of PFAS chemicals, regulating PFAS at the class rather than the individual chemical level would more effectively protect drinking water supplies in the long run. At present, regulated PFAS chemicals are typically replaced by as-of-yet unregulated versions of PFAS, thus:

- perpetuating risks (and harm) we want to avoid, and
- wasting time and resources chasing an increasingly complex problem.

Please regulate PFAS as a class of chemicals.

Daryl Beardsley
Beardsley Environmental Strategies
Industrial-Environmental Engineering for Resource Efficient Operations /
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darylb@alum.mit.edu
MA OSD/SDO Certified Women Business Enterprise

Wed 8/18/2021 6:56 PM
To:

- Theoharides, Kathleen (EEA)

+7 others
Cc:

- Skogstrom, Tiffany (EEA)

+1 other

Dear Secretary Theoharides and Members of the Administrative Council on Toxics Use Reduction:

Public Employees for Environmental Responsibility (PEER) and Massachusetts Sierra Club are writing to recommend that TURA adopt the U.S. Environmental Protection Agency (EPA) definition of per-and polyfluoroalkyl substances (PFAS). We understand that TURA is voting on "Per- and Polyfluoroalkyl Substances Not Otherwise Listed (PFAS NOL)" at tomorrow's TURA Administrative Council Meeting. The proposed definition is:

"those PFAS that contain a perfluoroalkyl moiety with three or more carbons (e.g., –CnF2n–, n ≥ 3; or CF3–CnF2n– , n≥2) or a perfluoroalkylether moiety with two or more carbons (e.g., –CnF2nOCmF2m– or –CnF2nOCmFm–, n and m ≥ 1)" (see https://www.mass.gov/doc/tura-administrative-council-meeting-agenda-8-19-2021/download).

EPA recently developed a working definition of PFAS which is:

"a structure that contains the unit R-CF2-CF(R')(R''), where R, R', and R'' do not equal "H" and the carbon-carbon bond is saturated (note: branching, heteroatoms, and cyclic structures are included)" (see https://www.epa.gov/pesticides/pfas-packaging).

The EPA definition includes those PFAS with two contiguous carbons with fluorine, but only one needs to be fully fluorinated. In contrast, the proposed Massachusetts definition requires three contiguous carbons, all fully fluorinated, except for the two carbon Gen X molecules which are also included. The EPA definition is broader, includes more PFAS than the proposed Massachusetts definition, and therefore is more protective of public health and the environment.

In addition, it is important for the Commonwealth to align with EPA's definition for regulatory consistency.

Sincerely,

Kyla Bennett, PhD, JD

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Clint Richmond
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Richard Bizzozero
315 River Road
Andover, MA 01810

October 15, 2021

Tiffany Skogstrom, Executive Director TUR Administrative Council
Executive Office of Energy and Environmental Affairs
Commonwealth of Massachusetts
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Ms. Skogstrom,

Thank you for the opportunity to comment on these very important regulations regarding the annual reporting by large quantity toxics users of Per- and PolyFluoroalkyl Substances Not Otherwise Listed (PFAS NOL). Regulating these substances as a category rather than individually is appropriate and an important first step to preventing regrettable substitutions and protecting public health and the environment from the unanticipated and harmful properties of these “forever” chemicals.

The policy deliberations on these proposed regulations has been years in development, with dozens of public meetings held by the Toxic Use Reduction Institute (TURI) Science Advisory Board (SAB) and the Toxic Use Reduction Act (TURA) governing bodies – the Administrative Council for Toxic Use Reduction and its advisory board. A robust and dynamic evaluation and deliberation has been provided by all parties. All three of the boards received significant feedback – both written and oral input during the development of this proposed regulation. Significant written and oral input was provided by chemical manufacturers, chemical trade associations, the American Chemistry Council, the FlouroCouncil and their scientists and lawyers. The proposed regulation has been thoroughly

researched, deliberated and vetted. I strongly support the regulation of these fluorinated substances as proposed in this regulation package.

Health and Environmental Impacts

Per- and polyfluoroalkyl substances (PFAS) are known as forever chemicals because they do not readily degrade in the environment. In general, the substances in this proposed category can be characterized by very high persistence in the environment that do not break down under normal environmental conditions. All of these substances pose some degree of bioaccumulation concern, especially in air breathing organisms. The longer-chain chemicals are the most bioaccumulative, but the shorter-chain chemicals also bioaccumulate, at least in plants. Many of the shorter-chain substances are mobile in the environment creating challenges to control and contain them. Key health endpoints of concern include effects on the endocrine system, including liver and thyroid, as well as metabolic effects, developmental effects, neurotoxicity, and immunotoxicity. Preventing human exposure through the reduction in use and release – exposure in both the workplace and environment, is a cost effective and preferred strategy for the Commonwealth to protect public health and reduce the need for clean-up, treatment and disposal of these chemicals in the environment after use.

Definition of Substance

The definition of substance as proposed in 301 CMR 41.02: Definitions, is appropriately broad and inclusive. This definition is necessary in order to capture the wide variety of substances currently on the list of reportable substances 301 CMR 41.00: TOXIC OR HAZARDOUS SUBSTANCE LIST. A substance category for reporting purposes is reported as one combined total weight of all the substances meeting the definition of the category.

Substance categories from the Emergency Planning and Community Right-to-Know Act (EPCRA), and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) are the foundation of reportable substances in the Toxics Use Reduction Act (TURA). These substance categories may share a specific toxic chemical or a group compounds that are similar and share identifiable characteristics such as elemental composition, chemical formula, chemical structure, chemical properties, physical properties, functional groups or chemical manufacture. Examples

include substance categories such as chromium compounds (N078), antimony compounds (N010), glycol ethers (N230), polychlorinated alkanes (N583), nicotine and it's salts (N503), haloethers, halomethanes, and nitrate compounds (N511) to mention a few. The definition as proposed is appropriate, accurate, efficient, and effective in describing what is a substance.

Adding a Category to the List of Reportable Substances

The proposed regulation of per- and polyfluoroalkyl substances not otherwise listed (PFAS NOL) has been thoroughly researched, deliberated and publicly vetted by stakeholders as noted above. These substances have documented very high persistence in the environment that do not break down under normal environmental conditions and have clear adverse health effects to humans and biological life.

I anticipate the TURA program and Mass DEP will provide clear reporting guidance to the regulated community on what PFAS are included in this substance category. Guidance provided by the program will be sufficient to address any concerns by the regulated community about business ability to determine whether a fluorinated substance they use in their facility is subject to the reporting category.

Delisting/listing petition process

Should a stakeholder believe a specific fluorinated substance they use not be included in the proposed category, there is a process in place to address that concern. The process is efficient and well defined and not onerous to the petitioner. Once regulated, an individual or entity can petition the Secretary of Energy and Environmental Affairs by providing an explanation of the petitioners' scientific basis for the proposed change to the TOXIC OR HAZARDOUS SUBSTANCE LIST. For delisting, the chemical or substance must not be known or cannot be reasonably anticipated to cause significant human or environmental health effects. The process is described in the document Decision Making Under TURA: Resources for TURA Administrative Council and Advisory Bodies.

I want to thank you for the opportunity to comment on these very important regulations to protect our communities from the harmful effects of these

fluorinated chemicals. I strongly support the regulation of this category of chemical substances as proposed.

Sincerely,

Richard Bizzozero

Support for listing PFAS to state's Toxic and Hazardous Substances List

BB

Tue 10/12/2021 1:20 PM

To:

Skogstrom, Tiffany (EEA

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

thank you, Bill Boehm

Sincerely,
Bill Boehm
18 Laurel St
Cambridge, MA 02139

BOSTON PUBLIC HEALTH COMMISSION

Building a Healthy Boston

October 15, 2021

Tiffany Skogstrom, Executive Director
Administrative Council on Toxics Use Reduction
Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Proposed Amendments to 301 CMR 41.00, *Toxic or Hazardous Substance List*

Dear Executive Director Skogstrom,

I am writing today on behalf of Boston Public Health Commission (BPHC) to express BPHC's support of the proposed changes to 301 CMR 41.00, *Toxic or Hazardous Substance List*. The mission of BPHC's Environmental Health Office is to respond to the full range of environmental and occupational public health issues in residences, public buildings, businesses, industry, and the environment, which pose a health threat to the residents and visitors of Boston, particularly those most vulnerable, and to develop programs to identify and address emerging environmental health issues. With this mission in mind, we support adding the category of per- and polyfluoroalkyl substances not otherwise listed (PFAS NOL) to these regulations.

PFAS in drinking water is an important emerging issue nationwide. Because PFAS are water soluble, over time PFAS from sources as varied as consumer products, manufacturing sites, firefighting foams, landfills, spills, and other releases can make their way into surface and groundwater where they can contaminate drinking water supplies. Because PFAS stay in the environment for a long time and do not break down easily, they have been widely detected in soil, surface waters (rivers and lakes), drinking water, air, and wildlife. Some PFAS can accumulate in the food chain. Exposure can occur when someone uses products that contain PFAS, eats PFAS-contaminated food, or drinks PFAS-contaminated water. When ingested, some PFAS can build up in the body and, over time, these PFAS may increase to a level where health effects could occur.

PFAS as a class of chemicals are very concerning for public health due to the combination of their widespread use, persistence in the environment, and potential human health impacts including:

- links to liver, kidney, and testicular cancer;
- immune system changes reducing the body's ability to fight off infections and decreasing effective vaccine response in children;
- increased cholesterol levels in the blood;
- Increased risk of high blood pressure or pre-eclampsia in pregnant women;

- and thyroid impacts.

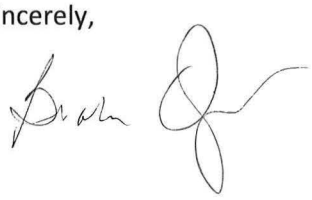
While the tap water Boston receives via the Massachusetts Water Resources Authority (MWRA) has thus far tested for trace to no detectable levels for various PFAS chemicals, continual vigilance is required due to their ability to migrate in the environment through the food chain and in surface waters. PFAS also have the potential to become a serious local and national environmental justice issue as communities least able to afford mitigation costs, such as lower income rural communities reliant on local well water, may be more vulnerable to contamination of their water supplies.

Updating 301 CMR 41.00 with these changes provides the TURA program with the valuable opportunity to augment existing measures to address toxic chemicals through enhancing understanding of the use of PFAS in industry and supporting prevention-related activities to reduce their use by industries in Massachusetts.

Including PFAS as a category of substances allows TURA to address members of this chemical family for which full toxicity information is not yet available rather than responding one chemical at a time as full data is collected, often years after they have been in use in industry and released into the environment. It also allows for future enhanced efforts to address specific chemicals should they be later listed individually by the Toxics Release Inventory (TRI) and thus no longer categorized as 'substances not otherwise listed'.

In closing, we would like to thank you and the Executive Office of Energy and Environmental Affairs for the opportunity to submit comment on these proposed amendments. With any questions, please reach out to Tierney Flaherty at tflaherty@bphc.org.

Sincerely,



Bisola Ojikutu, MD, MPH
Executive Director
Boston Public Health Commission

Support for listing PFAS to state's Toxic and Hazardous Substances List

DB

Tue 10/12/2021 12:23 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Many diseases connected to the presence of PFAS (obesity, immune issues, etc.) are connected to the mortality rates of COVID. Also, this is another issues that most likely impacts lower SES communities. Europe has banned 200 PFAS and so should we!

Sincerely,
Dawn Burau
21 Paulina St Apt 2
Somerville, MA 02144

Support for listing PFAS to state's Toxic and Hazardous Substances List

WB

Tue 10/12/2021 1:49 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Wolfgang Burger
35 Lafayette Sq
Haverhill, MA 01832

Support for listing PFAS to state's Toxic and Hazardous Substances List

NB

Tue 10/12/2021 1:48 PM

To:

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Nancy Burger
35 Lafayette Sq
Haverhill, MA 01832

PFAS TURA List

TC

Fri 10/15/2021 4:37 PM

To:

Skogstrom, Tiffany (EEA)

Hello
I am writing as a water resource specialist and Hydrogeologist about the need to add PFAS to the TURA list. PFAS have contaminated all the Hyannis water supply wells and is found in high concentrations in surface waters. Adding PFAS to the list will help identify responsible pArties and assist in developing efficient strategies to cleanup and prevent additional releases.

Thank you
Tom Cambareri

Sent from my iPhone

October 14, 2021

Ms. Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Ms. Skogstrom:

My name is Mary Cordero and I'm the Eastern Massachusetts Community Organizer with Community Action Works (formerly Toxics Action Center). At Community Action Works, we believe the environmental threats we face are big, but the power of well-organized community groups is bigger. That's why we work side by side with everyday people to confront polluters and to seed solutions. We partner with the people who are most impacted by environmental problems, training them with the know-how anyone would need to make change in their own backyard. Because when people know how to make change, they can build the power to transform our world.

Community Action Works has worked with dozens of communities who have been affected by PFAS contamination.

We are writing to support the TURA Administrative Council's recent decision to add Per-and Poly-fluoroalkyl Substances Not Otherwise Listed to the TURA list of Toxic and Hazardous Substances. We appreciate the extensive scientific review that the Toxic Use Resources Institute and Science Advisory Board undertook prior to the listing.

At Community Action Works, we have worked with community groups fighting PFAS contamination since 2016 and we currently co-facilitate the National PFAS Contamination Coalition, a national network of over 40 community groups from across the country fighting PFAS contamination in their communities. We know that PFAS did not exist 100 years ago, and now they are now so commonly used that they are present in the blood of nearly every person living in this country. PFAS are known to cause kidney disorders, cancers, reproductive disorders, and much more. PFAS chemicals are designed to not break down, meaning that their contamination now will stay for thousands of years.

Placing PFAS on the TURA list is a necessary first step that will help state officials better understand how and where PFAS is being manufactured, used and released in Massachusetts.

However, we recommend that additional steps be taken immediately to protect the health of Massachusetts residents.

First, we recommend that Massachusetts expand the proposed definition of PFAS. In this current proposed amendment, PFAS is defined too narrowly (≥C3F6 more or less). A broader definition of PFAS that includes more types of PFAS will be more protective of public health and the environment.

Neighboring states of Vermont, New Hampshire, Maine, and New York all define PFAS as " a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom." Additionally, the proposed Massachusetts bills (S.1494 / H. 2348) are also using this definition. TURA should also use this language for regulatory uniformity.

Second, we recommend lowering the reporting thresholds. PFAS chemicals are extremely toxic to human health and the environment, even in very small amounts. The TURA program requirements call for reporting if a facility manufactures or processes 25,000 lb/year, or otherwise uses 10,000 lb/year. A lowered reporting threshold will be more protective to public health and the environment.

Third, TURA must move with urgency to add PFAS to the list as soon as possible. Massachusetts residents have been impacted for far too long by these toxic man-made chemicals. We must protect Massachusetts families and move quickly.

Sincerely,
Mary Cordero
Eastern Massachusetts Community Organizer
Community Action Works
Mary@CommunityActionWorks.org
294 Washington Street, Suite 500
Boston, MA 02108

Boston University
School of Public Health

Department of Environmental Health
Talbot 4 West
715 Albany Street
Boston, Massachusetts
02118-2526
TEL: 617 638-4620
FAX: 617 638-4857/7726
October 15, 2021

Tiffany Skogstrom
Executive Director
TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge St., Suite 900
Boston, MA 02114

Re: Proposed amendments to 301 CMR 41: Toxic or Hazardous Substance List (TURA List)

Dear Ms. Skogstrom:

I am writing to support adding per- and polyfluoroalkyl substances not otherwise listed to the Toxic or Hazardous Substance List (TURA List). Furthermore, I recommend changing the proposed amendment of section 41.03, paragraph 14 to include "those PFAS that contain a perfluoroalkyl or perfluoroalkylether moiety containing one or more fully fluorinated carbon, that are not otherwise listed." My reasons for these recommendations are as follows:

- Per- and polyfluoroalkyl substances are known to be highly persistent in the environment and in humans and are therefore of particular concern for health impacts in exposed persons;

- Toxicological studies have demonstrated a wide variety of mechanisms of action and adverse impacts of many PFAS in experimental animal species. Some, but not all of these studies are described in the ATSDR Toxicological Profile for Perfluoroalkyls (Agency for Toxic Substances and Disease Registry. May, 2021).

- The ATSDR Toxicological Profile notes "Over 600 studies have evaluated the toxicity of perfluoroalkyls; epidemiological studies account for over 400 of the toxicity studies. Evidence from epidemiological studies suggest associations between perfluoroalkyl exposure and several health outcomes including liver damage, increases in serum lipids, thyroid disease, immune effects, reproductive toxicity, and developmental toxicity." (ATSDR, p. 749)

- Evidence of carcinogenicity of PFAS is more limited and relatively few human studies have evaluated cancer in exposed populations. Nevertheless, the International Agency

for Research on Cancer (IARC) has designated one PFAS (PFOA) as Group 2B, and the EPA has noted "suggestive evidence" that PFOA and PFOS are carcinogenic in humans. As more evidence accumulates, it is likely that these categorizations will change. The TURA scientific staff should act in anticipation of this, rather than react only after the evidence of carcinogenicity of PFAS is more robust.

- The recommendation that the PFAS NOL category include substances with one fully fluorinated carbon is to avoid unnecessary complexity in the current draft amendment. The current language distinguishing perfluoroalkyl from perfluoro-alkylether moieties is confusing and needs to be simplified.

I look forward to seeing the final version of the proposed amendments to 301 CMR 41. Please let me know if there are questions about my comments or recommendations.

Sincerely,

Richard Clapp

Richard Clapp, D.Sc., MPH
Professor Emeritus

98 Roosevelt Av
Westfield, MA 01085
c.clark2829@gmail.com / cwc.wraft@gmail.com

October 15, 2021

Tiffany Skogstrom
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114
tiffany.skogstrom@mass.gov

Dear Director Skogstrom,

I would like to extend my sincere gratitude to you and your office for the work they have done concerning PFAS, its use, and its regulation in the Commonwealth of Massachusetts. As a resident of a heavily contaminated community, a toxicologist, and a compassionate human being I am in full support of the proposed amendments regarding amendments for the definition of PFAS for the TURA Toxics or Hazardous Substance List.

Personally, working with *in-vivo* and *in-vitro* models for understanding the mechanisms of action of toxic substances, it is of my scientific opinion that many PFAS congeners share adverse health outcomes. This includes ones we have yet to study but share similar structure and chemical characteristics. The only way to ensure that people are adequately protected from synergistic consequences from exposure is that stringent standards be placed on these compounds. Since there are thousands of these compounds, we must take measures to protect ourselves and children's futures. Toxicological assessments of individual PFAS today underestimate the true consequences of exposure as we are still dosed with persistent PFAS compounds from their legacy use.

I support these amendments and encourage the committee to continue with their work.

Sincerely,
Christopher Clark
Westfield Resident

October 15, 2021

Ms. Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Ms. Skogstrom:

Clean Production Action (CPA) supports the TURA Administrative Council's recent decision to add Per- and Poly-Fluoroalkyl Substance Not Otherwise Listed to the TURA list of Toxic and Hazardous Substances. We appreciate the extensive scientific review that the Toxics Use Reduction Institute (TURI) and TURA Science Advisory Board (SAB) undertook prior to the listing.

PFAS are found in the air, drinking water, groundwater, and surface water across Massachusetts and the globe. They are present in human blood, breast milk and umbilical cords. They have contaminated food supplies, and the wider environment. While firefighting foam has been the primary cause of water contamination in some Massachusetts towns, we do not fully understand how other drinking water sources are being contaminated.

Placing PFAS on the TURA list is an important step towards a better understanding of how and where PFAS are manufactured, used and released in the Commonwealth.

1. CPA supports regulating PFAS as a class

The trend is clear. PFAS need to be regulated as a class. And states in the U.S. along with the European Union are already regulating PFAS as a class. While individual variations in PFAS chemistry exist, all PFAS have carbon-fluorine bonds, making them and their degradation products among the most persistent chemicals ever created.

As TURI's Policy Analysis report highlighted:
"In general, the chemicals that the SAB has reviewed are characterized by very high persistence in the environment; they do not break down under normal environmental conditions. In addition, all of these chemicals pose some degree of bioaccumulation concern, especially in air breathing organisms. The longer-chain chemicals are the most bioaccumulative, but the shorter-chain chemicals also bioaccumulate, at least in plants. Key health endpoints of concern include effects on the endocrine system, including liver and thyroid, as well as metabolic effects, developmental effects, neurotoxicity, and immunotoxicity. Some of these health endpoints have been documented for multiple chemicals that the SAB reviewed. Other health effects have been documented for only one or two chemicals, but are highlighted here because they have been found in a large number of studies."

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Somerville, MA 02144 USA
Phone: +1.781.391.6743
www.CleanProduction.org

The TURA Administrative Council decided unanimously to add PFAS NOL to the TURA list. CPA strongly supports this designation.

2. CPA supports adding PFAS to TURA list as soon as possible

TURI and the TURA SAB have spent three and a half years analyzing PFAS and determining that chemicals in current use increase the risk of serious health harm. As Massachusetts facilities and consumers continue to use PFAS for industrial and consumer applications, the level of PFAS in our blood and in water, soil, sludge, and wildlife, will only increase. As a result, Massachusetts should move quickly to finalizing listing. While PFAS in firefighting foam is the primary source of water contamination in some Massachusetts towns, we do not fully understand how other drinking water sources are being contaminated. TURA reporting can help answer these questions and inform municipal decision making to secure and maintain safer water.

3. PFAS should be listed as a Higher Hazardous Substance and reporting threshold lowered to 100 pounds per year

Because PFAS are persistent and bioaccumulative, it means that small amounts of those chemicals in the environment matters. Small amounts will concentrate as they move up the food chain, thereby increasing in concentration and increasing the possibility of adverse health effects due to exposure. Additionally, the well-studied PFAS have shown toxicity at extraordinarily low levels, at parts per trillion. As a result, they should be on the Higher Hazardous Substance list, and reporting threshold should be lowered to 100 pounds per year.

Massachusetts public health officials have a legitimate public interest in understanding all manufacturing, use and release of PFAS. All businesses should be considering alternatives, for the good of their workers, consumers, and surrounding communities.

While we understand that all businesses seek to reduce costs, TURA fees are modest, particularly in comparison with the enormous costs of cleaning up water contaminated by PFAS. If facilities choose to use PFAS, they should absorb the cost by paying a reporting fee. These reporting fees are much lower than the costs that the public, state, and municipalities must absorb to address the health care and clean-up costs of PFAS.

4. The Administrative Council should broaden the proposed definition of PFAS to align with language adopted by other states. PFAS should be defined as: "Perfluoroalkyl and polyfluoroalkyl substances are a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom."

It will be easier for companies to comply with state mandates the more they use a common definition for classifying PFAS.

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CPA recommends that Massachusetts expand the proposed definition of PFAS. In this current proposed amendment, PFAS is defined too narrowly (≥C3F6 more or less). A broader definition of PFAS that includes more types of PFAS will be more protective of public health and the environment.

For context, other state, federal and international entities all have broader definitions. EPA has a working definition that is somewhat broader (basically ≥C2F3): *"a structure that contains the unit R-CF2-CF(R')(R''), where R, R', and R'' do not equal "H" and the carbon-carbon bond is saturated (note: branching, heteroatoms, and cyclic structures are included)"* (see https://www.epa.gov/pesticides/pfas-packaging).

The Organization for Economic Cooperation and Development, in its July 19, 2021 paper, "Reconciling Terminology of the Universe of Per- and Polyfluoroalkyl Substances: Recommendations and Practical Guidance", uses the following definition: "PFASs are defined as fluorinated substances that contain at least one fully fluorinated methyl or methylene carbon atom (without any H/Cl/Br/I atom attached to it), i.e. with a few noted exceptions, any chemical with at least a perfluorinated methyl group (–CF3) or a perfluorinated methylene group (–CF2–) is a PFAS."

Furthermore, all states that have defined PFAS in legislation have simply used this definition: "a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom." Arizona, California, Colorado, Connecticut, Illinois, Kentucky, Maine, Minnesota, Nevada, New Hampshire, New York, Vermont, and Washington all include this definition in state law. Similarly, proposed bills in Massachusetts are also using this definition (S.1494 / H.2348).

CPA requests that TURA use the same language adopted by other states and define PFAS as "a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom."

5. Alternatives are available to PFAS

The listing of PFAS, and using a broad definition will help raise awareness of companies towards PFAS and accelerate the search for alternatives. CPA and other organizations are searching for and finding preferred alternatives to PFAS in a number of applications, including firefighting foam, cleaners and degreasers used in manufacturing operations, furniture and fabrics, as well as food packaging. Given the prevalence of alternatives on the market, Massachusetts can begin with the expanding the listing of PFAS to the TURA list of Toxic and Hazardous Substances, and added as a Higher Hazardous Substance.

Sincerely,

Mark S. Rossi, PhD
Executive Director

1310 Broadway, Suite 101
Somerville, MA 02144 USA
Phone: +1.781.391.6743
www.CleanProduction.org

Support for listing PFAS to state's Toxic and Hazardous Substances List

MC

Tue 10/12/2021 9:28 PM

To:

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Michelle Collar
35 Sunset Ave
North Attleboro, MA 02760

Statement for TURA

Public Comment ~ October 15, 2021

My husband Lt. Paul Cotter (ret) of Worcester, MA medically retired from his career as a firefighter after his cancer diagnosis in 2015. We now serve as advocates seeking to elevate the community of over one million firefighters and their occupational PFAS exposure.

While there are literally hundreds of studies on firefighter turnout gear, not one study produced the knowledge that PFOA was used as a byproduct of manufacturing in firefighter turnout gear after being told PFOA if present would only be there in 'trace amounts'. We took on industry and labor to find the truth ourselves as manufactures produced 'consultant' science for us to swallow.

In June 2020, Dr. Graham Peaslee, Notre Dame nuclear physicist published the first study ever conducted on the chemicals used to make turnout gear. This study was orchestrated by a fire wife and a ragtag group of firefighters. We had no resources and no help from our institutions saturated with chemical industry money. https://www.lastcallfoundation.org/nd-article

In the years leading up to this study, it became startling clear that firefighters are not receiving the education, medical monitoring, and health studies needed to provide a bare minimum toolkit on the exposures they face to both the PFAS in their gear, now known as the most 'highly fluorinated textile seen by nuclear physicist Graham Peaslee', nor their AFFF exposures.
https://cen.acs.org/environment/persistent-pollutants/Protective-gear-expose-firefighters-PFAS/98/i26

In 2019 I gave a statement to MASS DES for the MRL of PFOA for then Toxics Action Center – now known as Community Action Works. Read the full piece below, but I've included the statement of Dr. Graham Peaslee as he educates us on what just one set of turnout gear will do to a landfill.

https://dianecotter.medium.com/my-january-16-2019-stakeholder-statement-at-massdep-pfas-mrl-petition-by-toxics-action-center-and-8c49bf7facf2

So to get you something more concrete, I went back to the measurement of the new turnout gears, that had 116 ppm of PFOA that was readily available from the material on the jacket. I am guessing 95+ % remain on the jacket, but this was what would come off immediately if you soaked the jacket in water for a couple days. I went to the internet and looked up how much material is in a men's jacket, and it is about 3 yards x 45 in wide fabric or 1620 inches squared. Then I weighed a piece of jacket fabric in my lab from Boston FD, and I calculate about 730 g of fabric per jacket. (This is under 2 lbs, which seem a little light, but there is a lt of reinforced cloth and buckles on a typical jacket that probaly gives it a few more pounds, but no more PFAS.) If there are 730 g of fabric per

jacket and there are 116 ppm PFOA per gram, then you end with about 85 mg of free PFOA per jacket. This may not seem like much, but if you tossed two jackets into an Olympic-sized swimming pool (with 660,000 gallons of water), this amount of PFOA would exceed the 70 parts per trillion EPA standard for drinking water! This is without decaying in a landfill 20 years. Imagining pants are about the same as a jacket, that means one set of new turnout gear tossed into water would produce enough waste PFOA to contaminate a full-sized swimming pool. Then if you let it decay in a landfill for 10–20 years you would probably get enough PFOA to contaminate 100 times that much…but the exact ratio of PFOA to to other PFAS isn't known in decaying fabric, and the total amount of fluorochemicals applied to the clothing isn't known exactly by anybody but manufacturers, so it will be hard to say whether it is 100x or 500x. But the bottom line is that these heavily treated textiles will contaminate 300,000 gallons of water per item readily, and maybe 100 times that over a couple of decades in the landfill…which is a lot of water.

In the case of firefighters the deception has been 20 years in the making regarding the turnout gear and over 40 years for the dialogue that AFFF is as safe as 'dishwashing liquid'. Firefighters were told if there was 'PFOA' in their gear it would be 'trace amounts'. Yet industry could not define what a trace amount was to us. This is largely in part to the corporate hold industry has over the fire service with the likes of DuPont, 3M, Gore, and Lion Gear who have been the voting members of our NFPA (National Fire Protection Association) safety standards institution while remaining silent on the long and short chain PFAS used for decades in turnout gear, but having much to say about firefighter cancer and products of combustion. That immersion spread into the labor union as well when DuPont and 3M became the major sponsors of our cancer summits, while omitting all discussion of PFOA in turnout gear.

In 2018 I began working with legislative agent Paul Jacques for the Professional Firefighters of Massachusetts to ensure the strongest language possible for the removal of PFAS in firefighter turnout gear. Representative Jim Hawkins introduced our bill https://malegislature.gov/Bills/191/H3661 which had over 80 sponsors. With Covid-19 our bill died in house. He has worked tirelessly to resurface this bill and it calls for the removal of PFAS from firefighter turnout gear.

Because of the complexities of chemical saturated fire service institutions, we are at an impasse with the National Fire Protection Association who oversees the safety standards for all equipment related to firefighting. This includes their turnout gear. The NFPA requires a PTFE lining for firefighter turnout gear. Our study with Dr Peaslee found that lining is 30% Teflon. In addition to the 'outer shell' which is saturated in PFAS and contains a 'precursor' that is forming PFOA in hours to days. This is a urgent

matter that even the new leadership of the International Association of Firefighters has spearheaded with Boston's own General President Edward Kelly earlier this year.

https://www.iaff.org/news/call-to-action-comment-on-proposed-tia-1594-on-nfpa-1971/

Sadly, the NFPA rejected the pleas of the firefighters who asked the standard be removed. https://news.bloomberglaw.com/daily-labor-report/effort-to-rid-fire-gear-of-forever-chemicals-fails-key-vote

This comment today is to give the TURA insight into the fire service complexities and to express our desire to support the actions to address, minimize, remove, PFAS chemicals from firefighter turnout gear, firehouse environments, and support the use of only independently proven fluorine free foams.

Just yesterday we received this American Chemistry article, it amplifies the catastrophic conundrum firefighters are faced with. https://www.americanchemistry.com/chemistry-in-america/chemistries/fluorotechnology-per-and-polyfluoroalkyl-substances-pfas/pfas-provide-critical-protection-for-firefighters-and-emergency-responders?fbclid=IwAR1YoDsOGIytUxiKH7qQ4O9x49PoFkPr6jJfyTQoupz9NnN7ir51o74RBXo

The studies below show spotlight our great concern that firefighters are not aware of the risk they are in due to the elevated levels of PFAS in their system - and that this concerns their immune system, endocrine system, and yet unknown harms of Covid-19.

Thank you for hearing my statement today.

Sincerely,

Diane Cotter

Your Turnout Gear and PFOA

www.yourturnoutgearandpfoa.com

Firefighter PFAS Studies:

https://www.lastcallfoundation.org/nd-article

https://pubs.acs.org/doi/abs/10.1021/acs.est.9b05490#.XlbPyCsHNQc.twitter

https://www.nature.com/articles/s41370-021-00288-7?proof=t

https://ipen.org/sites/default/files/documents/pfhxs_socio-economic_impact_final_oct.2019.pdf

https://drive.google.com/file/d/0B6R8Ok-Cikg5dk1FYWFWRGNPLTc4QnpIeERVb3ZaRnpjZEg4/view?fbclid=IwAR2j_kg2ooOg5pFb_jcvMIG2FsnF0kSnzzkVe2_Xh6g7Zvn5m195k9EHdNE

2.

https://www.cdc.gov/niosh/firefighters/health.html

https://journals.lww.com/joem/Pages/articleviewer.aspx?year=2019&issue=05000&article=00020&type=Fulltext&fbclid=IwAR2kX5lRhDI65-vnn6or6zJ3IfweTzLRGhk-PrRECgzq4gDMq6P3Q3C9ams

https://biomonitoring.ca.gov/projects/firefighter-occupational-exposures-fox-project

https://biomonitoring.ca.gov/results/projects/410

D.C. 10.12.2021

Support for listing PFAS to state's Toxic and Hazardous Substances List

JD

Wed 10/13/2021 12:12 AM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
June Davenport
PO Box 228
Princeton, MA 01541

WASTEWATER ADVISORY COMMITTEE TO THE MASSACHUSETTS WATER RESOURCES AUTHORITY

Tiffany Skogstrom
Executive Director
TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900, Boston, MA 02114.

tiffany.skogstrom@mass.gov

October 13, 2021

Re: Proposed Amendments to 301 CMR 41 (TURA list)

To Whom It May Concern:

The Wastewater Advisory Committee (WAC) to the Massachusetts Water Resources Authority (MWRA) supports the inclusion of PFAS-NOL (Per & Polyfluoroalkyl substances not otherwise listed) in the Massachusetts Toxic or Hazardous Substance List (TURA).

Evidence of the long-term damage trace amounts of PFAS may do to humans and the environment is accumulating at the same time that their use multiplies.

The addition of PFAS-NOL to TURA would help publicly owned treatment works (POTWs) and industry determine where PFAS are used in industry and where opportunities exist to reduce their use (and industry liability).

The MWRA, like POTWs across the country, contains costs to ratepayers and enhances the environment by selling nutrient-rich biosolids as fertilizer. The solids from this process would otherwise have to be landfilled or incinerated. Recycling of biosolids is continually threatened because of contaminants of emerging concern, such as PFAS, in wastewater.

With several New England states establishing guidance limiting PFAS to 20ppt or lower for drinking water and exploring limits on biosolids, it is increasingly important to reduce PFAS coming in to POTWs.

WAC supports the definition of “substances,” proposed in this regulation. It is important to treat PFAS has as an entire class, not individual chemicals. In the past, regulation of individual PFAS chemicals resulted in the proliferation of similar substances, thereby sidestepping control.

Sincerely,

Wayne Chouinard, PE
Chair

Support for listing PFAS to state's Toxic and Hazardous Substances List

BD

Wed 10/13/2021 5:30 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Beverly Droz
35 Islington Rd
Auburndale, MA 02466

Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

October 14, 2021

RE: OPPOSE- Adding the per-and-polyfluoroalkyl substances not otherwise listed (PFAS NOL) category as a high hazard category on the Toxic or Hazardous Substance List

Dear Ms. Skogstrom:

DuPont is a global innovation leader with technology-based materials and solutions that help transform industries and everyday life. Our employees apply diverse science and expertise to help customers advance their best ideas and deliver essential innovations in key markets including electronics, transportation, construction, water, healthcare and worker safety. We employ over 450 people at our Marlborough campus, which serves as the global headquarters for the DuPont Electronics & Industrial business. At this site, we manufacture specialized materials found in applications such as consumer electronics (smart phones), flat-panel displays, and telecommunications.

Due to that global leadership, we generally take an interest in laws and regulations that purport to be based on science, including this one. We strongly oppose adding the per-and-polyfluoroalkyl substances not otherwise listed (PFAS NOL) category as a high hazard category on the Toxic or Hazardous Substance List not only because the vote was based on flawed scientific principles but also due to deficiencies in process. The Massachusetts Toxics Use Reduction Act ("TURA") intended for the addition or deletion of chemicals on a list of hazardous substances to be a multi-stage decision making method with a "robust and dynamic process for discussion, analysis, and stakeholder input." The TUR Science Advisory Board ("SAB") recommendation and TUR Administrative Council vote to list PFAS NOL lacked these important precepts.

As a member of the American Chemistry Council (ACC), we support the concerns that were expressed by the ACC over deficiencies in process outlined in a series of letters, phone calls and meetings with the Governor's Office in May and June 2020. More specifically, ACC raised concerns regarding procedural deficiencies in virtual meetings conducted by the SAB, Advisory Committee and Administrative Council. While Zoom technology, when effectively deployed, can be a useful method of facilitating public comment that is consistent with the spirit of the Governor's Executive Order of maximizing public participation, the SAB's meetings failed to allow for such meaningful participation. Those deficiencies included:

(1) failure to provide periodic (at reasonably-timed intervals) opportunities for the public to respond;
(2) failure to ensure that public comments are allowed during the relevant portion of the debate and not at some point when they are no longer relevant to the discussion;
(3) failure to permit enabling of cameras and microphones by participants; and
(4) failure to consider public comment submitted electronically into the record and allowing the Board members the opportunity to respond to public comment.

Given that the SAB's discussions are often technical in nature, the lack of robust discussion by participants, many of whom are experts in their fields, and SAB members, truncated important debate. This give-and take among the experts has been a long-standing hallmark of SAB meetings

and one that was nearly eliminated by the virtual platform, to the detriment of a well-balanced debate and sound scientific conclusions.

These concerns relate directly to the SAB's vote to recommend listing of certain PFAS substances taken by the SAB on June 25, 2020. The SAB's recommendation was then taken to the Administrative Council on August 19, 2021, and that vote allows the listing of hundreds of substances used by manufacturers and businesses in Massachusetts, increasing their costs and reducing their competitiveness.

DuPont also takes note of the ACC's argument that it believes, if adopted, this listing would violate Massachusetts Law because Massachusetts law does not permit the listing of "substances" by "a category." In order to allow for a measured and scientifically-sound assessment of substances, the law was designed to limit the annual review process. A "categorical" review absent any unifying basis in the underlying toxicology and physiochemistry appears to be an "end run" around the current law.

In addition to the procedural deficiencies and potential violations of existing Massachusetts law described above, the SAB's vote merits further discussion and input from the Advisory Committee to the Administrative Council, also established under TURA, to consider and provide input into the full impact that vote has on Massachusetts' businesses. Although the issue was on an October 2020 agenda of the Advisory Committee, along with other issues, an issue of this magnitude deserves the full attention of the Advisory Committee and Administrative Council. As the Commonwealth emerges from the COVID-19 pandemic and many businesses are struggling, these decision-making entities should give greater scrutiny as to the ways in which this will disadvantage Massachusetts companies.

We appreciate your review and consideration of these comments. Please feel free to contact me if you have any questions.

Sincerely,

Ellen Mager
DuPont Marlborough Site Leader
ellen.mager@dupont.com

cc: Honorable Charlie Baker
Massachusetts State House
Office of the Governor
Room 280
Boston, MA 02133

Comment regarding PFAS

M

Fri 10/15/2021 1:52 PM

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To:

Skogstrom, Tiffany (EEA)

After several years of concern about PFAS contamination, including in Massachusetts municipal water supplies, and knowing that PFAS are "forever" chemicals that are harmful to human health and the environment, and are very difficult to clean up, I applaud the TURA Council voting to add PFAS NOS to the list of Toxics and Hazardous Substances.

I am glad there is growing awareness of the need to reduce PFAS exposures and to reduce environmental contamination. Among the many sources of exposure that have not been sufficiently recognized are artificial turf playing fields used by children and young athletes. I hope designating PFAS NOS as toxic will help to eliminate the use, and installation, of artificial turf as well as its being subject to regulations for disposal.

I support broad and strong bans of PFAS.

Sincerely,

Meredith Fields

Watertown

Support for listing PFAS to state's Toxic and Hazardous Substances List

SG

Tue 10/12/2021 2:14 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Sandra Gardiner
35 Woodland Rd
Lexington, MA 02420

Support for listing PFAS to state's Toxic and Hazardous Substances List

MG

Tue 10/12/2021 3:57 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Mary Gershanoff
234 Aspen Cir
Lincoln, MA 01773

Add PFAS NOL to the TURA list

CG

Fri 10/1/2021 11:36 AM

To: Skogstrom, Tiffany (EEA)

Tiffany Skogstrom

Executive Director, TURA Administrative Council

Executive Office of Energy and Environmental Affairs

100 Cambridge Street, Suite 900 Boston

MA 02114

October 1, 2021

Dear Ms. Skogstrom,

I am writing today to voice my concerns about PFAS and give my support for amendment 301 CMR 41 that will add PFAS NOL to the TURA list.

There are numerous state bills nationwide that point to public concerns about PFAS in firefighting foam, groundwater, drinking water, soil, military defense sites, food packaging, cookware, electronics, farmland, dairy cows, cosmetics and more.

It is recognized that these highly persistent chemicals are toxic to human health. A CDC report estimates that PFAS are in the bloodstream of 97% of Americans.

I support the amendment and ask for your efforts to include PFAS NOL on the TURA list.

Sincerely,

Connie Glore

Climate Justice Group

North Andover MA

978 376-1100

October 14, 2021

Ms. Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Ms. Skogstrom,

As a member of the Climate Justice Group in North Andover MA, I am writing regarding the regulation of PFAS. We want strong legislative action to stop the use and discharge of these forever chemicals which have been found in 100% of tested rivers. According to the CDC, PFAS are estimated to be in the bloodstream of 97% of Americans.

EPA laboratory and epidemiological studies on PFAS have shown the potential for diseases of the thyroid, liver, and immune systems and cancer.

I ask that a listing of PFAS on TURA include the following EPA's definition of PFAS which reads, *"a structure that contains the unit R-CF2-CF(R')(R"), where R, R', and R" do not equal "H" and the carbon-carbon bond is saturated (note: branching, heteroatoms, and cyclic structures are included)."* https://www.epa.gov/pesticides/pfas-packaging).

"The EPA definition is broader, includes more PFAS than the proposed Massachusetts definition, and therefore is more protective of public health and the environment." (Dr. Kyla Bennet, Director/PEER and Clint Richmond, Executive Committee/MA Sierra Club)

All states that have defined perfluoroalkyl and polyfluoroalkyl substances in their PFAS legislation have used the definition, "a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom."

These states are Arizona, California, Colorado, Connecticut, Illinois, Kentucky, Maine, Minnesota, Nevada, New Hampshire, New York, Vermont, and Washington. Proposed Massachusetts bills are also using this definition (S.1494 / H.2348).

We request that TURA:
1. Adopts the PFAS definition, "a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom."
2. Recognizes the bio-accumulative effects of PFAS and lists PFAS as a Higher Hazardous Substance.
3. Acts with expediency to ensure PFAS substance are listed, monitored, reported and cleaned up.

Sincerely,

Constance Glore
Climate Group
North Andover MA 01845
connieglore@mac.com
978 376-1100

Support for listing PFAS to state's Toxic and Hazardous Substances List

CG

Tue 10/12/2021 12:07 PM

To:

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Carol Goslant
21 Carver St
Cambridge, MA 02138

Support for listing PFAS to state's Toxic and Hazardous Substances List

WG

Tue 10/12/2021 12:39 PM

To:

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Willis Gray
1 Pilgrim Dr
Andover, MA 01810

Support for listing PFAS to state's Toxic and Hazardous Substances List

JH

Tue 10/12/2021 2:25 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

James K. Hadcroft here.

Sincerely,
James Hadcroft
356 Gifford St
Falmouth, MA 02540

Thursday, October 14, 2021

Ms. Tiffany Skogstrom. Executive Director of the TURA Administrative Council, Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900, Boston, MA 02114

Dear Ms. Skogstrom,

We are public health research scientists who have been studying the effects of PFAS on health and the environment.

We are writing to you in support of the proposed amendments to 301 CMR 41: Toxic or Hazardous Substance List (TURA List). Specifically, we are in support of adoption of the proposed amendments that will add Per- and Polyfluoroalkyl Substances Not Otherwise Listed (PFAS NOL) to the Toxic or Hazardous Substance List and will add a definition of the term "substance" to the regulation as a means of clarification.

Class-Based Approach is Justified

It is well established in the scientific literature that PFAS are ubiquitous, persistent, and the few well-studied PFAS – about 6-8 out of 4700 - are shown to be toxic.[1] Exposure to wildlife, ecology and people is well documented, (reviewed in De Silva, et al.), highlighting the presence of PFAS in the environment.[2] Epidemiological studies show associations between PFAS exposure and a number of health effects including decreased bone health, adverse birth outcomes and immunologic effects, and metabolic disruption. A growing number of studies in animal models also support a cause-effect relationship between PFAS exposure and these adverse health outcomes.

There are about 4700 types of PFAS according to a 2018 OECD report), more according to a more recent report.[3,4] Few PFAS have received substantial toxicological evaluation. Given the large number of PFAS and the tendency for new PFAS to replace older ones as the latter are phased out, regulation of individual compounds is not scientifically feasible. As a result, regulation of PFAS as a class is considered necessary by several groups of experts as well as

[1] Toxicological Profile: Perfluoroalkyls. ATSDR. Published 2018. Accessed September 26, 2019. https://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=1117&tid=237
[2] De Silva A, Armitage J, Bruton T, et al. PFAS Exposure Pathways for Humans and Wildlife: A Synthesis of Current Knowledge and Key Gaps in Understanding. Environ Toxicol Chem. 2021;40(3):631-657. doi:10.1002/ETC.4935
[3] OECD. *TOWARD A NEW COMPREHENSIVE GLOBAL DATABASE OF PER-AND POLYFLUOROALKYL SUBSTANCES (PFASs)*.; 2018. Accessed June 18, 2021. https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV-JM-MONO(2018)7&doclanguage=en
[4] CompTox Chemicals Dashboard | PFASMASTER Chemicals. Accessed August 13, 2021. https://comptox.epa.gov/dashboard/chemical_lists/PFASMASTER

various governments and agencies including the State of California and the USEPA.[5,6] For example, the California Department of Toxic Substances Control states "The available information demonstrates that all PFAS or their degradation, reaction, or metabolism products have at least one hazard trait of concern to the State of California: environmental persistence…We believe that all members of the class have a potential for significant and widespread adverse impacts due to their extremely high environmental persistence, coupled with growing evidence for human and ecological health hazards for the impurities, metabolites, and degradation products of the subset commonly used in consumer products."[7]

Revise working title for "PFAS not otherwise listed"

The listing's working title "PFAS not otherwise listed" is ambiguous and requires clarification. We suggest that the title be replaced with "selected" or "certain" PFAS not otherwise listed.

After completion of the current listing, it is imperative that TURI continue to examine PFAS that do not fall within the current listing's definition. Such chemistries include PFAS with fewer than three carbon atoms, among others. We recommend that TURI continue to review and assess the environmental and health hazards associated with PFAS that are not captured by the current listing. This is critical as there is a mixture of PFAS in the environment – and it is the responsibility of the Commonwealth to do what can be done to prevent exposures to these mixtures in air, water, biosolids, food, wherever there is potential for discharge into the environment.

Clarify the PFAS Definition

The SAB definition of the category of PFAS has ambiguity and it would be helpful to clarify the structural definition. For ease of use, a structural definition should be maintained, but specified, "i.e." instead of "e.g." Furthermore, said structural definition, as written, is ambiguous in that it does not provide great enough detail as to the identity of the groups on the left or the right side of each of the dashes. Once this listing is finalized, the health and safety of perfluorinated molecules with fewer than three perfluorinated carbons should be reviewed.

It is urgent to complete the listing – every definition/listing will have pros and cons – we strongly suggest fixing the ambiguities and moving on.

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[5] Bălan S, Mathrani V, Guo D, Algazi A. Regulating PFAS as a Chemical Class under the California Safer Consumer Products Program. *Environ Health Perspect*. 2021;129(2):1-9. doi:10.1289/EHP7431

[6] *Understanding, Controlling, and Preventing Exposure to PFAS*. National Academies Press; 2020. doi:10.17226/25856

[7] Bălan S, Mathrani V, Guo D, Algazi A. Regulating PFAS as a Chemical Class under the California Safer Consumer Products Program. *Environ Health Perspect*. 2021;129(2):1-9. doi:10.1289/EHP7431

Precedence for Adoption of Class-Based Approaches

Massachusetts is not the only State or jurisdiction taking a substance (class) -based approach to PFAS. Several states have already adopted a class-based approach for addressing PFAS. The USEPA is also developing a structural definition to classify PFAS under the Safe Drinking Water Act and the Toxic Substances Control Act. Organizations in Europe are also working towards a class-based approach to addressing PFAS.

- The State of Maine defines PFAS as any substance containing at least one fully fluorinated carbon atom. Starting January 2023, manufacturers will be required to report the intended purpose of and amount of PFAS used in manufactured products containing intentionally added PFAS. Effective in 2030, the sale and distribution of non-essential PFAS containing products will be banned.[8]
- Vermont defines PFAS as any substance containing at least one fully fluorinated carbon atom. The state of Vermont enacted legislation that bans the manufacturing and sale of the following products with intentionally added PFAS: firefighting foam, PPE, food packaging, stain and water-resistant treatments for rugs and carpets, and ski wax.[9]
- Washington defines PFAS as any chemical containing at least one fully fluorinated carbon atom and includes all such chemicals as a priority chemical subject to use reporting.[10]
- California defines PFAS as any chemical containing at least one fully fluorinated carbon atom in its legislation to restrict the sale of firefighting foam and PPE containing intentionally added PFAS.[11]
- Recent proposals by the EPA to list PFAS under the Toxic Substances Control Act (TSCA) and Draft Contaminant Candidate List 5 (Draft CCL 5) would require reporting and recordkeeping of PFAS as a class as defined by the EPA.[12]

---

[8] Legislature M. *LD 1503, HP 1113, Text and Status, An Act To Stop Perfluoroalkyl and Polyfluoroalkyl Substances Pollution*. Accessed August 6, 2021. http://www.mainelegislature.org/legis/bills/display_ps.asp?ld=1503&PID=1456&snum=130

[9] Legislature M. *LD 1503, HP 1113, Text and Status, An Act To Stop Perfluoroalkyl and Polyfluoroalkyl Substances Pollution*. Accessed August 6, 2021. http://www.mainelegislature.org/legis/bills/display_ps.asp?ld=1503&PID=1456&snum=130

[10] Legislature M. *LD 1503, HP 1113, Text and Status, An Act To Stop Perfluoroalkyl and Polyfluoroalkyl Substances Pollution*. Accessed August 6, 2021. http://www.mainelegislature.org/legis/bills/display_ps.asp?ld=1503&PID=1456&snum=130

[11] California. Bill Text - SB-1044 Firefighting equipment and foam: PFAS chemicals. Accessed October 12, 2021. https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB1044

[12] USEPA. Federal Register:: TSCA Section 8(a)(7) Reporting and Recordkeeping Requirements for Perfluoroalkyl and Polyfluoroalkyl Substances; Extension of Comment Period. Accessed September 29, 2021. https://www.federalregister.gov/documents/2021/08/03/2021-16490/tsca-section-8a7-reporting-and-recordkeeping-requirements-for-perfluoroalkyl-and-polyfluoroalkyl

- Europe: Working alongside ECHA, several countries in the European Union are developing a proposal that utilizes a structural definition to ban PFAS as a class under REACH. Key goals of the class-based approach are to provide a regulatory framework for regulating the thousands of existing PFAS, and also to enact legislation that will cover future replacement PFAS, avoiding the regrettable substitution of legacy PFAS e.g., PFOA.[13,14]

Revise the listing to reflect PFAS as high hazard substances

PFAS are some of the most toxic human-made substances. The facts that the drinking water standards are in units of parts-per-trillion, PFAS are persistent and the effects are seen in the population, highlights the inherent hazard status of these chemicals. Listing PFAS as a class of chemicals is a critical first step, but it does not reflect the hazard potential of these substances. After listing, PFAS should be listed as "High Hazard Substances" in order for the Commonwealth to work with industries to identify and decrease and replace the use of these substances.

List Now – Do Not Wait

Given the ubiquity, toxicity, persistence, and the number of PFAS in consumer products and the environment, a class-based approach to regulation is warranted and must be approved immediately. Every day that the Commonwealth waits to adopt this approach, the more PFAS is used and released to the environment, resulting in costly exposures and potential clean-ups.

Communities and individuals in the Commonwealth are scrambling to address the costly impacts of contamination of their water supplies by the well characterized 6 PFAS that are included in the Massachusetts drinking water standard.[15] With each passing day, scientists develop and apply more sensitive techniques to measuring and studying PFAS and we know that the water supplies alone are not contaminated with ONLY these 6 PFAS. Since we do not know the full suite of PFAS currently in commerce, nor their associated toxicities, we cannot wait to learn of these one at a time.

Exposure to PFAS is associated with significant health and environmental impacts. Listing these chemicals as a class enables a path forward – albeit a challenging one, but it is only with this

[13] Registry of restriction intentions until outcome - ECHA. Accessed October 12, 2021. https://echa.europa.eu/de/registry-of-restriction-intentions/-/dislist/details/0b0236e18663449b

[14] RIVM. PFAS restriction proposal. Accessed October 14, 2021. https://www.rivm.nl/en/pfas/pfas-restriction-proposal

[15] Massachusetts Department of Environmental Protection. 310 CMR 22: The Massachusetts Drinking Water Regulations | Mass.gov. Published 2020. Accessed September 29, 2021. https://www.mass.gov/regulations/310-CMR-22-the-massachusetts-drinking-water-regulations

listing that OTA can work with industry to identify and limit the use of PFAS. This is the only way forward to identify and limit PFAS exposures in the Commonwealth.

Respectfully,

Wendy Heiger-Bernays, PhD, Clinical Professor, Boston University School of Public Health

Thomas Webster, DSc, Professor, Boston University School of Public Health

Jennifer Schlezinger, PhD, Associate Professor, Boston University School of Public Health

Rich Gurney, PhD, Professor, Simmons University

Greylin Nielsen, MPH, Doctoral Student, Boston University School of Public Health

Emily Hammel, MPH, Doctoral Student, Boston University School of Public Health

Natalie Banacos, MS, Doctoral Student, Boston University School of Public Health

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 12:41 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Kate Hermann-Wu
1306 Trapelo Rd.
Waltham, MA 02451

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 12:38 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Ailsa Hermann-WU
1306 Trapelo Rd
Waltham, MA 02451

Support for listing PFAS to state's Toxic and Hazardous Substances List

BI

Tue 10/12/2021 9:53 PM

To:

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

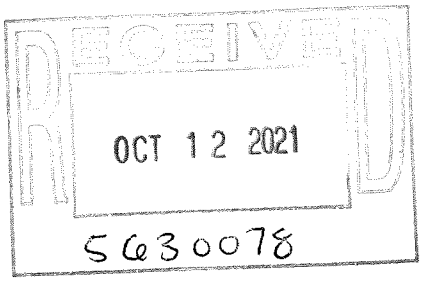
Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Barry Ingber
9 Draper St
Medford, MA 02155

IUSBP
India-US Business Partners



Governor Charles Baker
Massachusetts State House, # 280, Boston, MA 02133

Dear Governor Baker:
Working with businesses in all sectors, I was surprised to learn of a recent and urgent matter. The past year and a half should have taught all of us of the consequences of government action in the absence of a firm, scientific foundation, but that it appears not to be the case when the Massachusetts Toxic Use Reduction Institute Advisory Council recently voted to list a full class of PFAS chemicals as high hazard substances. Grouping PFAS as a single class is scientifically flawed. Many PFAS have very different properties and often have essential functions and benefits. The concept that all PFAS are hazardous and/or toxic is simply not scientifically sound. Several reputable scientific bodies (ECOS, VT DEC, and National Academy of Sciences) have recently expressed concerns about grouping PFAS as a class. I direct you to:

- *ECOS1 – the Environmental Council of the States – which represents state and territorial environmental agency leaders, several of whom have implemented regulatory programs in their home states, has said: "Many regulators and subject-matter experts advise against grouping PFAS as an entire class."*
- *The Vermont Department of Environmental Conservation, which was specifically charged by the legislature to develop a class regulation or to explain why such a regulation wasn't possible said, "The Review Team spent over a year deliberating, researching, and discussing the potential to regulate PFAS as a Class. After reviewing the current peer-reviewed literature, as well as the available toxicology data for PFAS, the Review Team determined that at the current time it is not feasible to regulate PFAS as a Class."*
- *And federal scientists participating in a workshop convened last fall by the National Academies of Science, Engineering, and Medicine (NASEM) to review the federal PFAS research program acknowledged the broad diversity of properties with this group of substances, concluding that3 "PFAS substances thus present unique challenges for grouping into classes for risk assessment."*

Please do everything without your power to stop these misguided PFAS regulations from placing more obstacles in the way of businesses in Massachusetts.

Thank you.

(Rajat Bhatnagar), President – India-U.S.Business Partners

CC Secretary Kathleen A. Theoharides
Office of Energy and Environmental Affairs
100 Cambridge St. Suite 900, Boston, MA 02114

Support for listing PFAS to state's Toxic and Hazardous Substances List

Wed 10/13/2021 9:52 AM

To:

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Mo Kafka
262 Bradford St.
Provincetown, MA 02657

PFAS

RK

Fri 10/8/2021 10:15 PM

To:

Skogstrom, Tiffany (EEA)

Hi Tiffany,

I think that PFAS should be added to the TURA list.

—

Richard Keleher
46 Brewster Lane, Acton, MA 01720
(978) 944-2734

Support for listing PFAS to state's Toxic and Hazardous Substances List

CK

Tue 10/12/2021 8:33 PM
To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Christine King
146 College Hwy
Southampton, MA 01073

Support for listing PFAS to state's Toxic and Hazardous Substances List

JK

Tue 10/12/2021 1:14 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Janet Kolodner
106 Naples Rd
Brookline, MA 02446

Support for listing PFAS to state's Toxic and Hazardous Substances List

AK

Tue 10/12/2021 4:56 PM
To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Andee Krasner
43 Sheridan Street
Boston, MA 02130

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 2:28 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Teresia LaFleur
40 Bigelow Dr
Sudbury, MA 01776

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 2:48 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Christine Lazar
10 Rockdale Hill Circle
Upton, MA 01568

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 3:54 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
janet lyman
75 mechanic st.
amherst, MA 01002

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 2:06 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

This issue affects me directly, because the tap water in my town (Wayland) currently exceeds the PFAS regulatory limit. We desperately need to get to the bottom of where these PFAS compounds are originating and stop the source.

Sincerely,
Philip Marrone
105 School St
Wayland, MA 01778

PFAS

Sat 10/2/2021 8:26 PM

To: Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

I am writing today to voice my concerns about PFAS and to support amendment 301 CMR 41 that will add PFAS NOL to the TURA list.

Nationwide, there are numerous state bills concerning PFAS in firefighting foam, groundwater, drinking water, soil, military defense sites, food packaging, cookware, electronics, farmland, dairy cows, cosmetics and more. It is recognized that these highly persistent chemicals are toxic to human health, and a CDC report estimates that PFAS are in the bloodstream of 97% of Americans.

I support the amendment and ask for your efforts to include PFAS NOL on the TURA list.

Thank you,

Gary Martin

179C Lakeshore Rd.

Boxford, MA 01921

Support for listing PFAS as toxic chemicals

Sun 10/3/2021 9:24 PM

To: Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

I am writing today to voice my concerns about PFAS and express my support for amendment 301 CMR 41 that will add PFAS NOL to the TURA list.

There are numerous state bills nationwide that point to public concerns about PFAS in firefighting foam, groundwater, drinking water, soil, military defense sites, food packaging, cookware, electronics, farmland, dairy cows, cosmetics and more. It is recognized that these highly persistent chemicals are toxic to human health. A CDC report estimates that PFAS are in the bloodstream of 97% of Americans.

I support the amendment and ask for your efforts to include PFAS NOL on the TURA list.

Sincerely,

Karen Martin

179 Lakeshore Rd

Boxford, Ma 01921

MassMEDIC
PO Box 177
Brookline, MA 02446

October 15, 2021

SUBMITTED VIA EMAIL

Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114
tiffany.skogstrom@mass.gov

Director Skogstrom:

The Massachusetts Medical Device Industry Council (MassMEDIC) is a trade association that represents nearly 300 of the world's leading innovators and manufacturers of medical devices, diagnostic products, digital health technologies, which call the Commonwealth of Massachusetts home. Medical technology is a critical industry to the Commonwealth, with more than 500 companies, employing in excess of 25,000 employees. Medical devices make up 1 out of every 4 products exported from Massachusetts.

MassMEDIC is concerned about 301 CMR 41.00: TOXIC OR HAZARDOUS SUBSTANCE LIST. If these rules are adopted, as approved by the Administrative Council, then Massachusetts users of the thousands of per-and-polyfluoroalkyl substances not otherwise listed (PFAS NOL) substances in that class will be subject to the rule and be required to pay user fees due to their listing as a high hazard substance.

Our concerns are that listing PFAS NOL as a class authorizes the listing of thousands of substances used by manufacturers and businesses in Massachusetts, increasing their costs and reducing their competitiveness. As our Commonwealth emerges from the COVID-19 pandemic, and many businesses are struggling, this decision to impose additional fees associated with the listing/use will *uniquely* disadvantage Massachusetts companies.

Medical devices made with fluoropolymers, a compound of PFAS, have been available to patients for over 50 years, with tens of millions of devices used without demonstrating adverse health effects like carcinogenicity and reproductive, developmental, or endocrine toxicity. The health risks of these medical devices are thoroughly assessed by the U.S. Food and Drug Administration ("FDA") before they make it on the market and must undergo multiple tests to prove biocompatibility in compliance with international biocompatibility standard, ISO 10993. Furthermore, manufacturers and the FDA, in compliance with the FDA Quality System Regulation, continue to monitor the safety of these products even after they are marketed.

The Food and Drug Administration doesn't just monitor and control the medical devices and drugs used in the U.S.—it also ensures the packaging used is safe and effective at keeping the contents clean and germ-free. The packaging used to seal and deliver medical devices is tested to ensure it will protect the sterility of instruments and implants. The resilient packaging must also meet rigorous labeling standards which let the FDA trace devices in use.

Any blanket regulation of PFAS places at risk the ability of companies to manufacture and provide lifesaving and life-enhancing fluoropolymer containing medical devices to patients across the U.S. and the globe.

PFAS is a broad generic term encompassing classes of substances stretching from gases and liquids to small molecular weight solids and high molecular weight fluoropolymers. PFAS are defined based on small chemical structural elements that apply to a broad range of substances with such diverse properties and effects that it is impractical to regulate them as a single class. While some low molecular weight PFAS and some fluorinated polymers for paper and cardboard coating have been and are being phased out by the industry, working with the FDA, certain other distinct fluoropolymers are critical to the production of lightweight, flexible plastic packaging. Fluoropolymers are a subset of fluorinated polymers. Fluoropolymers used as components in polymer processing additives (PPAs) are high molecular weight polymers, have low levels of residual monomers or oligomers, exhibit very low water solubility, and are non-reactive and thermally stable. As an indication for the low risk, they generally meet simplified regulatory criteria – like OECD criteria of polymer of low concern – which indicate the overall low risk of environmental impacts of polymers used in packaging. They are present in certain plastic packaging components in only very small amounts. There are no commercially available alternatives to these fluoropolymers.

Should medical devices made with fluoropolymers be withdrawn from the market because of the adverse impact of state legislation, thousands of patients 'lives will be at risk for lack of available treatment and life-saving options. Today, in many cases, medical devices that use fluoropolymers are the "standard of care." Lack of access to these devices can result in significant decreases in clinical success, including higher morbidity and mortality rates. Massachusetts is a leading state for medical technology companies (one of the top five in terms of revenue and investment), but this regulation unfairly penalizes this important Massachusetts industry even though these same devices have gone through the rigor of FDA approval and been cleared as safe for patients.

We look forward to working with you more on this. If you have any questions, please feel free to contact me at brian@massmedic.com, or 617-905-6116

Regards,

Brian Johnson
President
MassMEDIC

MASSACHUSETTS BREAST CANCER COALITION

October 14, 2021

Ms. Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Support for adding Per-and Poly- fluoroalkyl Substance Not Otherwise Listed to the TURA list of Toxic and Hazardous Substances

Dear Ms. Skogstrom,

On behalf of Massachusetts Breast Cancer Coalition, dedicated to preventing environmental causes of breast cancer through community education, research advocacy, and changes to public policy, we would like to express our support for adding Per-and Poly- fluoroalkyl Substance Not Otherwise Listed to the TURA list of Toxic and Hazardous Substances.

PFAS exposure has been linked to testicular and kidney cancer, high cholesterol, liver damage, thyroid disease, decreased vaccine response and reduced immune system functioning, and other health impacts[1]. In lab studies, PFAS exposure has also been shown to alter mammary gland development, which raises concerns about an increased risk for breast cancer. TURA's scientific advisory board spent 3.5 years reviewing the science around this chemical class' health harms, and it is critical that the Commonwealth recognizes this extensive scientific deliberation and moves forward with this listing.

As an organization based in Cape Cod, we have experienced firsthand the effects of PFAS contamination of drinking water in our state. A recent Harvard University study[2], published in *Environmental Science and Technology*, documented that that contamination of groundwater on Cape Cod by PFAS is even more widespread than is previously known. The Town of Barnstable has spent $20 million over the past six years to reduce the amount of PFAS in municipal drinking water supplies, demonstrating the strain that this problem puts on public resources. 20% of public water sources tested in Massachusetts has been found to be above maximum levels set by the state for six PFAS chemicals[3]. PFAS poses a serious threat to vulnerable drinking water supplies in the state, and it is essential that the public and regulators have more information about its production and use in the state in order to support upstream efforts to prevent environmental contamination and protect public health – TURA reporting for PFAS is a critical part of this response.

The proposed group of PFAS should be added to the TURA list to ensure the protection of public health. Without increased knowledge of industry's use of PFAS, PFAS accumulation will only worsen and threaten our health and the health of our children and grandchildren. We strongly call for this listing to be finalized without delay – science and the experience of impacted communities demonstrates the urgency of this issue.

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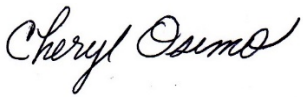
[1] Agency for Toxic Substances & Disease Registry (ATSDR). (2019a). Toxicological Profile for Perfluoroalkyls. https://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=1117&tid=237

[2] Ruyle, B. J., Pickard, H. M., LeBlanc, D. R., Tokranov, A. K., Thackray, C. P., Hu, X. C., ... & Sunderland, E. M. (2021). Isolating the AFFF Signature in Coastal Watersheds Using Oxidizable PFAS Precursors and Unexplained Organofluorine. *Environmental Science & Technology*, *55*(6), 3686-3695.

[3] Boston Globe (2021, May 23). More Communities are Finding Toxic Chemicals in Their Drinking Water.

Sincerely,



Cheryl Osimo
Executive Director
Massachusetts Breast Cancer Coalition
cosimo@mbcc.org
508-246-3047
www.mbcc.org

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 12:48 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Carole McAuliffe
40 Way 35 Off Briar
Wellfleet, MA 02667

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 3:32 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Maureen McCarthy
32 South St
Marblehead, MA 01945

Support for listing PFAS to state's Toxic and Hazardous Substances List

Wed 10/13/2021 7:34 AM

To:

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Mike McCool
48 Dorothy Rd
Millbury, MA 01527

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 6:38 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Kathleen McHendry
281 Chauncey Walker St Lot 105
Belchertown, MA 01007

October 13, 2021

Ms. Kathleen Theoharides

Secretary Executive Secretary, Energy and Environmental Affairs

Executive Office of Energy and Environmental Affairs

100 Cambridge St., Suite 900, Boston, MA 02114

Dear Secretary Theoharides:

I am writing regarding the regulation of PFAS. We want strong legislative action to control the use and clean-up of these forever chemicals which have been found in 100% of tested rivers. According to the CDC, PFAS are estimated to be in the bloodstream of 97% of Americans.

We request the Office of Energy and Environmental Affairs:

1. Adopts the PFAS definition, "a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom."

2. Recognizes the bio-accumulative effects of PFAS and lists PFAS as a Higher Hazardous Substance.

3. Acts with expediency to ensure PFAS substance are listed, monitored, reported and cleaned up.

Sincerely,

Kate McHugh

Andover, MA

Kate@katemchugh.com

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 2:48 PM**To:**

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Brian McPherson
23 Oak Knoll Rd
Natick, MA 01760

MCTA
PO BOX 518 Upton Ma, 01568

October 15, 2021

Ms. Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street
Suite 900
Boston, MA 02114

Re: Comments of Massachusetts Chemistry & Technology Alliance relative to proposed amendments to 301 CMR 41.00 Toxic or Hazardous Substance List

To Whom It May Concern:

On behalf of the Massachusetts Chemistry & Technology Alliance (MCTA), I want to thank you for the opportunity to comment on the proposed amendments to 301 CMR 41.00 Toxic or Hazardous Substance List. MCTA is deeply concerned about the unintended consequences of these amendments as drafted,

MCTA is the professional organization representing the manufacturers, users and distributors of chemistry in the Commonwealth. Our membership ranges from small, multi-generational family-owned businesses operating with a handful of employees to large global companies employing thousands. Our members are located throughout the Commonwealth and rely on us to be their voice with regulatory and lawmaking bodies

On August 19, 2021, the Administrative Council voted to add the following definition of the word "substance" to 301 CMR 41.02. It should be noted that the proposed amendment bypassed the TURA program's stakeholder process and was referred directly to the Administrative Council for vote.

"Substance means any agent or material including but not limited to: pure chemicals with a specific chemical and structural identity; and categories or groups of chemicals, compounds or mixtures that share similar, identifiable characteristics such as, but not limited to, elemental composition, chemical formula, chemical structure, chemical properties, physical properties, functional groups or chemical manufacture." [Underline emphasis added]

The proposed amendment is overly broad and lacks the clarity and specificity to provide any guidance to the regulated community. The language as written states that any "agent or material" that share any "similar, identifiable characteristics" will be considered a single substance. The repeated use of the term "not limited to" strips the language of any meaning and of any use to the regulated community. In essence it says everything can be included in any grouping as a single substance that can be listed under TURA.

MCTA also is opposed to the inclusion of "any agent or material" that share "physical characteristics," i.e. size, shape, weight, etc., regardless of chemical formula or identity in the definition. Conceivably, thousands of different chemicals or materials could be swept on to the TURA list as a single "substance" due to solely to their shared physical characteristics.

MCTA would also like clarification of what is meant by "chemical manufacture" and why it provides justification for a listing a substance. Is "chemical manufacture" the point of origin? The process used? The company manufacturing the material or agent? This is unclear.

As written, the proposed definition has no meaning and is of no use as guidance to the regulated community. On the surface, it appears to be an attempt to list substances for reasons other than a particular chemical functionality or identity.

In short, MCTA contends that the proposed definition is overly broad and lack specificity and clarity. It is punitive and poses an undue hardship on a small universe of statutorily defined facilities in the Commonwealth.

On August 19, 2021, the Administrative Council also voted*: For calendar year reporting period 2021 and thereafter, the toxic or hazardous substance list shall include the following substance category: The per- and polyfluoroalkyl substances not otherwise listed (PFAS NOL) category, which consists of: those PFAS that contain a perfluoroalkyl moiety with three or more carbons (e.g., –CnF2n–, n ≥ 3; or CF3–CnF2n– , n≥2) or a perfluoroalkylether moiety with two or more carbons (e.g., –CnF2nOCmF2m− or –CnF2nOCmFm–, n and m ≥ 1) that are not otherwise listed.*

Please note that MassDEP is proposing that the listing of the PFAS NOL category be effective for the calendar year reporting period 2021 and thereafter (301 CMR 41.03(14)). However, 301 CMR 41.04(1) requires that "any addition or deletion of a substance shall take effect the calendar year immediately following the year in which the addition or deletion is codified in 301 CMR 41.00."

Since the PFAS category was not listed as a toxic and hazardous substance, companies subject to TURA were not tracking it. In fact, as TURI has acknowledged, many companies are unaware that any of the thousands of PFAS chemicals defined in the proposed amendment are present in their products or processes because suppliers don't list them as PFAS on the Material Safety Data Sheets.

To not follow the existing rules on this change would be an unnecessary burden on the regulated community.

By way of background, please note that only a fraction of chemical users in the Commonwealth will be impacted by the proposed definition while many others are statutorily exempt. The TURA law identifies subject companies by SIC codes in Chapter 21I, Section 10 while exempting a host of other commercial, institutional and municipal users.

The subject companies – many of which are small, locally-based operations -- will pay for implementation, education, outreach, grants and technical support to exempt facilities, municipalities and non-profits. These statutorily defined operations will also be the only facilities subject to reporting and enforcement.

Thank you for the opportunity to comment. If you have any questions, please do not hesitate to contact me.

Sincerely,

Katherine Robertson
Executive Director

27 Moseley Avenue
Westfield, MA 01085
klm.wraft@gmail.com

WESTFIELD RESIDENTS ADVOCATING FOR THEMSELVES

October 15, 2021

Tiffany Skogstrom
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114
tiffany.skogstrom@mass.gov

Dear Director Skogstrom,

Thank you for the opportunity to submit these written comments in support of the proposed amendments regarding the addition of a definition for "substance" and the PFAS-NOL category to the TURA Toxics or Hazardous Substance List. If you check my address above, you'll see I am writing from an Environmental Justice community in Westfield that has been bearing the weight of PFAS exposure for decades - although we've only known of our exposure for the last five years.

First and foremost, my gratitude to the Science Advisory Board and the Administrative Council for their work bringing these proposed changes forward. These amendments are the best next step in PFAS management and toward recognizing the People's right to clean air and water as documented in Article 97 of the MA Constitution. The changes proposed also represent tremendous progress in honoring the public's right-to-know regarding these man-made chemicals, now so ubiquitous.

Of course, given the extraordinarily persistent, bioaccumulative, and toxic nature of these man-made substances obviously a broader definition to include any fluorinated monomers and fluoropolymers, and a much lower reporting threshold would be preferable. These adjustments would be much more protective against ongoing unnecessary PFAS exposure to our most vulnerable environmental justice populations. Altering the definition to encompass the entire PFAS family[1], including pre-cursors, as defined by the Interstate Technology Research Council (ITRC) (see attached) and lowering reporting thresholds would raise public and industry awareness regarding the use and proper handling and transfer of PFAS in the Commonwealth.

It was heartening to see that the PFAS Exposure Assessment results in Westfield were considered in this work. As an affected community member and an Exposure Assessment participant, I can tell you those blood samples were taken 4 years after we stopped drinking the contaminated water. If our blood had been tested when we first found out about the contamination in 2016, the PFAS numbers would be far more shocking. Also, the average numbers presented don't reveal the worst affected among us. Those residents, often living in environmental justice communities like mine, are our most vulnerable to ongoing and often unknown PFAS exposure and need these proposed amendments the most.

At the Public Hearing today we heard about how only a few companies would be required to report, but that these amendments would create an undue regulatory burden. The argument that a company, which already has invoices and transportation manifest documentation for its chemicals, faces an undue burden collating this information is hollow indeed.

Massachusetts residents have a right to "clean" air and water - meaning, among other things, free of manmade PFAS. The undue burden here is on our bodies, our communities, our natural resources, and our wallets. Residents, contaminated without consent, have to pay the consequences of PFAS discharges.

[1] https://pfas-1.itrcweb.org/2-2-chemistry-terminology-and-acronyms/#figure_2_3

We have to pay for remediation. We have to pay for bottled water. We are forced to pay in municipal water treatment, and wastewater treatment. We have to pay in health consequences, with lowered immunity and increased risk of chronic disease, and damage to our embryos, thyroids, livers, kidneys, immune systems. We have to pay with the years of exposure because of how long it takes for PFAS to leave our bodies - in the years these man-made chemicals wreak havoc on our endocrine systems and organs.

We pay in money… medical bills, medication, lost wages, sick time, lost property values, lost academic performance and increased special education costs, lost access to waters, fisheries, and farmland we used to think were clean, lost time doing the things we used to love to do.

We pay in chronic stress and worry about all the PFAS sources we still don't know anything about and have no idea how to stop. We have to pay in hours upon hours of childcare costs, traveling to attend meetings, logging into zoom/team/webex meetings, hours spent delivering our concerns in 3 minute bites. We pay when listening to the constant insult of high paid attorneys telling us corporate profits matter more than we do.

On top of all that, we fear we are paying with our lives - fighting a relentless pandemic virus with our immune systems tied behind our backs because of PFAS exposure.

We are only asking that these PFAS users/manufacturers/dischargers report what they are doing with these truly hazardous materials, as is also our right. The undue burden here is on the residents, the unconsenting victims, the people who have a right to clean air and water and a right to know - rights that continue to be violated every single day.

Again, my gratitude to the SAB and Council for all their work, and to you for accepting these comments in support of the proposed amendments to add "substance" and PFAS-NOL category to the TURA Toxics or Hazardous Substance List, and in request that the definition of PFAS be broadened to include the entire family as defined by ITRC, listed as high-hazard, and with the lowest possible individual and combined reporting threshold possible.

These amendments to statute would bring us much closer to honoring the violated rights and protecting the health of the residents of the Commonwealth.

Thank you very much for your work.

Sincerely,

Kristen L Mello

Kristen L. Mello, M.Sc.
Co-founder / Director, WRAFT
Westfield Residents Advocating For Themselves

Adverse Health Effects of PFAS

Prepared By Jennifer Schlezinger October 12, 2021

Bone health: PFAS are present in human bone.(1,2) In analyses of general populations, serum PFAS concentrations have been associated with lower bone mineral density, (3–5) increased risk of osteoporosis diagnosis, (6) and increased fracture risk.(7) PFAS associations with reduced bone quality have been reported for both women (3–6) and men.(3,5,7) Importantly, associations between serum PFAS concentrations and reduced bone quality have also been observed in children.(8–10) Further, in rodent models, early life exposure to perfluorooctanoic acid (PFOA) is associated with reduced mineralization of bone at birth (11) and lower bone mineral density in aged mice.(12)

Birth outcomes: Maternal plasma and cord blood concentrations of PFOA, perfluorooctane sulfonic acid, perfluoroheptane sulfonic acid, perfluorononanoic acid, perfluorodecanoic acid and perfluoroundecanoic acid are associated with increased risk of low birth weight, small for gestational age and/or preterm birth.(13–17) Reduced placental efficiency and low birth weight are also evident in rodent models exposed to PFOA.(18)

Immune function: PFAS body burdens are associated with reduced antibody titers following routine vaccinations (Haemophilus influenza type b, Hepatitis B, tetanus, diphtheria, and rubella) (reviewed in (19,20) and recent studies (21–25)). Further, in rodent models, multiple PFAS suppress T cell-dependent antibody responses, including PFOA (26–30), perfluorooctane sulfonic acid (31–33), perfluorodecanoic acid (34) and FRD-902 (35).

Metabolic health: Increased concentrations of serum total cholesterol, non-high density lipoprotein cholesterol, and low density lipoprotein cholesterol are among the best supported, most sensitive endpoints in both cross-sectional and longitudinal epidemiology studies (reviewed in (19,20) and recent studies (36–43)). Further, associations of PFAS with increased adiposity (44–46), risk of type 2 diabetes (40,47–50) and risk of cardiovascular disease (51) have been reported. Recent rodent studies show that in mice fed a human-relevant diet with human relevant PFAS blood concentrations, that PFOA increases serum triglycerides and total and low density lipoprotein cholesterol.(52–56)

In Massachusetts, 8.3% of people over 35 are living with heart disease, which equates to 277,000 people.(57) As of 2017, cardiovascular disease was the second leading cause of death in Massachusetts, only slightly behind cancer. Cardiovascular disease caused 134.6 in 100,000 deaths while all cancers caused 149.3 in 100,000 deaths.(58)

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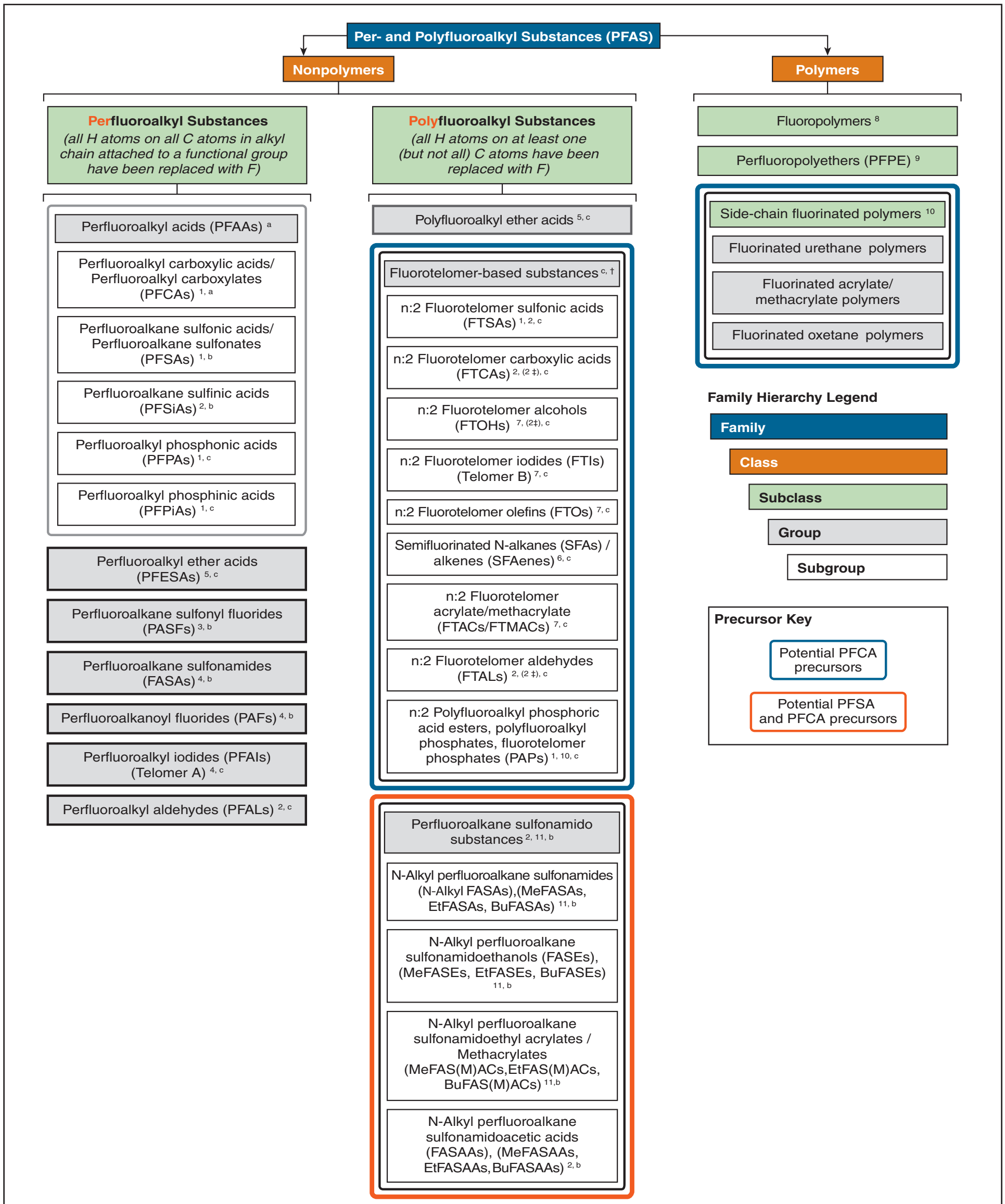


Manufacturing Process Legend
(a) Manufactured by either ECF or fluorotelomerization
(b) Manufactured by ECF
(c) Manufactured by fluorotelomerization

Notes
† N:3 saturated/unsaturated acids subfamily (intermediate transformation product) not shown under this family
‡ Unsaturated derivatives are intermediate transformation products

PFAS Use Legend
(1) Surfactants
(2) Intermediate environmental transformation product
(3) Principal raw material for perfluoroalkane sulfonyl- based products including surfactants and surface protection products
(4) Raw material for surfactants and surface protection products
(5) Includes some fluoropolymer polymerization aids
(6) Ski wax, medical applications
(7) Raw material for fluorotelomer-based surfactants and surface protection products
(8) High molecular weight polymeric plastics such as PTFE
(9) A broad class of polymers used largely as lubricants
(10) Used for surface protection
(11) Major raw material for perfluoroalkane sulfonyl-based surfactant and surface protection products

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 1:45 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
David Miller
93 Mozart St
Jamaica Plain, MA 02130

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 7:53 PM
To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Sherry Morgan
26 Meadow Wood Dr
South Deerfield, MA 01373

mwwa
massachusetts water works association

www.masswaterworks.org

October 15, 2021

Tiffany Skogstrom, Executive Director
TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

VIA Email to: **tiffany.skogstrom@mass.gov**

RE: Proposed Amendments to 301 CMR 41.00: TOXIC OR HAZARDOUS SUBSTANCE LIST

Dear Ms. Skogstrom:

Massachusetts Water Works Association (MWWA) is a non-profit membership organization representing over 1,300 water supply professionals throughout the Commonwealth. Our membership consists of water operators, water system managers, consulting engineers, equipment manufacturers and vendors. Our members work hard to provide the most essential service – safe drinking water. We are writing today in support of the proposed amendments to 301 CMR 41.00 to add Per- and Poly-fluoroalkyl Substances Not Otherwise Listed (PFAS NOL) to the Commonwealth of Massachusetts' Toxic or Hazardous Substance (TURA) List.

As you are aware, Per- and Polyfluoroalkyl Substances (PFAS) are impacting water supplies in Massachusetts and across the nation. MWWA is pleased to be a member of the legislature's recently convened PFAS Interagency Task Force as we look to better understand the extent of PFAS in the Commonwealth and create response plan strategies. We believe the action that the TURA Administrative Council is taking is a good first step toward identifying and quantifying where and how much PFAS is being manufactured and used in the Commonwealth.

Massachusetts just promulgated a new drinking water standard for PFAS of 20 parts per trillion (ppt) for the sum of six PFAS compounds. PFAS is ubiquitous and so it is no surprise that as sampling commenced in 2021, we

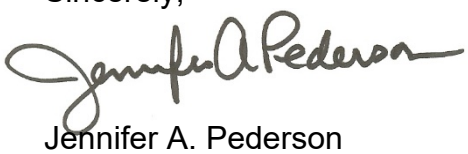
are finding PFAS compounds in many water supplies across the Commonwealth. With just about half of the sampling complete, over 70 Public Water Systems currently exceed the state standard and must investigate interim and long-term solutions to bring the drinking water below 20 ppt. PFAS is an especially challenging issue for water suppliers on a number of fronts, including but not limited to, operational issues, public communication and outreach, and cost.

The good news is that treatment of water supplies to remove PFAS is possible. The bad news is treatment is expensive and we are just removing it from the water and transferring it to a different medium for disposal (which presents its own challenges). In some cases, responsible parties will be identified and might be held responsible for paying for treatment, but in other cases, there simply is not an easily identifiable source. For those water systems where there is not an obvious source, ratepayers will have to bear the burden of the treatment cost. MWWA believes that source control (getting these compounds out of commerce and from getting into the environment) is critical to reduce future burden of having to remove PFAS in water at the source. While we recognize these regulations will not prohibit the use of PFAS, it will provide valuable information that might lead to source control measures.

While PFAS research is ongoing, including studies into the actual health impacts from PFAS exposure, the state should invest more in understanding the fate and transport of PFAS through the environment, our watersheds, and aquifers. In the meantime, the reality is that water suppliers must meet the new drinking water standard and so we support actions such as these regulations which will help Massachusetts better understand where PFAS is being used which may lead to better protection of our water supplies and the environment from future contamination.

We appreciate the opportunity to comment on the proposed regulations. Should you have any questions on our comments, please do not hesitate to contact me.

Sincerely,



Jennifer A. Pederson
Executive Director

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 3:46 PM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Elizabeth Newton
23 Sycamore Road
Wayland, MA 01778

Northeastern University
Social Science Environmental Health Research Institute

318 International Village
360 Huntington Avenue
Boston, MA 02115
617-373-2022

Comment on Amendments to Add Category of PFAS to TURA List

Toxic Use Reduction Institute- TURI
126 John St
Lowell, MA 08152

To the TURA Administrative Council,

We are writing to comment in favor of the vote by the TURA Administrative Council to add the Per- and Poly-fluoroalkyl Substances Not Otherwise Listed (PFAS NOL) category to the TURA list of Toxics or Hazardous Substances. We are a group of academic researchers who study the scientific, regulatory, and economic considerations related to PFAS. We work to produce accessible research and information about PFAS contamination and work in collaboration with impacted communities to educate populations about this crisis.[1]

PFAS are a broad class of chemicals that are linked to many serious health effects, including "cancer, immune suppression, thyroid and sex hormone disruption, and adverse effects on liver and kidney function."[2] These chemicals are very persistent in the human body, with half-lives ranging from months to years.[3] Individuals encounter PFAS exposure not only through use of consumer goods such as nonstick cookware or textiles, but through a wide range of other sources less publicly recognized. The contamination of drinking water and other media has been linked to several categories of point sources, including military and other firefighting facilities with use of fluorinated fire fighting foams, industrial facilities that produce or use PFAS, and other facilities such as landfills and wastewater treatment plants

[1] More information on our lab's work is available at www.pfasproject.com

[2] Trowbridge et al. (2020). Exposure to Perfluoroalkyl Substances in a Cohort of Women Firefighters and Office Workers in San Francisco. Environmental Science & Technology, 54 (6), 3364-74; page 3364. DOI: 10.1021/acs.est.9b05490

[3] Trowbridge et al., 3370.

that do not create or use PFAS directly but concentrate and/or transform PFAS in waste streams. Other media such as sludge, landfill leachate, and compost pose additional sources of PFAS exposure.

We are strongly in support of listing PFAS as a class of chemicals rather than listing individual chemicals. Some manufacturers have phased out long-chain (containing seven or more fluorinated carbons) PFAS such as PFOA and PFOS that are linked with a variety of health problems and instead replaced them with similar short-chain PFAS that have been thought to be safer alternatives."[4] Mounting evidence suggests that short-chain PFAS' persist in the environment and are difficult to remove from drinking water.[5] Moveover, less than one percent of PFAS have been tested for toxicity, and their clear pattern of persistence contributes to concerns about bioaccumulation of these forever chemicals.[6] The lack of evidence that short-chain PFAS are truly safer than long-chained PFAS may result in failure to protect public health, thus exemplifying why PFAS chemicals should be regulated as a class.

Listing PFAS as a class will be very beneficial for public health protection in Massachusetts. In order to enhance the Commonwealth's continuous work to decrease PFAS use, PFAS must be listed under TURA. This action will help raise awareness among manufacturers about how PFAS are used and how to reduce existing use, and encourage them to reduce company involvement with PFAS and their liability of PFAS contamination. TURA has been a nationally prominent policy process, with TURI being the nation's model for toxics reduction. In tandem with Massachusetts' early provision of MCLs for 6 PFAS, this action can make the state even further a leader in the nationwide effort at PFAS Toxics reduction.

Respectfully submitted,
Lilyana Ibañez
Dr. Alissa Cordner, Associate Professor of Sociology, Whitman College
Dr. Julia Varshavsky, Assistant PRofessor of Environmental Health, Northeastern University
Dr. Phil Brown, University Distinguished PR\rofessor of Sociology and Health Sciences, Northeastern University

For the PFAS Project Lab of the Social Science Environmental Health Research Institute

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Support for listing PFAS to state's Toxic and Hazardous Substances List

Wed 10/13/2021 12:32 AM

To:

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Lori Parkinson
55 Farmcrest Avenue
Lexington, MA 02421

nantucket
PFAS ACTION GROUP

October 12, 2021

Ms. Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Ms. Skogstrom:

The Nantucket PFAS Action Group supports the TURA Administrative Council's recent decision to add Per-and Poly-fluoroalkyl Substance Not Otherwise Listed (NOL) to the TURA list of Toxic and Hazardous Substances. We appreciate the extensive time, effort, scientific review, and the complete and thorough analysis that the Toxic Use Resources Institute and Science Advisory Board have put into this.

We strongly support the regulation of PFAS as a class and would vigorously oppose any efforts to limit reporting to a subset of PFAS. In the interest of public health we hope that PFAS be added to the TURA list as soon as possible.

Nantucket PFAS Action Group is working closely with firefighters to provide PFAS awareness in the fire service. We are constantly seeing industry playbook tactics used to dismiss the occupational exposures from the PFAS that these firefighters have been facing for decades. AFFF and PFAS-laden turnout gear is contributing to the alarming high rates of cancer among firefighters, and exacerbating drinking water contaminants in every community with a fire station. The majority of firefighters who are aware of PFAS want it out of their gear and foam. We believe PFAS should be banned from turnout gear due to the toxicity, persistence, and the vast amounts of these compounds that are used and shed during each stage of the garment life cycle. We are hopeful that adding PFAS as a class to TURA's hazardous substance list would encourage textile companies to invest in innovation and look for safer alternatives that will remove toxic chemicals from the gear to not only be safe from fires but also the chemicals from their gear.

We understand this has been in the works for years and as more information continues to come, we hope the Administrative Council will be open to reassing the definition of PFAS to align with language adopted by other states. For the sake of regulatory uniformity, we respectfully request that TURA use the same language adopted by other states and define PFAS as "a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom."

In the absence of federal regulation and guidance, we are happy and relieved to see the efforts made by TURA on this important matter that is affecting so many residents in the state of Massachusetts.

Best,

Jaime Honkawa

Co-Founder
Nantucket PFAS Action Group

Ayesha Khan

Co-Founder
Nantucket PFAS Action Group

Dianne Plantamura <dlplant@comcast.net>

Mon 10/4/2021 8:29 AM

To: Skogstrom, Tiffany (EEA)

to: Tiffany Skogstrom

Executive Director, TURA Administrative Council

Executive Office of Energy and Environmental Affairs

100 Cambridge Street, Suite 900 Boston

MA 02114

October 4, 2021

Dear Ms. Skogstrom,

I am writing today to voice my concerns about PFAS and give my support for amendment 301 CMR 41 that will add PFAS NOL to the TURA list.

There are numerous state bills nationwide that point to public concerns about PFAS in firefighting foam, groundwater, drinking water, soil, military defense sites, food packaging, cookware, electronics, farmland, dairy cows, cosmetics and more.

It is recognized that these highly persistent chemicals are toxic to human health. A CDC report estimates that PFAS are in the bloodstream of 97% of Americans.

I support the amendment and ask for your efforts to include PFAS NOL on the TURA list.

Sincerely,

Dianne Plantamura,

22 Mill St.

Groveland, MA 01834

PFAS Regulation

Tue 10/12/2021 8:50 PM
To:

- Skogstrom, Tiffany (EEA)

October 14, 2021

Ms. Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Ms. Skogstrom,

As a member of the Climate Justice Group in North Andover MA, I am writing regarding the regulation of PFAS. We want strong legislative action to stop the use and discharge of these forever chemicals which have been found in 100% of tested rivers. According to the CDC, PFAS are estimated to be in the bloodstream of 97% of Americans.

EPA laboratory and epidemiological studies on PFAS have shown the potential for diseases of the thyroid, liver, and immune systems and cancer.

I ask that a listing of PFAS on TURA include the following EPA's definition of PFAS which reads, *"a structure that contains the unit R-CF2-CF(R')(R"), where R, R', and R" do not equal "H" and the carbon-carbon bond is saturated (note: branching, heteroatoms, and cyclic structures are included)."* https://www.epa.gov/pesticides/pfas-packaging).

"The EPA definition is broader, includes more PFAS than the proposed Massachusetts definition, and therefore is more protective of public health and the environment." (Dr. Kyla Bennet, Director/PEER and Clint Richmond, Executive Committee/MA Sierra Club)

All states that have defined perfluoroalkyl and polyfluoroalkyl substances in their PFAS legislation have used the definition, "a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom."

These states are Arizona, California, Colorado, Connecticut, Illinois, Kentucky, Maine, Minnesota, Nevada, New Hampshire, New York, Vermont, and Washington. Proposed Massachusetts bills are also using this definition (S.1494 / H.2348).

We request that TURA:
1. Adopts the PFAS definition, "a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom."
2. Recognizes the bio-accumulative effects of PFAS and lists PFAS as a Higher Hazardous Substance.
3. Acts with expediency to ensure PFAS substance are listed, monitored, reported and cleaned up.

Sincerely,
Dianne Plantamura
22 Mill Street, Groveland, MA 01834

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 3:03 PM
To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Isaiah Plovnick
263 Walnut St
Brookline, MA 02445

RE: PFAS NOL / Substance Public Comment period closes 5pm, 10/15/21

Rick Reibstein
Fri 10/8/2021 7:57 AM

To:

Skogstrom, Tiffany (EEA)

Comment in Support of the Regulatory Change to Clarify What the Toxic or Hazardous Substance List Includes

When the Toxics Use Reduction Act was passed, the legislature unanimously approved its provisions. These include Section 8, the responsibilities of all state agencies. This instructed all state agencies to amend their "programs or associated regulations, where feasible, so as to promote toxics use reduction as the preferred method for achieving the goals of such programs". In order to protect the public from the threats of toxic chemicals, the agencies of the Commonwealth are to do what is necessary to ensure we know where they are used.

It was clearly the intention of the Legislature to appropriately address these threats, and not to employ a narrow, ineffective approach constricted by artificial definitions. The toxics list has always included mixtures and categories. It is only because the law has powerful forces in opposition to its purpose of protecting the public and the environment from toxic chemicals that there is any question about whether the list can cover a category of chemicals. Unfortunately, entities with the intention of continuing toxics use without the transparency that the act provides, have sown confusion about how the act should be implemented. There is no question but that the government agencies charged with its mandate must ensure that where toxic threats are present in sufficient degree, that they be included. What is the result of inclusion in the Act? It is not the imposition of an unreasonable requirement, nor the potential loss of economic value, though there is some small economic impact. Toxics users become responsible for knowing about their use, and telling the public. The statute requires consciousness, transparency. The fear of some that this will harm their means of making a living must be put in that context. They can still sell or use toxic chemicals. The difference, if we respect the mandate of a unanimous legislature, and allow the program to implement the act as intended, will be that we will know about toxics use.

There are some chemicals that present the famous "whack-a-mole" problem, (the amusement park game in which a "mole" keeps popping up in different places). When one member of a chemical group is regulated, industry takes a very similar one, a sibling or cousin so to speak, off the shelf and substitutes that chemical, which presents similar threats. Industry may challenge the agency to prove that the sibling presents similar threats, but the burden of proof concerning members of a

group of chemicals must be on the company. It is only through an act of willful blindness, or favoritism to special economic interests, that an agency can assume that the other members of the group should be considered innocent until proven guilty of posing a potential threat. These are not people in jeopardy of losing their freedom. These are chemicals that are more likely than not to be harmful, to belong on a list of toxic or hazardous substances.

It should be thought that the idea that any clarification of this matter was necessary is absurd. But it is good that the program is moving to clarify the question. It is an undeniable fact that inclusion on the list of substances that threaten the public and the environment is meant to be an effective means of bringing about transparency concerning those threats. The public has the right to know when chemicals present a risk, and to allow the continued frustration of the "whack-a-mole" game would run counter to that right. The agencies responsible for TURA's implementation would be violating Section 8 of the law and rejecting the Act's purposes were they to accept the argument that the definition of chemicals needs to be limited. The clarification should not have been necessary to make, but the public should be glad that the program is making it.

Rick Reibstein
Lecturer, Boston University, Department of Earth and Environment
Former Assistant Direction, Office of Technical Assistance
Faculty, Harvard Continuing Education
Member, Board, National Pollution Prevention Roundtable

Identifications are supplied as information about affiliation. The comment is submitted as the writer's personal opinion.

From: Skogstrom, Tiffany (EEA) [mailto:tiffany.skogstrom@mass.gov]
Sent: Thursday, October 7, 2021 10:55 AM
To: Skogstrom, Tiffany (EEA) <tiffany.skogstrom@state.ma.us>
Subject: PFAS NOL / Substance Public Comment period closes 5pm, 10/15/21

Dear TURA Program Stakeholder,

The Public Comment Period concerning **proposed amendments** to 301 CMR 41: Toxic or Hazardous Substance List (TURA List) is currently open and will end at 5pm on October 15th, 2021, with a zoom public hearing from 1pm to 3pm on the same day. These proposed amendments, if adopted, will add Per- and Polyfluoroalkyl Substances Not Otherwise Listed (PFAS NOL) to the Toxic or Hazardous Substance List, and will add a definition of the term "substance" to the regulation as a means of clarification.

Draft regulations were filed on Friday, August 20, 2021. Copies of the proposed regulations may be **downloaded here**, or may be obtained by sending an email to Tiffany Skogstrom at **tiffany.skogstrom@mass.gov** or calling 857-275-1561.

Written testimony will be accepted until 5 p.m. on October 15, 2021. Written testimony should be submitted via email **tiffany.skogstrom@mass.gov** or via mail to: Tiffany Skogstrom, Executive Director of the TURA Administrative Council, Executive Office of Energy and Environmental Affairs, 100 Cambridge Street, Suite 900, Boston, MA 02114.

A public hearing will be held virtually on Zoom from 1pm to 3pm on October 15, 2021. **Please note that this meeting is being conducted remotely, consistent with An Act Extending Certain COVID-19 Measures Adopted During the State of Emergency. This Act includes an extension, until April 1, 2022, of the remote meeting provisions of Governor Baker's March 12, 2020, Executive Order resulting from the outbreak of the 2019 novel coronavirus, known as "COVID-19."** Use **this link** to access the Zoom public hearing between 1pm and 3pm on October 15, 2021 (Meeting ID: 885 2870 7255, Passcode: C5TCLa, Telephone Passcode: 562031) or **find your local phone number**.

Reasonable accommodations to participate in the public hearing are available upon request. Include a description of the accommodation you will need; please include as much detail as you can. Also include a way we can contact you if we need more information. Please allow at least two weeks (14 days) advance notice. Last minute requests will be accepted, but we may be unable to fulfill the request. Please send an email to Melixza G. Esenyie, ADA and Diversity Manager at the Executive Office of Energy and Environmental Affairs at **Melixza.Esenyie2@mass.gov** or call 617-626-1282.

Further details may be found in the **Notice of Public Hearing** published in the **Massachusetts Register** on September 3, 2021.

Also, please note that many of our communications have been sent to you via Constant Contact. To ensure that you receive these messages, you may have to adjust your settings and recognize maota@mass.gov as a safe sender.

Thank you,
Tiffany Skogstrom
Executive Director, TURA Administrative Council

Tiffany Skogstrom, MPH, Director *(she / her)*
Massachusetts Office of Technical Assistance (OTA)
Executive Office of Energy and Environmental Affairs
Phone: 857-275-1561

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October 15, 2021

Dear Administrative Council on Toxics Use Reduction:

The Massachusetts Sierra Club has signed a letter recommending that TURA add "Per- and Polyfluoroalkyl Substances Not Otherwise Listed (PFAS NOL)" to the TURA List. That letter urges a broad definition of per- and polyfluoroalkyl substances (PFAS), the one that has been adopted by the OECD and in laws in many other U.S. states. This definition is: a substance that contains at least one fully fluorinated carbon atom.

The Sierra Club would further suggest that the occupational and environmental risks stem from organofluorine chemistry itself. This chemistry is usually based on two related highly dangerous substances that are already on the TURA list, namely:

- Hydrofluoric acid (all concentrations)
- Hydrogen fluoride (all forms)

We need to regulate and avoid any substance that could have carbon-fluorine degradants, which are generally extremely persistent. The extreme persistence of these synthetic chemicals is, by itself, environmental contamination. Furthermore, many of these have been produced in large volumes for decades with little oversight. These chemicals have and will disperse and accumulate with unknown and irreversible harms. This includes fluoropolymers, which need to be included now on the TURA List.[1]

Therefore there are a number of extensions to the OECD definition that should be considered.

1) *All* polyfluorinated alkyl substances. This would implement the full literal meaning of PFAS. This would encompass, for example, all difluoromethyl moieties.

Other extensions could include non-alkyl organic substances:

2) Polyfluorinated alkenes. This would include vinylidene fluoride, which is used as a monomer in fluoropolymers.

3) Any polyfluorinated organic group, i.e., with at least two C-F bonds. This would for example include difluorophenyl. Benzene is already on the TURA list, and this would capture several even more problematic fluorinated variants.

[1] For example: "Polypropylene, nitrile rubber, and *PTFE* occurred in all samples" [emphasis added] in an *Artic* study. Source: "High Quantities of Microplastic in Arctic Deep-Sea Sediments from the HAUSGARTEN Observatory", *Environ. Sci. Technol.*, 2017. https://pubs.acs.org/doi/10.1021/acs.est.7b03331

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This could be continued with various classes but the logical conclusion is to regulate all organofluorines. There could be special handling rules for essential FDA-registered ethical pharmaceuticals.

Given what we have learned so far about PFAS, and what we continue to learn, the state needs to develop regulations that are the most protective of public health and the environment for all organofluorine chemistry. The Sierra Club strongly urges adding PFAS and organofluorines to the TURA list.

Sincerely,

Clint Richmond,
Member, Executive Committee
Massachusetts Sierra Club
clint@massachusetts.sierraclub.org

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 3:20 PM
To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Jodi Rodar
223 N Valley Rd
Pelham, MA 01002

PFAS Chemical purposed amendments

RG

Fri 10/8/2021 3:19 PM

To:

- Skogstrom, Tiffany (EEA)

I take objection to the inclusion of all fluoropolymers in the PFAS Chemical purposed amendments with no exception for the molecular chain length. You are making unneeded regulations material that have a proven safety record and reduce risks in several industries around the world for chemical transfer hoses to fuel lines and brake line.

I find the proposal overreaching and detrimental to industry.

Best Regards,

Greg

Greg Rooke
New Product Development Manager
Titeflex Commercial, Inc.

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Adverse Health Effects of PFAS

Prepared By Jennifer Schlezinger October 12, 2021

Bone health: PFAS are present in human bone.(1,2) In analyses of general populations, serum PFAS concentrations have been associated with lower bone mineral density, (3–5) increased risk of osteoporosis diagnosis, (6) and increased fracture risk.(7) PFAS associations with reduced bone quality have been reported for both women (3–6) and men.(3,5,7) Importantly, associations between serum PFAS concentrations and reduced bone quality have also been observed in children.(8–10) Further, in rodent models, early life exposure to perfluorooctanoic acid (PFOA) is associated with reduced mineralization of bone at birth (11) and lower bone mineral density in aged mice.(12)

Birth outcomes: Maternal plasma and cord blood concentrations of PFOA, perfluorooctane sulfonic acid, perfluoroheptane sulfonic acid, perfluorononanoic acid, perfluorodecanoic acid and perfluoroundecanoic acid are associated with increased risk of low birth weight, small for gestational age and/or preterm birth.(13–17) Reduced placental efficiency and low birth weight are also evident in rodent models exposed to PFOA.(18)

Immune function: PFAS body burdens are associated with reduced antibody titers following routine vaccinations (Haemophilus influenza type b, Hepatitis B, tetanus, diphtheria, and rubella) (reviewed in (19,20) and recent studies (21–25)). Further, in rodent models, multiple PFAS suppress T cell-dependent antibody responses, including PFOA (26–30), perfluorooctane sulfonic acid (31–33), perfluorodecanoic acid (34) and FRD-902 (35).

Metabolic health: Increased concentrations of serum total cholesterol, non-high density lipoprotein cholesterol, and low density lipoprotein cholesterol are among the best supported, most sensitive endpoints in both cross-sectional and longitudinal epidemiology studies (reviewed in (19,20) and recent studies (36–43)). Further, associations of PFAS with increased adiposity (44–46), risk of type 2 diabetes (40,47–50) and risk of cardiovascular disease (51) have been reported. Recent rodent studies show that in mice fed a human-relevant diet with human relevant PFAS blood concentrations, that PFOA increases serum triglycerides and total and low density lipoprotein cholesterol.(52–56)

In Massachusetts, 8.3% of people over 35 are living with heart disease, which equates to 277,000 people.(57) As of 2017, cardiovascular disease was the second leading cause of death in Massachusetts, only slightly behind cancer. Cardiovascular disease caused 134.6 in 100,000 deaths while all cancers caused 149.3 in 100,000 deaths.(58)

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October 15th, 2021

To:
Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Executive Office of Energy and Environmental Affairs
Massachusetts Office of Technical Assistance and Technology
100 Cambridge Street, Suite 900
Boston, MA 02114

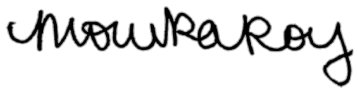
Dear Tiffany Skogstrom and the TURA Administrative Council,

I am writing **in support that the class of per- and poly-fluoryl alkyl substances (PFAS) be added to the Toxics Use Reduction (TUR) list of Toxic or Hazardous Substances**. The TURA Science Advisory Board has reviewed the history and latest scientific information related to PFAS health effects on the endocrine system, including liver and thyroid, as well as metabolic effects, developmental effects, neurotoxicity and immunotoxicity. In addition, I also worked on toxicology studies during my doctoral research at the University of Massachusetts Amherst that investigated the effects of PFAS from Aqueous Film-Forming Foam (AFFF) used in firefighting activities on liver development. The results of this work are concerning and can be viewed in the *Environmental Health Perspectives* publication from September 2020 titled "Chemical Characterization of a Legacy Aqueous Film-Forming Foam Sample and Developmental Toxicity in Zebrafish (*Danio rerio*)", and can be accessed at: https://ehp.niehs.nih.gov/doi/full/10.1289/EHP6470.

Many communities in Massachusetts are spending enormous amounts of time and energy addressing PFAS contamination issues in their drinking water systems, including Westfield, a town near where I live. And as noted by the TURA Science Advisory Board, PFAS have been detected above the Massachusetts' Maximum Contaminant Level (MCL) of 20 ppt for six specific PFAS in drinking water wells in dozens of towns. In addition to the animal-based toxicology work conducted by scientists like myself and others, numerous epidemiological studies have **linked PFAS exposures to human health issues**. In case these peer-reviewed scientific publications have not been reviewed yet, please see the attached document summarizing what is known about PFAS effects on health, prepared by Dr. Jennifer Schlezinger, an Associate Professor at Boston University's School of Public Health.

It is clear that PFAS as a class are an issue for environmental and human health, and that many individual PFAS chemicals are persistent, bioaccumulative, and toxic. Listing PFAS on the TUR list of Toxic or Hazardous Substances is a step in the right direction for companies to actively be aware of their PFAS usage and to make efforts to reduce it.

Respectfully submitted,



Monika A. Roy, PhD, MSPH
Postdoctoral Research Associate
University of Massachusetts Lowell
Monika_Roy@uml.edu

PFAS

Sat 10/2/2021 3:59 PM

To: Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

I am writing today to voice my concerns about PFAS and give my support for amendment 301 CMR 41 that will add PFAS NOL to the TURA list.

There are numerous state bills nationwide that point to public concerns about PFAS in firefighting foam, groundwater, drinking water, soil, military defense sites, food packaging, cookware, electronics, farmland, dairy cows, cosmetics and more.

It is recognized that these highly persistent chemicals are toxic to human health. A CDC report estimates that PFAS are in the bloodstream of 97% of Americans.

I support the amendment and ask for your efforts to include PFAS NOL on the TURA list.

Sincerely,

Nancy Sarro

44 Equestrian Drive

North Andover, MA 01845

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 12:05 PM
To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Emily Scott
69 Harvey Apt 10
Cambridge, MA 02140

Department of Toxic Substances Control

Jared Blumenfeld
Secretary for
Environmental Protection

Meredith Williams, Ph.D.
Director
1001 "I" Street
P.O. Box 806
Sacramento, California 95812-0806

Gavin Newsom
Governor

October 13, 2021

Tiffany Skogstrom
Executive Director, TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

PROPOSED AMENDMENTS TO ADD A CATEGORY OF PFAS CHEMICALS TO THE TURA LIST

Dear Ms. Skogstrom:

The California Department of Toxic Substances Control (DTSC) supports the proposal to add the category of per- and polyfluoroalkyl substances not otherwise listed (PFAS NOL) to the TURA list of Toxics or Hazardous Substances. Additionally, we recommend that TURA expand its definition of PFAS NOL to include ultra-short-chain compounds.

As of the 2021 reporting period, the TURA list already includes several PFASs that EPA added to section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA). However, EPCRA excludes chemicals active in commerce whose identity is confidential business information (CBI) and currently covers fewer than 200 PFASs, a small percentage of the more than 9,000 PFASs identified by U.S. EPA.[1] As the TURA Science Advisory Board (SAB) Policy Analysis dated May 2021 points out, using a chemical class approach to PFASs can help avoid regrettable substitutions. Taking a class approach will also simplify the reporting requirements for businesses, because facilities will not need to determine which specific PFASs they are using. In our research towards the implementation of the Safer Consumer Products (SCP) regulations, we have found that a chemical class approach to PFASs is justified and necessary because all PFASs or their degradation, reaction, or metabolism products have hazardous properties of concern to the state of California, including high persistence and various

[1] https://comptox.epa.gov/dashboard/chemical_lists/pfasmaster

toxicities. Our rationale for regulating PFASs as a class is detailed in Bălan et al. (2021).[2]

We encourage TURA to expand its definition of PFAS NOL to include ultra-short chains. While the shortest PFAS reviewed in the May 2021 Policy Analysis had three fluorinated carbons (i.e., PFBA), ultra-short-chain PFASs display some of the same hazards of concern, including very high persistence, mobility in the environment, and potential toxicity.[3,4] For example, trifluoroacetic acid (TFA) is of growing concern due to its widespread detection, high persistence, and aquatic toxicity, yet it is not currently covered under the proposed PFAS NOL definition. To capture TFA and other ultra-short chain class members, DTSC recommends adopting the revised PFAS definition from the Organisation for Economic Cooperation and Development (OECD), which includes substances that contain at least one fully fluorinated methyl or methylene carbon atom. [5] This is a straightforward definition, without arbitrary chain length requirements.

As the May 2021 Policy Analysis points out, the TURA program has the opportunity to enhance understanding of the uses of PFASs in manufacturing, which will greatly help prevention activities. This goal will be better achieved by expanding the definition of PFAS NOL to include ultra-short chains.

Thank you for considering our comments. Should you have follow-up questions, please contact Simona Bălan of my staff at Simona.Balan@dtsc.ca.gov or 510-540-3888.

Sincerely,

Karl Palmer
Deputy Director
Safer Consumer Products Program
Karl.Palmer@dtsc.ca.gov

cc: see next page

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[2] Bălan SA, Mathrani VC, Guo DF, Algazi AM (2021) Regulating PFAS as a Chemical Class under the California Safer Consumer Products Program. Environ Health Perspect 129(2). https://doi.org/10.1289/EHP7431

[3] Ateia et al. (2019) The overlooked short- and ultrashort-chain poly- and perfluorinated substances: A review. Chemosphere 220:866-82

[4] Zhu et al. (2020) Exposure to low concentration of trifluoromethanesulfonic acid induces the disorders of liver lipid metabolism and gut microbiota in mice. Chemosphere 258:127255

[5] https://www.oecd.org/chemicalsafety/portal-perfluorinated-chemicals/terminology-per-and-polyfluoroalkyl-substances.pdf

cc: André Algazi
Branch Chief
Department of Toxic Substances Control
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1001 I Street 12th Floor, P.O. Box 806
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SILENT SPRING INSTITUTE
Researching the Environment and Women's Health

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October 15, 2021

Ms. Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Ms. Skogstrom,

We are writing to comment in support of the unanimous decision by TURA's Administrative Council to add the Per- and Poly-fluoroalkyl Substances Not Otherwise Listed (PFAS NOL) category to the TURA list of Toxics or Hazardous Substances.

We are scientists at Silent Spring Institute, an independent research organization that investigates links between the environment and women's health, with a focus on breast cancer. Silent Spring was founded as a collaboration of scientists, clinicians, and families affected by breast cancer, with a mission to conduct environmental health research that can inform disease prevention. We have studied PFAS in drinking water,[1,2] consumer products,[3] and blood[4]. Silent Spring currently has four federally funded research studies on PFAS, including 1) Massachusetts PFAS and Your Health Study, part of a larger study funded by CDC/ATSDR to study health effects of PFAS exposures from drinking water, 2) PFAS-REACH, based in Massachusetts and New Hampshire, which is assessing the relationship between PFAS and pediatric immunotoxicity, 3) STEEP, led by the University of Rhode Island, which is investigating the environmental transport of PFAS and health effects related to exposure, and 4) a newly funded National Science Foundation study to investigate policy responses to PFAS at multiple levels of governance.

[1] Schaider, L. A., Rudel, R. A., Ackerman, J. M., Dunagan, S. C., & Brody, J. G. (2014). Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. *Science of the Total Environment*, *468*, 384-393.
[2] Hu, X. C., Andrews, D. Q., Lindstrom, A. B., Bruton, T. A., Schaider, L. A., Grandjean, P., ... & Sunderland, E. M. (2016). Detection of poly-and perfluoroalkyl substances (PFASs) in US drinking water linked to industrial sites, military fire training areas, and wastewater treatment plants. *Environmental science & technology letters*, *3*(10), 344-350.
[3] Schaider, L. A., Balan, S. A., Blum, A., Andrews, D. Q., Strynar, M. J., Dickinson, M. E., ... & Peaslee, G. F. (2017). Fluorinated compounds in US fast food packaging. *Environmental science & technology letters*, *4*(3), 105-111.
[4]Boronow, K. E., Brody, J. G., Schaider, L. A., Peaslee, G. F., Havas, L., & Cohn, B. A. (2019). Serum concentrations of PFASs and exposure-related behaviors in African American and non-Hispanic white women. *Journal of exposure science & environmental epidemiology*, *29*(2), 206-217.

Chemicals in the PFAS family are of concern for many health endpoints, including breast cancer[5,6,7]. A growing body of evidence is also raising concerns about newer PFAS, many of which are not part of the list of individual PFAS already listed under TURA. We have several points regarding adding PFAS NOL to the TURA list, including the importance of a class-based approach, the necessity of reconsidering the reporting threshold given PFAS' persistence and toxicity at extremely low concentrations, the externalized social and health costs of PFAS for regulators and the public, and the extensive scientific deliberation that surrounded this amendment.

A class-based approach to PFAS regulation is necessary

A strength of this listing is it applies a class-based approach to addressing PFAS. This class of chemicals is associated with a wide range of adverse health outcomes, including cancer, immunotoxicity, reproductive toxicity, developmental effects on the mammary gland, neurotoxicity, and thyroid, liver, and kidney effects[8]. EPA's Comptox Database now indicates that there are over 9,000 PFAS[9] and over 1,400 individual PFAS have been associated with industrial uses and consumer products[10], meaning it would be impossible to study each one individually and inadvisable to regulate just a subset of PFAS. While industry has argued during oral testimony that fluoropolymers should be exempt from regulation, academic work indicates that fluoropolymers, particularly the degradants and incidental PFAS associated with their lifecycle, can pose serious toxicity concerns and TURA's Scientific Advisory Board debated at length about this subset of PFAS chemicals and decided they should be included due to similar rationale. California's Department of Toxic Substances Control is regulating PFAS as a chemical class, citing this approach as "logical" and "necessary" given that all studied PFAS, or their degradation, reaction, or metabolism products, display common hazardous traits[11]. The American Public Health Association and a number of expert scientists including Dr. Linda Birnbaum, former head of the National Institute for Environmental Health Sciences, have recommended approaching PFAS as a class based on their shared chemical properties[12,13]. Past

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[5] Tucker, D. K., Macon, M. B., Strynar, M. J., Dagnino, S., Andersen, E., & Fenton, S. E. (2015). The mammary gland is a sensitive pubertal target in CD-1 and C57Bl/6 mice following perinatal perfluorooctanoic acid (PFOA) exposure. *Reproductive Toxicology*, *54*, 26-36.

[6] White, S. S., Stanko, J. P., Kato, K., Calafat, A. M., Hines, E. P., & Fenton, S. E. (2011). Gestational and chronic low-dose PFOA exposures and mammary gland growth and differentiation in three generations of CD-1 mice. *Environmental health perspectives*, *119*(8), 1070-1076.

[7] Bonefeld-Jørgensen, E. C., Long, M., Fredslund, S. O., Bossi, R., & Olsen, J. (2014). Breast cancer risk after exposure to perfluorinated compounds in Danish women: a case–control study nested in the Danish National Birth Cohort. *Cancer Causes & Control*, *25*(11), 1439-1448.

[8] Agency for Toxic Substances & Disease Registry (ATSDR). (2019). *Toxicological Profile for Perfluoroalkyls*. https://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=1117&tid=237

[9] PFAS Master List of PFAS Substances (Version 2), EPA, https://comptox.epa.gov/dashboard/chemical_lists/pfasmaster

[10] Glüge, J., Scheringer, M., Cousins, I. T., DeWitt, J. C., Goldenman, G., Herzke, D., ... & Wang, Z. (2020). An overview of the uses of per-and polyfluoroalkyl substances (PFAS). *Environmental Science: Processes & Impacts*, *22*(12), 2345-2373.

[11] Bălan, S. A., Mathrani, V. C., Guo, D. F., & Algazi, A. M. (2021). Regulating PFAS as a chemical class under the California Safer Consumer Products Program. *Environmental Health Perspectives*, *129*(2), 025001.

[12] American Public Health Association, *Reducing Human Exposure to Highly Fluorinated Chemicals to Protect Public Health*. 2016.

[13] Birnbaum, L., Southerland, B., & Sussman, R. (2021, July 30). EPA must protect public health by regulating PFAS as a class. The Hill. https://thehill.com/opinion/energy-environment/565528-epa-must-protect-public-health-by-regulating-pfas-as-a-class

examples (such as flame retardants and CFCs) have shown that a non-class-based approach has been ineffective at protecting public health and the global environment.

While this amendment would add PFAS NOL to the TURA list, it has defined PFAS as those that contain a perfluoroalkyl moiety with three or more carbons (e.g., –CnF2n–, n ≥ 3; or CF3–CnF2n– , n≥2) or a perfluoroalkylether moiety with two or more carbons (e.g., –CnF2nOCmF2m− or –CnF2nOCmFm–, n and m ≥ 1). This definition of PFAS is narrower than that which has been adopted by other states and institutions. For example, the Organization for Economic Cooperation and Development (OCED) defines PFAS as "fluorinated substances that contain at least one fully fluorinated methyl or methylene carbon atom (without any H/Cl/Br/I atom attached to it)." While the best approach to defining PFAS is an evolving line of inquiry, TURA's definition will fail to encompass many high production volume PFAS of known concern by not including those PFAS with one fluorinated carbon atom. We hope that this can be considered in future amendments to the TURA list.

Businesses should not be exempt from the rule as a result of manufacturing or processing volumes
If the draft regulations for PFAS are adopted, Massachusetts businesses will be subject to TURA program requirements, if they manufacture or process 25,000 lb/year, or otherwise use 10,000 lb/year, of PFAS NOL. A more scientifically sound approach for protecting against unreasonable risks would be for all PFAS used in manufacturing and processing to be subject to reporting requirements regardless of volume. Cousins et al. (2020) established the argument that despite the high diversity of the class, they are all alike in that they contain perfluoroalkyl moieties that are extremely resistant to environmental and metabolic degradation, and this high persistence means that their continual release will result in accumulating environmental concentrations and increasing probabilities of the occurrence of irreversible harms (i.e., even relatively small initial environmental releases of PFAS can lead to high environmental and biological concentrations over time). Moreover, PFAS drinking water regulations are in the parts per trillion range, lower than other types of contaminants, so even smaller releases could potentially lead to drinking water contamination. For their draft reporting rule under TSCA, the EPA has proposed that businesses report on their PFAS manufacturing or use activities regardless of production volumes or concentrations in products.

The social and health costs of PFAS need to be considered
We understand industry will incur costs associated with reporting PFAS NOL under TURA. These costs, however, are minimal compared to the true costs of PFAS, including those associated with the chemical class' social, health, and scientific impacts. In the absence of information on environmental releases and health impacts, local and state governments are investing significant resources in human biomonitoring and other exposure assessments, while also leading cleanup efforts. For a Massachusetts' example, the Town of Barnstable has spent $20 million over the past six years to reduce the amount of PFAS in municipal drinking water supplies. Moreover, the health care costs associated with this class of chemicals is likely enormous. Extrapolating from a European-based study on healthcare expenditures related to PFAS, U.S. health-related costs are estimated to be between $37-59 billion annually[14]. Beyond these monetary costs, there are unquantifiable costs associated with the experience of illness and/or stress associated with an individual knowing that they or their family has been contaminated. Researchers, including at our scientific institute, are currently exerting significant efforts to collect the blood from thousands of children and adults and discern the health effects of consumption of PFAS-contaminated drinking water and other PFAS exposures. This reporting rule would address costs associated with not having adequate information on the sources and quantities of PFAS manufactured in the Commonwealth and would support research,

[14] Cordner, A., Goldenman, G., Birnbaum, L. S., Brown, P., Miller, M. F., Mueller, R., ... & Trasande, L. (2021). The True Cost of PFAS and the Benefits of Acting Now. *Environmental science & technology*.

monitoring, and regulatory efforts. We need to know where PFAS are being released, at any level, in order to predict drinking water supplies likely to be impacted. This amendment would also result in businesses developing toxics use reduction plans, which could ultimately lead to the use of safer alternatives. Reporting the use of these toxic, persistent, and highly mobile chemicals is important to prevent further environmental pollution and address the toll on communities who burdened with the contamination of their water, air, and bodies.

This listing represents years of comprehensive review and expert assessment
These amendments are the result of several years of scientific deliberation by TURA's Scientific Advisory Board and TURA's Administrative Council unanimously voted in favor of the amendments after reviewing TURI's policy analysis. This TURA listing would not ban PFAS, but rather would make information about their industry use publicly available. Impacted communities and workers have the right to know about PFAS sources and uses, and this information is necessary to guide regulatory actions. Listing PFAS under TURA will also help raise awareness among manufacturers about how PFAS are currently used, and encourage actions to reduce the use of PFAS across the supply chain.

In summary, the available science supports listing PFAS under TURA. Exposure to highly persistent PFAS have been associated with a range of health hazards. Grouping PFAS NOL as a class is in line with the action taken by other regulatory agencies and recommendations by prominent experts in the field. Learning more about the use of these chemicals in Massachusetts is critical to inform community and government-level actions to protect public health.

Thank you for the opportunity to provide comments.

Sincerely,

Jennifer Liss Ohayon, PhD
Research Scientist

Laurel Schaider, PhD
Senior Research Scientist

Support for listing PFAS to state's Toxic and Hazardous Substances List

Wed 10/13/2021 6:39 AM
To:

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

This is an urgent issue and frankly, I wonder if this goes far enough.
Pfas users and manufacturers should be held financially liable for mitigation and cleanup.
Further, we should have a target date for abolishing these chemicals in Massachusetts.

Sincerely,
David Slater
6 Manomet Road
Sharon, MA 02067

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 2:19 PM
To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

MA

Sincerely,
Barbara Spark
214C Allandale Road
Chestnut Hill, MA 02467

October 14, 2021

Ms. Tiffany Skogstrom
Executive Director of the TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Ms. Skogstrom:

The undersigned support the TURA Administrative Council's recent decision to add Per-and Poly-fluoroalkyl Substance Not Otherwise Listed to the TURA list of Toxic and Hazardous Substances. We appreciate the extensive scientific review that the Toxic Use Resources Institute and Science Advisory Board undertook prior to the listing.

PFAS have been detected in air, drinking water, groundwater and surface water. They are present in human blood, breast milk and umbilical cords. They have contaminated food supplies, and the wider environment.

Placing PFAS on the TURA list is a necessary first step that will help state officials better understand how and where PFAS is being manufactured, used and released in Massachusetts.

1. We strongly support the regulation of PFAS as a class and would vigorously oppose any efforts to limit reporting to a subset of PFAS.

Throughout the country, states are regulating PFAS as a class. While there are individual variations in PFAS chemistry, all PFAS have carbon-fluorine bonds, making them among the most persistent chemicals ever created. PFAS persist for thousands of years. Those PFAS that have been well studied have been shown to be toxic at extraordinarily low levels. PFAS currently in use may degrade to form the highly toxic PFOA and PFOS. Some PFAS have not been fully characterized, which does not mean that they are safe. It only means their impacts are not known. The TURA Administrative Council decided unanimously to add PFAS NOL to the TURA list. We strongly support this designation.

2. PFAS must be added to TURA list as soon as possible after this comment period and ideally no later than March 1, 2022.

The Toxics Use Reduction Institute has spent 3.5 years analyzing PFAS and determining that chemicals in current use increase the risk of serious health harm. As documented in the University of Massachusetts Lowell PFAS Policy Analysis (https://www.turi.org/content/download/13639/207519/file/PFAS+Policy+Analysis+May+2021.pdf), PFAS are linked to several cancers, neurodevelopmental harm, immunosuppression, liver impacts, kidney impacts, and endocrine harm, among other adverse health effects. The Science Advisory Board has completed a thorough and complete analysis.

As Massachusetts facilities and consumers continue to use PFAS for industrial and consumer applications, the level of PFAS in our blood and in water, soil, sludge, and wildlife, will only increase. As a result, Massachusetts should move quickly to finalizing listing.

Massachusetts is in the process of testing drinking water for six PFAS and an increasing number of cities and towns have already been notified that they have elevated PFAS in their water. While PFAS in firefighting foam is the primary source of water contamination in some Massachusetts towns, we do not fully understand how other drinking water sources are being contaminated. TURA reporting can help answer these questions and inform municipal decision making to secure and maintain safer water.

3. PFAS should be listed as a Higher Hazardous Substance and reporting threshold lowered to 100 pounds per year.

PFAS are persistent and bio-accumulative. Those that have been well studied have shown toxicity at extraordinarily low levels, at parts per trillion. As a result, they should be on the

Higher Hazardous Substance list, and reporting threshold should be lowered to 100 pounds per year.

Any use of PFAS increases the body burden of PFAS in people, animals, and the environment. TURA listing requires reporting, consideration of alternatives and the payment of a small fee. Massachusetts public health officials have a legitimate public interest in understanding all manufacturing, use and release of PFAS. All businesses should be considering alternatives, for the good of their workers, consumers, and surrounding communities.

While we understand that all businesses seek to reduce costs, TURA fees are modest, particularly in comparison with the enormous costs of cleaning up water contaminated by PFAS. If facilities choose to use PFAS, they should absorb the cost by paying a reporting fee. These reporting fees are much lower than the costs that the public, state, and municipalities must absorb to address the health care and clean-up costs of PFAS.

4. The Administrative Council should broaden the proposed definition of PFAS to align with language adopted by other states. PFAS should be defined as "Perfluoroalkyl and polyfluoroalkyl substances are a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom."

We recommend that Massachusetts expand the proposed definition of PFAS. In this current proposed amendment, PFAS is defined too narrowly (≥C3F6 more or less). A broader definition of PFAS that includes more types of PFAS will be more protective of public health and the environment.

For context, other state, federal and international entities all have broader definitions.

EPA has a working definition that is somewhat broader (basically ≥C2F3):
"a structure that contains the unit R-CF2-CF(R')(R"), where R, R', and R" do not equal "H" and the carbon-carbon bond is saturated (note: branching, heteroatoms, and cyclic structures are included)" (*see* https://www.epa.gov/pesticides/pfas-packaging).

The Organization for Economic Cooperation and Development, in its July 19, 2021 paper, "Reconciling Terminology of the Universe of Per- and Polyfluoroalkyl Substances: Recommendations and Practical Guidance," uses the following definition:
"PFASs are defined as fluorinated substances that contain at least one fully fluorinated methyl or methylene carbon atom (without any H/Cl/Br/I atom attached to it), *i.e.* with a few noted exceptions, any chemical with at least a perfluorinated methyl group (–CF3) or a perfluorinated methylene group (–CF2–) is a PFAS."

Furthermore, all states that have defined perfluoroalkyl and polyfluoroalkyl substances in their PFAS legislation have simply used: "a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom."

Arizona, California, Colorado, Connecticut, Illinois, Kentucky, Maine, Minnesota, Nevada, New Hampshire, New York, Vermont, and Washington all include this definition in state law. Similarly, proposed Massachusetts bills are also using this definition (S.1494 / H.2348).

For the sake of regulatory uniformity, we respectfully request that TURA use the same language adopted by other states and define PFAS as "a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom."

Sincerely,

David Levine
Cofounder and President
American Sustainable Business Council

Meredith Elbaum
Executive Director
Built Environment Plus

Marc S. Rossi, PhD
Executive Director
Clean Production Action

Elizabeth Saunders
Massachusetts Director
Clean Water Action

Sylvia Broude
Executive Director
Community Action Works

Erica Kyzmir-McKeon
Senior Attorney
Conservation Law Foundation

Nancy Goodman
Executive Director
Environmental League of Massachusetts

Ben Hellerstein
State Director
Environment Massachusetts

Steve Seymour
Executive Director
GreenCape

Marcia Cooper
President
Green Newton

Lynne Nadeau
President
Healthlink

Jean A. Lemieux
President
Massachusetts Association for the Chemically Injured, Inc.

Cheryl Osimo
Executive Director
Massachusetts Breast Cancer Coalition

Jodi Sugerman-Brozan
Executive Director
Massachusetts Coalition for Occupational Safety and Health

Deirdre Cummings
Legislative Director
MASSPIRG

Jaime Honkawa and Ayesha Khan Barber
Co-Founders
Nantucket PFAS Action Group

Judy Norsigian
Board Chair
Our Bodies, Ourselves

Kyla Bennett, PhD, JD
Science Director/New England Director
Public Employees for Environmental Responsibility

Ed Stockman
Co-founder
Regeneration Massachusetts

Ann Devlin
Co-President
Saugus Action Volunteers for the Environment

Anne Gero
Legislation and Advocacy Community Advisor
Seaside Sustainability

Deborah Pasternak
Executive Director
Sierra Club, Massachusetts Chapter

Phil Brown, PhD
University Distinguished Professor of Sociology and Health Sciences
Director, Social Science Environmental Health Research Institute
Northeastern University

Brendan O'Neill
Executive Director
Vineyard Conservation Society

Support for listing PFAS to state's Toxic and Hazardous Substances List

Wed 10/13/2021 10:04 AM

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Thank you for making clean water in Massachusetts a priority.

Sincerely,
Jean Steinmetz
148 Albert St
West Springfield, MA 01089

Support for listing PFAS to state's Toxic and Hazardous Substances List

Thu 10/14/2021 7:24 AM

To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Environmental deterioration is a critical issue that needs strong and immediate action to preserve the remaining biodiversity.

Sincerely,
Rebecca Stevenson
83 Myrtle St. #2
Medford, MA 02155

Support for listing PFAS to state's Toxic and Hazardous Substances List

Wed 10/13/2021 11:41 AM
To:

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

How are local communities going to remove the PFAS from our drinking water? Companies who are using these chemicals should shoulder the costs to remove them.

Sincerely,
Charleen Strelke
7 DOUGLAS DR
NORTH EASTON, MA 02356

Comment for public hearing October 15, 2021 regarding PFAS/PFAS NOL chemicals & proposed amendments

Fri 10/15/2021 9:21 AM

To:

- Skogstrom, Tiffany (EEA)

Cc:

- William Brownsberger;
- Owens, Steven - Rep. (HOU) <steven.owens@mahouse.gov>

Synthetic_Artificial Turf Research Resources.pdf

257 KB

Tiffany Skogstrom, Executive Director of the TURA Administrative Council

Executive Office of Energy and Environmental Affairs

100 Cambridge Street, Suite 900

Boston, MA 02114

Dear Ms. Skogstrom,

I commend the work that the Tura Administrative Council is doing in expanding the substance category PFOS NOL to the TURA list of Toxic or Hazardous Substances. As I understand it, this work will summarize existing information about hazardous characteristics, examine how PFAS are used in manufacturing and in consumer products, identify ways to regulate and reduce use, toxic use payment fees, and increase company control/prevention activities regarding potential contamination. These activities will strengthen the Commonwealth's work to reduce the use of PFAS.

What I do not understand is why the Council is overlooking the proliferation of toxic and carcinogenic synthetic turf carpeting in our communities as it addresses PFAS and other chemicals. The Toxic Use Reduction Institute (TURI) at UMass Lowell has documented that organically managed natural grass fields are the safer alternative for sports surfaces. Their case studies detail playable hours, cost of maintenance, and disposal costs for communities in Massachusetts: Springfield, Marblehead, and Martha's Vineyard. Please see - https://www.turi.org/Our_Work/Community/Artificial_Turf.

The multi-million dollar synthetic turf industry touts these plastic fields filled with crumb rubber and other proprietary materials as safe alternatives to natural grass. Should we not be protecting our residents' health, particularly the health of our children, and our natural environment against the "forever" chemical pollution that gets into young bodies, the earth, our rivers, and our groundwater and remains there forever? And given the climate change alarm why are these toxic heat islands, which get hotter than asphalt, being installed along our rivers and in recreational spaces? Synthetic turf has a useful life of about 10 years. After that, it must be replaced. How is the old turf disposed of? Synthetic turf has not yet been defined as hazardous waste in Massachusetts – not because it has not been associated with a number of carcinogenic chemicals, but because the manufacturers are not required by law to disclose the chemical content of their turf product. It is not recyclable and there are no monitored waste sites. When it's time to roll up a worn-out synthetic turf field, it does not have to go the route of officially designated hazardous waste with a chain of custody and a series of signoffs until it reaches a landfill certified to accommodate it. Instead, it often lands in a rural or poorer community or it is dumped by the side of a back road. Once there, it continues to poison the groundwater supply and/or drinking water supply. It is time for state-wide regulation standards. Why is Massachusetts tolerating the installation of this pollution for-profit product across our Commonwealth?

Many promoters of synthetic turf say we have to wait for the EPA research and that these fields are safe. They are wrong. Attached is a 4-part series re: EPA corruption. Whistleblowers have spoken out about the Environmental Protection Agency's practice of routinely approving dangerous chemicals. If you are counting on the EPA Office of Chemical Safety and Pollution to protect the public - think again. This Intercept 4-part series details evidence of pressure within the agency to minimize or remove the evidence of potential adverse effects of these chemicals - PFAS, PFOA, bisphenol A or BPA - on immune, endocrine, metabolic, and neurological systems, reproductive problems, birth defects, and cancer.

#1 Whistleblowers Expose Corruption in EPA Chemical Safety Office

https://theintercept.com/2021/07/02/epa-chemical-safety-corruption-whistleblowers/

#2 Leaked Audio Shows Pressure to Overruled Scientists in "Hair-on-Fire" Cases

https://theintercept.com/2021/08/04/epa-hair-on-fire-chemicals-leaked-audio/

#3 New Evidence of Corruption at EPA Chemicals Division

https://theintercept.com/2021/09/18/epa-corruption-harmful-chemicals-testing/

#4 EPA Officials Exposed Whistleblowers Three Minutes after Receiving Confidential Complaint

https://theintercept.com/2021/09/30/epa-whistleblowers-exposed/

The State must take the lead on this issue. Cities and Towns must take action on this issue. Why? Because of the Precautionary Principle, which dictates that when an activity threatens to harm human or environmental health, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically. We have seen over the years numerous times where industry pressure clouded cause and effect on a potentially threatening product to allow it to continue to be sold. Asbestos, lead paint, tobacco, various pesticides, and Monsanto's herbicides Agent Orange and Roundup are notorious examples. Note: Monsanto was the original manufacturer of synthetic turf.

The time to act is now! I have attached information regarding Synthetic/Artificial Turf Research Resources. Please contact me for any further information.

Thank you for your consideration,

Elodia

_____

Elodia Thomas

67 Marion Road

Watertown, MA 02472

(617) 926-3952

Synthetic/Artificial Turf Research Resources: Information links regarding public health; injury risks; environmental toxicity and heat island effects; grass field construction, maintenance, and costs; evolving research and government policy; and more.

Compiled by: Elodia Thomas, elodia.h2otown@gmail.com

TURI - Toxic Use Reduction Institute, UMass Lowell

https://www.turi.org/Our_Work/Community/Artificial_Turf

TURI supplies resources and tools to help businesses, municipalities, and communities in MA find safer alternatives to toxic chemicals and to help make Massachusetts a safer and more sustainable place to live and work.

TURI has documented that organically managed natural grass fields are the safer alternative for sports surfaces. Their case studies detail playable hours, cost of maintenance, and disposal costs for communities in Massachusetts: Springfield, Marblehead, and Martha's Vineyard.

Quick Link Topic Areas at site include:

- Resources: Playing Fields and Playgrounds - TURI has developed fact sheets, case studies, reports, videos, and links to outside news, journal articles, and resources from other sources about the health and safety of playing surfaces, including athletic fields and playgrounds. https://www.turi.org/Our_Work/Community/Artificial_Turf/Resources_Playing_Fields_and_Playgrounds
- Online seminar: Selecting an Athletic Turf You Can Feel Good About on Vimeo https://vimeo.com/473234739
- **FAQ:** https://www.turi.org/Our_Work/Community/Artificial_Turf/Frequently_Asked_Questions
- Athletic playing fields and artificial turf: considerations for municipalities and institutions: https://www.turi.org/TURI_Publications/TURI_Chemical_Fact_Sheets/Artificial_turf_fact_sheet
- Organic Grass Care: https://www.turi.org/Our_Work/Community/Organic_Grass_Care
- Playground Surfacing: https://www.turi.org/Our_Work/Community/Playground_Surfacing

Safe Healthy Playing Fields Inc.

https://www.safehealthyplayingfields.org

Who Are They?

An all-volunteer group that explains - with facts - why grass and natural surfaces are the best choice - for financial, environmental and public health reasons. Their explanations address five major areas: cost, injury, heat, toxicity to environment, and toxicity to athletes, especially kids. Sign up for their Facebook page and email list. Friends Don't Let Friends Play on Toxic Turf!

Their Goals:

- Raise awareness of the problems with artificial turf:
  - Higher costs to play on fake grass
  - Children playing in the elevated heat

    - Environmental concerns for the streams into which chemicals are washed
    - Waste tire infill is effectively a children's product but NOT regulated as a children's product
    - Athletes exposed to unknown levels of toxins and carcinogens
- Get government regulation of shredded waste tire for sports fields and playgrounds
- Provide the community with news, updated information, and resources for making informed decisions
- Protect the safety and the finances of local communities

Topics Index:

- Grass Fields: Costs, Maintenance, Questions to Ask, Durability, Health Benefits of Natural Turf.
- Synthetic Turf: Costs, Maintenance, Questions to Ask Installers & Facility Managers, Injuries, Toxicity/Carcinogens, Lead, Heat Levels, Warning Signs, Unregulated, Industry Misinformation, Environmental Hazards, The Problem with Alternative Infills, Waste Tire Crumb Playground Surfaces.
- Grass vs. Synthetic: Costs, Maintenance, Toxicity to People & Environment, Injuries/Player Preference, Heat: Grass vs. Synthetic.
- Playgrounds
- Resources & News: Fact Sheets, Lawsuits, Federal News, State News, Videos, Blog
- Take Action! Make Your Voice Heard, Recent Action: Local, Recent Action: State, Recent Action: Federal.

Environment & Human Health, Inc.

https://www.ehhi.org

Who Are They?

Environment and Human Health, Inc. (EHHI) is a ten-member, science-based organization in composed of physicians, public health professionals and policy experts affiliated with Yale University in New Haven, CT. They are dedicated to protecting human health from environmental harms through research, education and the promotion of sound public policy.

EHHI's website receives over 180,000 visitors a month and reaches people and governmental agencies all over the country and the world. EHHI publishes eJournal which includes articles and studies that concern environment and human health issues.

EHHI is not a membership organization. All support comes from foundations and individuals. EHHI does not receive any funds from businesses or corporations.

Synthetic Turf Reports & News: https://www.ehhi.org/artificial-turf.php

- **Synthetic Turf: Industry's Claims Versus the Science: A Careful Analysis of Studies That Industry Uses To Justify Safety Claims, 2017** https://www.ehhi.org/NewTurf_Final.pdf
    - Overview of the Problem https://www.ehhi.org/newturf-overview.pdf
    - Summary of Findings https://www.ehhi.org/summary-turf.pdf
- Brochure - 12 Reasons Why Synthetic Fields Pose a Health Risk https://www.ehhi.org/turf_brochure.pdf
- Artificial Turf: Chemical Analysis https://www.ehhi.org/chemicals.php

- Video: Tire Particulate Synthetic Turf and Children, https://youtu.be/UEVeAmqHTSM Dr. Stuart Shalat, Environmental Epidemiologist
- Artificial Turf: Cancers Among Players, https://www.ehhi.org/turf-cancer-stats.php

SynTurf.org

www.SynTurf.org

Citizen Information & Advocacy
Guive Mirfendereski, PhD, JD - Founder and Managing Editor, Newton, MA

A US-based worldwide forum dedicated to information about the environmental and health risks associated with artificial/synthetic turf fields. By supplying a reliable body of information about environmental and health impact of artificial turf fields, this site looks to level the playing field of information about synthetic turf in favor of public interest.

This site grew out of the need for a clearinghouse of information about the environmental and health aspects of artificial turf, particularly about information not readily disclosed by promoters and sellers of artificial turf systems and their purchasers.

Other Articles, Videos, Letters:

PFAS:

- https://www.bostonglobe.com/2021/05/23/science/more-communities-are-finding-toxic-chemicals-their-drinking-water
- April 13, 2021, https://www.ewg.org/news-insights/news-release/landmark-bipartisan-pfas-action-act-introduced-congress
- https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas#what-are-pfas-and-why-are-they-a-problem?-
- https://theintercept.com/2019/10/08/pfas-chemicals-artificial-turf-soccer/
- https://static1.squarespace.com/static/589fbbcbd482e9cad937c944/t/5e7418664cfd2b239499e567/1584666729243/TURI+fact+sheet+-+PFAS+in+artificial+turf.pdf

Turf Disposal:

- Atlantic Monthly Article - December 19, 2019. https://www.theatlantic.com/science/archive/2019/12/artificial-turf-fields-are-piling-no-recycling-fix/603874/

Heat Island Effect:

- https://www.nrpa.org/parks-recreation-magazine/2019/may/synthetic-sports-fields-and-the-heat-island-effect/
- Climate Action Moreland, Australia, April 3, 2021 https://climateactionmoreland.org/2021/04/03/how-will-synthetic-turf-impact-urban-heat-island-and-microclimate-around-hosken-reserve/?fbclid=IwAR0yZr9BjH1uNZGnfUFsbBSWPclDgI5v2q8gBrL66gQEokkYGwJL67ekmOE

Climate Change:

- January 8, 2020, Climate Change and artificial turf not a good mix http://www.thesomervilletimes.com/archives/96542
- Urban Land Institute Boston/New England region: Living with Heat https://ulidigitalmarketing.blob.core.windows.net/ulidcnc/2019/11/Living-With-Heat-Report-for-web.pdf

Videos:

- Turf Doesn't Breakdown clip: https://www.youtube.com/watch?v=A8OLBfWmt7g
- Turf Recycling: A Decade-Long Deception https://www.youtube.com/watch?v=9Wndy6dLJGk

Letters to Editors:

- https://www.cambridgeday.com/2021/04/29/bbns-use-of-synthetic-turf-fields-is-a-violation-of-the-schools-vow-of-principled-engagement/
- Elodia Thomas - December 1, 2020 https://www.watertownmanews.com/2020/12/01/letter-are-more-artificial-turf-fields-a-win-for-watertown-and-the-planet/

2017 - Bruce Coltin - Artificial Turf Public Forum Speeches to Town Council published in Watertown News:

- https://www.watertownmanews.com/2017/09/14/letter-resident-concerned-about-health-risks-from-artificial-turf/
- https://www.watertownmanews.com/2017/09/28/letter-resident-worries-about-lead-contained-in-artificial-turf/
- https://www.watertownmanews.com/2017/10/13/letter-resident-worried-about-chemicals-being-used-on-artificial-turf/
- https://www.watertownmanews.com/2017/10/26/letter-fine-sand-other-materials-in-artificial-turf-worries-resident/
- https://www.watertownmanews.com/2017/11/20/letter-are-there-links-between-artificial- turf-and-cancer-in-soccer-players/

Regarding proposed amendments to 301 CMR 41: Toxic of Hazardous Substance List (TURA List)

Thu 10/14/2021 3:28 PM

To:

Skogstrom, Tiffany (EEA)

To Whom It May Concern,

Thank you for the opportunity to express my support for the proposed amendments. Communities deserve to know where PFAS are being used in Massachusetts. In the absence of a comprehensive list, communities have been forced to spend resources attempting to figure out where PFAS contamination is coming from.

Please know that as a mother and as a water protector, I appreciate the State's leadership on this issue, even if it comes too late for many already impacted by PFAS contamination. I strongly encourage the State to move forward listing PFAS under TURA and to extend the list to cover the entire class of PFAS in subsequent legislation.

Sincerely,

Rebekah Thomson
West Tisbury, MA

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 5:18 PM
To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Laurie Toner
554 Washington St Apt 2
Brighton, MA 02135

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 3:54 PM
To:

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Peter Townsend
85 Metropolitan Ave
Ashland, MA 01721

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 12:43 PM**To:**

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
David Tyler
23 Hastings St
Greenfield, MA 01301

Support for listing PFAS to state's Toxic and Hazardous Substances List

Wed 10/13/2021 4:11 PM
To:

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Donald Walker
102B Delabarre Ave
Conway, MA 01341

Acton Water District Est. 1912

Water Supply District of Acton

693 MASSACHUSETTS AVENUE
P.O. BOX 953
ACTON, MASSACHUSETTS 01720

TELEPHONE (978) 263-9107 FAX (978) 264-0148

October 15, 2021

Tiffany Skogstrom, Executive Director
TURA Administrative Council
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

VIA Email to: **tiffany.skogstrom@mass.gov**

RE: Proposed Amendments to 301 CMR 41.00: TOXIC OR HAZARDOUS SUBSTANCE LIST

Dear Ms. Skogstrom:

The Acton Water District (AWD) is a community public water system serving approximately 95% of the homes and businesses in the Town of Acton. Our elected officials and staff work hard to provide the most essential service – safe drinking water. We are writing today in support of the proposed amendments to 301 CMR 41.00 to add Per- and Poly-fluoroalkyl Substances Not Otherwise Listed (PFAS NOL) to the Commonwealth of Massachusetts' Toxic or Hazardous Substance (TURA) List.

As you are aware, Per- and Polyfluoroalkyl Substances (PFAS) are impacting water supplies in Massachusetts and across the nation, including in Acton. We believe the action that the TURA Administrative Council is taking is a good first step toward identifying and quantifying where and how much PFAS is being manufactured and used in the Commonwealth.

Massachusetts recently promulgated a new drinking water standard for PFAS of 20 parts per trillion (ppt) for the sum of six PFAS compounds. PFAS is ubiquitous and so it is not surprising that we have identified PFAS in each of the 23 groundwater wells we operate in our community. With the discovery of widespread PFAS contamination in Acton, we must investigate interim and long-term solutions to bring the drinking water below 20 ppt. PFAS is an especially challenging issue for us on a number of fronts, including but not limited to, operational issues, public communication and outreach, and cost.

The good news is that treatment of water supplies to remove PFAS is possible. The bad news is treatment is expensive and we are just removing it from the water and transferring it to a different medium for disposal (which presents its own challenges). Although in some cases, responsible parties will be identified and might be held responsible for paying for treatment, so far in Acton there simply is not an easily identifiable source. Without an obvious source or readily accessible ways to identify a source, ratepayers will have to bear the burden of the treatment cost and other PFAS associated expenses. The District believes that source control (getting these compounds out of commerce and from getting into the environment) is critical to reduce future burden of having to remove PFAS in water at the source. While we recognize these regulations will not prohibit the use of PFAS, it will provide valuable information that might lead to source control measures.

While PFAS research is ongoing, including studies into the actual health impacts from PFAS exposure, the state should invest more in understanding the fate and transport of PFAS through the

Acton Water District

Water Supply District of Acton

693 MASSACHUSETTS AVENUE
P.O. BOX 953
ACTON, MASSACHUSETTS 01720

TELEPHONE (978) 263-9107 FAX (978) 264-0148

environment, our watersheds, and aquifers. In the meantime, the reality is that water suppliers such as us, must meet the new drinking water standard therefore we support actions such as these regulations which will help Massachusetts better understand where PFAS is being used which may lead to better protection of our water supplies and the environment from future and ongoing contamination.

We appreciate the opportunity to comment on the proposed regulations. Should you have any questions on our comments, please do not hesitate to contact Matthew Mostoller, Environmental Manager.

Sincerely,

Chris Allen
District Manager

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 4:23 PM
To:

- Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Alison Webster
16 Bardwell street
Jamaica plain, MA 02130

Support for listing PFAS to state's Toxic and Hazardous Substances List

Tue 10/12/2021 1:00 PM
To:

Skogstrom, Tiffany (EEA)

Dear Ms. Skogstrom,

Dear members of the Administrative Council,

Per- and polyfluoroalkyl substances (PFAS) are persistent bioaccumulative and toxic chemicals. I am concerned about PFAS in drinking water and I support the Administrative Council's decision to list PFAS on the state's Toxic and Hazardous Substances List.

State officials and the public have a right to know where these chemicals are being made, used and released.

Thank you for voting to add PFAS to the Toxic and Hazardous Substances List.

Sincerely,
Rebecca Wish Esche
30 Lime St
Newburyport, MA 01950

Together, improving life

October 14, 2021

Ms Tiffany Skogstrom
Executive Director of the TURA Administrative Council,
Executive Office of Energy and Environmental Affairs,
100 Cambridge Street, Suite 900
Boston, MA, 02114
617-626-1086, Tiffany.skogstrom@mass.gov

RE: Proposed regulation to amend the Toxics or Hazardous Substance List (301 CMR 41.00)
https://www.mass.gov/doc/proposed-amendments-to-the-tura-toxic-or-hazardous-substance-list-august-2021-0/download

Dear Ms Skogstrom:

Thank you for the opportunity to provide comments regarding your proposed definition of "PFAS NOL" and classification of this broad "substance category" as hazardous substances.

W. L. Gore & Associates (Gore) is a global materials science company dedicated to transforming industries and improving lives. We have over six decades of expertise leveraging the unique properties of PTFE (polytetrafluoroethylene) and other fluoromaterials to invent valuable products including implantable medical devices such as vascular grafts and stents; components for aircraft, automobiles, mobile phones and computers; protective apparel for first responders; high performance outerwear; filters, seals, and vents that reduce emissions from power generation and industrial processes; and products used in the manufacture of semiconductors and pharmaceuticals. We invite you to view our website to learn more about Gore and the valuable products and product components that we supply globally to support a wide variety of industries. (www.gore.com)

Gore recognizes the important health and environmental challenges that need to be addressed for some fluorinated materials and that additional action is needed. Gore also supports the idea that a scientifically based grouping approach would be useful to more efficiently manage the risks of fluorinated substances. We believe that the physical, chemical and biological properties of a PFAS can be used to sort substances into similar groups where hazards, uses and appropriate risk mitigation measures can be considered.

The Massachusetts Toxics Use Reduction Act (TURA's) proposed definition of "PFAS NOL" includes "perfluoroalkyl moiety with three or more carbons (e.g., –CnF2n–, n ≥ 3; or CF3–CnF2n–, n≥2)," and describes the broad PFAS group that includes thousands of substances with different properties: polymers and non-polymers; solids, liquids, and gases; persistent and non-persistent substances; highly reactive and inert substances; mobile and insoluble substances; and toxic and nontoxic chemicals.

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High molecular weight fluoropolymers like PTFE, FEP, PFA and ETFE are highly stable, too large to be bioavailable, non-toxic, and are not mobile in the environment.[1] According to the OECD criteria for Polymers of Low Concern[2], many fluoropolymers like PTFE, when evaluated, meet all the OECD criteria and show that their properties present low health and environmental hazards. PTFE and other high molecular weight fluoropolymers are different from the PFAS that are found in water resources. The difference is evident from objective data on their properties, the biologically sensitive applications where they have been extensively used and studied for decades (e.g., medical devices and pharmaceutical processing), and their absence from environmental media.

We have observed that many who are working to address important health and environmental topics use the broad term PFAS, when they are most interested in a distinct sub-group of PFAS (e.g., perfluoroalkyl acids such as PFOA). Many of the issues raised focus on specific properties such as: water solubility (mobility), toxicity, the potential for a substance to bioaccumulate, and the propensity for a substance to degrade into other substances of concern. For example, data presented to the TURA administrative council in March, which proposed the PFAS category definition, was primarily focused on perfluoroalkyl acids (PFAAs).

Including PTFE and other Polymers of Low Concern in the definition of "PFAS NOL" is unlikely to contribute to the state's Pollution Prevention goal to reduce the use of toxic substances, may divert attention from PFAS which should be prioritized for additional response actions, and will potentially reduce the availability of products that contribute to human health and safety, environmental protection, and other important societal goals. We respectfully suggest narrowing the definition of PFAS to focus on a sub-class of PFAS by using terminology such as "PFAA", "non-polymeric PFAS", or even "PFAS that do not meet the OECD criteria for a polymer of low concern".

Again, we thank you for the opportunity to provide comments on your important proposed regulation.

Sincerely,

Peggy J. Horst, CHMM
Product & Chemical Stewardship Associate

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[1] Henry BJ et al., 2018. A Critical Review of the Application of Polymer of Low Concern and Regulatory Criteria to Fluoropolymers. Integrated Environmental Assessment and Management Volume 14, Number 3, pp. 316–334.)
LINK https://setac.onlinelibrary.wiley.com/doi/epdf/10.1002/ieam.4035

[2] Organization for Economic Co-operation and Development. 2009. Data analysis of the identification of correlations between polymer characteristics and potential for health or ecotoxicological concern. OECD Task Force on New Chemicals Notification and Assessment, Expert Group Meeting on Polymers; 2007 Mar; Tokyo, Japan. Paris (FR)
LINK https://www.oecd.org/env/ehs/pesticides-biocides/44046355.pdf