Response to Comments

Revisions to Prohibit PFAS in Cleaning and Personal Care Products

June 23, 2022

Overview

Per- and polyfluorinated substances (PFAS) are a group of synthetic chemicals that share a defining characteristic of carbon-fluorine bonds. This unique chemical structure makes PFAS extremely stable, resistant to degradation, and effective at repelling oil and water. As a result, PFAS have been commercially valuable additives for several product types. However, the stability of these chemicals also makes them highly resistant to breaking down in the environment. PFAS have contaminated soils and water bodies across the globe and are associated with several adverse health outcomes such as impacts on thyroid function, increased risk of certain cancers, and decreased immune responses to vaccines.

In 2020, Green Seal piloted a new health-protective requirement, a prohibition on PFAS, via the development and issuance of new criteria for hand sanitizers. In 2021, with a stronger understanding of these components in product formulas, Green Seal conducted work to propose expanding the PFAS prohibition to other Green Seal standards. Green Seal conducted a feasibility assessment including a review of North American cleaning and personal care product markets, a review of product formulations, outreach to relevant stakeholders, and a literature review of scientific research. It became clear that PFAS are non-essential chemical ingredients for functional performance in both cleaning and personal care products, and that safer alternatives are commercially available. Therefore, Green Seal proposed a prohibition on PFAS in cleaning and personal care products.

From December 8, 2021, to January 22, 2022, Green Seal held a public comment period and solicited responses from manufacturers, advocacy groups, industry associations, testing laboratories, and consumers on proposed revisions to prohibit PFAS as a chemical class in cleaning and personal care products. Below are the stakeholders who have provided feedback throughout the standard revision process, as well as the formal comments received during the public comment period. Green Seal's responses to stakeholder feedback are summarized in the sections below.

Stakeholder Participants

The following stakeholders provided recommendations, shared technical expertise, and submitted statements of approval or substantive objections. Green Seal greatly appreciates the time and expertise volunteered by these stakeholders during this initiative.

American Cleaning Institute (ACI)

Brulin

Center for Environmental Health (CEH)

Diversey

Ecolab

Household & Commercial Products Association (HCPA)

PortionPac Chemical Corporation

San Francisco Department of the Environment

Toxic-Free Future

Toxic Use Reduction Institute (TURI)

Document Guide

This document contains the comments that were submitted by stakeholders during the public comment period: December 2021 – January 2022 and contains Green Seal's responses to those comments. To review the proposals and other revision documentation, visit Green Seal's website.

Section 1. Summary of Stakeholder Input

Section 2. Comments Submitted During the Public Comment Period

Section 3. Green Seal's Response to Comments

Section 1. Summary of Stakeholder Input

Stakeholder Support

A majority of the participating stakeholders expressed strong support for the intent of Green Seal's proposed revision to the standards for cleaning and personal care products:

- Support for regulating the intentional use of PFAS in products
- Support for regulating all PFAS, as a chemical class

For regulating the intentional use of PFAS in products: All stakeholders supported regulating intentional uses of PFAS in Green Seal-certified products because of the documented environmental persistence and harm of several of these chemicals.

For regulating PFAS as a chemical class: Most stakeholders supported regulating PFAS as a chemical class as opposed to regulations only on individual chemicals or sub-classes of PFAS.

Summary of Stakeholder Concern and/or Opposition

A minority of stakeholders expressed concern on the scope and timing of the project. One stakeholder expressed concern about any potential regulations in product packaging being included in the scope of the revision. Another stakeholder encouraged Green Seal to include all product categories Green Seal certifies into the scope of this revision.

One stakeholder recommended that Green Seal include additional product testing into the framework to determine compliance to the PFAS prohibition criteria. For example, it was recommended Green Seal include total fluorine testing as a verification method, and that Green Seal conduct random product total fluorine testing on commercially available products.

A minority of stakeholders recommended adopting a narrower definition of PFAS chemicals because the current definition includes hydrofluoroolefins (HFOs) – a category of chemicals not used for the same functions as other PFAS. Additionally, one stakeholder encouraged Green Seal to regulate PFAS by functional uses in a product, as opposed to regulating PFAS as a chemical class.

Green Seal's Full Response to stakeholders can be found in Section 3, herein.

Other Input

Another stakeholder encouraged Green Seal to consider and develop guidance on safer alternatives to PFAS in cleaning products that manufacturers could use as a resource when reformulating.

Green Seal's General Response to All Stakeholder Input

We appreciate the input and recommendations provided by all participating stakeholders. The technical and market expertise and insight have been critical to carrying out evidence-based decision-making. Green Seal standards are designed to reflect today's environmental leadership on the North American market. Green Seal remains vigilant to address any new or emerging health and environmental risks determined by scientific studies and occupational health reports. And as new information arises and as products are designed to be safer, healthier, and greener, Green Seal moves to update our standards in order to continue to encourage market transformation that is increasingly protective of human health and our environment.

Section 2. Comments Received During Public Comment Period

During the December to January 2022 Comment Period, Green Seal received three written comments from the following groups.

- Ecolab
- San Francisco Department of the Environment
- Household and Commercial Products Association (HCPA)

Comment, Ecolab

Thank you for reaching out last month to provide your proposed revision to prohibit PFAS ingredients from Green Seal certified cleaning and personal care products. The Ecolab Team has reviewed the proposed changes and **agrees** with the proposed revision. Please let us know if there is any additional feedback you are looking for from our side.

Comment, San Francisco Department of the Environment

Dear Ms. Maule,

We appreciate the opportunity to comment on the Proposed Revision to Prohibit PFAS in Cleaning and Personal Care Products. As you may know, the City and County of San Francisco has been working steadily to eliminate purchases of products containing PFAS. We have long pointed to Green Seal certified products in our contract specifications, and were dismayed to recently discover that a Green Seal certified product may be the source of PFAS contamination of wastewater at a San Francisco facility. **We therefore strongly concur with a full prohibition of PFAS in cleaning and personal care products.**

Furthermore, we believe that Green Seal must go farther, faster. The PFAS-containing product noted above is a floor care product, one of the product categories Green Seal plans to address in a later phase. Given that inaction today only compounds the long future of PFAS pollution that we all collectively face, **we urge Green Seal to commit now to prohibiting PFAS in all products, with limits on personal care products and cosmetics effective immediately upon adoption, and after one year for all other product categories.** Such an action would send a clear signal to the market that PFAS does not belong in any "green" product, and must be eliminated.

In addition, we offer the below comments for all Green Seal product categories.

1. **PFAS Limit:** The proposal does not clearly specify a level to which PFAS is limited, but points to the Green Seal hand sanitizer criteria with a limit of "0.01% by weight." We suggest you clarify what this limit is for. We assume it is for total fluorine, but that is not clear. If so, it is our understanding that a lower limit -- 10ppm -- is now achievable in quality commercial laboratories. We urge you to adopt 10ppm total fluorine as the PFAS limit for all product categories, whether intentionally added or present as a contaminant.
2. **Test Method:** We urge Green Seal to specify an approved test method in its criteria. We suggest a total fluorine test using combustion ion chromatography or similar method that is available broadly in commercial laboratories. Total fluorine testing is a reasonable proxy for the presence of PFAS and is relatively inexpensive. Should a product test above 10ppm for total fluorine, it could be followed by total organic fluorine testing to discern whether the fluorine present is organic or inorganic. At that point, any product with test results above 10ppm organic fluorine would not be eligible for certification.

3. **Compliance Verification:** The strongest certification programs verify product claims; to that end, we urge Green Seal to include in the criteria the methods by which verification will be conducted. We suggest that a manufacturer must either submit products for testing or provide accredited laboratory results verifying claims. Furthermore, given the potential for accidental PFAS introduction into supply chains, we urge Green Seal to conduct random product testing and include language in the standard regarding this and the consequences (i.e. loss of certification) should product testing reveal the presence of prohibited substances. Lastly, we recommend that the revision include language that verification must be repeated upon each recertification.

Thank you for your consideration of these comments. We welcome the opportunity to discuss them and any questions or concerns you may have.

Sincerely yours,

Jen Jackson
Toxics Reduction & Healthy Ecosystems Program Manager

Comment, Household and Commercial Product Association (HCPA)

Dear Ms. Maule,

The Household & Commercial Products Association[1] (HCPA) appreciates the opportunity to provide comments on the *Proposal for New Chemical Class Prohibition: Per-and Polyfluoroalkyl Substances (PFAS) Prohibited in Cleaning and Personal Care Products*[2] and urges careful consideration of our comments and concerns.

HCPA represents a wide range of trusted and familiar household and commercial products that hold their products to the highest safety standards while making every effort to protect human health and the environment. Formulators and manufacturers are continuously improving their products to account for new science and technology, ever-changing regulations, consumer demand, sustainability goals, and a host of other factors that change what's possible as the marketplace evolves. Many formulators have never needed or have long since reformulated out of the PFAS class of ingredients due to the well-known health and environmental effects, i.e., the cleaning and personal care products in this proposal. To illustrate the point, a survey of the ingredients in the HCPA Consumer Product Ingredients Dictionary identified less the 1% of all ingredients could meet the proposed definition of PFAS.[3] But in the limited situations in which PFAS remain in formulated products, it is because that ingredient imparts an essential function and suitable replacements do not currently exist.

HCPA commends Green Seal for their ambitious efforts to eliminate per- and polyfluoroalkyl substances (PFAS) in Green Seal-certified products. Many of our members utilize Green Seal certification for their products to distinguish themselves in the marketplace and it is a well-recognized certification standard utilized by many environmentally preferable product (EPP) purchasers. We do, however, have a few significant concerns that will inhibit the application of this proposal to other product categories and future Green Seal standards.

Overly Broad Definition of PFAS

HCPA cautions that the definition of Per- and Polyfluorinated Alkyl Substances (PFAS) being *A class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom. This includes but is not limited to PFAS identified via the US EPA's CompTox database PFAS Master List*[4] is extremely broad and captures many substances not generally considered PFAS. For example, this definition would capture hydrofluoroolefins (HFOs) which are gases or volatile liquids, and when released ultimately break down into naturally occurring substances in the matter of days that do not bioaccumulate in the environment and are not mobile in soil and water. HFOs are already highly regulated

and have undergone extensive testing and review to demonstrate their safety in intended uses throughout their life cycle with significant environmental improvements over prior generation chemistries.[5] Similarly, fluoropolymers differ from significantly PFOA and PFOS in their molecular weight, toxicity and their insolubility in water. Several fluoropolymers are used in medical applications due to their stability and chemical inertness. Additionally, HCPA urges consideration of the recent OECD statement[6] that notes

> The term "PFASs" does not inform whether a compound is harmful or not, but only communicates that the compounds under this term share the same trait for having a fully fluorinated methyl or methylene carbon moiety. In addition, particularly for PFASs without an assigned CAS No., a lot of parallel and often non-intuitive acronyms are employed, potentially prohibiting effective communication and creating barriers for synthesizing knowledge. This section aims to provide practical guidance on how to identify and use suitable terms to foster communication around PFASs with the aim of being accurate, precise, understandable by others, and consistent.

As noted, the proposed broad definition would identify thousands of compounds as PFAS, but in reality, a much smaller subset is commercially relevant, and an even smaller subset have been identified as being PBT (persistent, bioaccumulative, and toxic) or likely to pose concerns to human health or the environment. Furthermore, it is important to note that the term PFAS does not indicate whether a specific substance is harmful, only that it meets the definition. HCPA is concerned that the use of the overly broad definition of PFAS could lead to several unintended and unnecessary consequences. These include restricting the availability of vital products such as medical devices, and the restriction of other critical to society substances that do not pose a risk to public health. There is also a concern that replacement ingredients would perform less effectively or be unable to provide a similar level of functionality. Or stated another way, formulators would move to other chemistries and ingredients – if they can provide the necessary function with the same or better efficacy – but that is not currently the situation.

HCPA recommends that Green Seal adopt a more narrowly focused definition rather than taking the much broader precautionary approach. There are a couple of recent options within the United States for Green Seal to consider, which includes the recently adopted definition in Delaware:

> "PFAS means non-polymeric perfluoroalkyl and polyfluoroalkyl substances that are a group of man-made chemicals that contain at least 2 fully fluorinated carbon atoms, excluding gases and volatile liquids. "PFAS" includes PFOA and PFOS"[7]

Another potential option would be the current US EPA working definition of PFAS, although HCPA cautions the use of this definition as it is from a proposed rule that may change:

> "For the purposes of this proposed action, the structural definition of PFAS includes per- and polyfluorinated substances that structurally contain the unit R-(CF2)- C(F)(R′)R″. Both the CF2 and CF moieties are saturated carbons and none of the R groups (R, R′ or R″) can be hydrogen."[8]

Both definitions still capture the compounds that are of concern within the overly broad definition, but compounds such as the HFOs - which are not generally been considered PFAS material - are excluded.

Treating PFAS as a Single All-Encompassing Class

While we understand the merits of a single all-encompassing PFAS class prohibition, we are concerned that given the rapidly evolving understanding of this area that this may not be the best approach. This approach would *identify* potential PFAS, but it would not differentiate between substances with clear human health and the environment concerns from substances with no concerns. We think a better approach would be use the identified potential PFAS combined with Green Seal's existing and comprehensive information on their certified products. Using the function(s) of ingredients within these formulations in combination with product categories would readily identify the potential challenge areas. We'd also posit that this is effectively what was done in Phase I by identifying the categories in which little to no PFAS are being utilized. We think that this science-based approach would lead a much more robust effort

that is protective of human health and the environment while staying true to the goals of Green Seal. HCPA would also be more than happy to collaborate with Green Seal to share expertise and information to help inform and assist in these efforts.

We thank you for your time and attention and we look forward to continuing work with Green Seal on their efforts.

Sincerely,

Steven Bennett, Ph.D.
Executive Vice President, Scientific & Regulatory Affairs

[1] The Household & Commercial Products Association (HCPA) is the premier trade association representing companies that manufacture and sell $180 billion annually of trusted and familiar products used for cleaning, protecting, maintaining, and disinfecting homes and commercial environments. HCPA member companies employ 200,000 people in the U.S. whose work helps consumers and workers to create cleaner, healthier and more productive lives.
[2] https://greenseal.org//storage/standards/December%202021/PFAS_Revision_Summary_12.8.2021.pdf
[3] Search performed 1/21/2022 yielded 12 of 1683 (0.7%) ingredients containing "fluoro" www.productingredients.com
[4] https://comptox.epa.gov/dashboard/chemical-lists/PFASMASTER
[5] HFOs have very low global warming potential (GWP) and are not ozone depleting substances (ODS). HFOs have been developed to replace hydrofluorocarbons (HFCs) (low to high GWP, no ODS) which replaced hydrochlorofluorocarbons (HCFCs) (high GWP, low ODS), which replaced chlorofluorocarbons (CFCs) (high GWP, high ODS).
[6] Reconciling Terminology of the Universe of Per- and Polyfluoroalkyl Substances: Recommendations and Practical Guidance, Section 3.2. Practical guidance on how to identify and use suitable PFAS terms, https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/CBC/MONO(2021)25&docLanguage=en
[7] https://legis.delaware.gov/json/BillDetail/GenerateHtmlDocument?legislationId=48449&legislationTypeId=1&docTypeId=2&legislationName=HB8
[8] https://www.federalregister.gov/documents/2021/06/28/2021-13180/tsca-section-8a7-reporting-andrecordkeeping-requirements-for-perfluoroalkyl-and-polyfluoroalkyl

Section 4. Green Seal's Responses to Written Comments

Topic Categories

- General Feedback
- Project Scoping
- Definition of PFAS
- Prohibition PFAS as a Chemical Class
- Testing and Verification Methods

General Feedback

Ecolab agrees with Green Seal's proposed revision to prohibit PFAS as a chemical class in our cleaning and personal care product standards.

Green Seal Response: We appreciate this feedback on the proposed revisions.

Project Scoping

The San Francisco Department of the Environment recommends that Green Seal increase the scope of this revision to be applicable to cleaning and personal care products immediately, and all other Green Seal-certified products within one year.

Green Seal Response: We appreciate this recommendation and agree that PFAS are a problematic class of chemicals that warrants comprehensive and timely action. When enacted, this revision will apply to all cleaning and personal care products immediately, i.e., any product applying for certification after this revision is enacted will be required to comply with the criteria. Additionally, all currently certified products will undergo a review for re-certification to this new PFAS criterion and have one year to comply. For clarity, individuals can visit the Green Seal website to see which products have undergone re-certification to this new criterion by noting the standard edition number on the product listing.

Green Seal is unable to move at the pace recommended ("immediately"). Green Seal's standard development process requires important check-points such as a feasibility review, stakeholder outreach, and at least a 30-day public comment period. Green Seal has not yet implemented these important steps for product categories other than cleaning products and personal care products.

We are committed to exploring leadership criteria for PFAS in all other product categories and we welcome any resources or knowledge that will help to accelerate Green Seal's work in this area.

Outcome: No actions were taken on the scoping of the currently proposed revision.

Definition of PFAS

HCPA recommends Green Seal HCPA recommends Green Seal adopts a more narrowly focused definition of PFAS rather than the broader precautionary approach currently proposed because the proposed definition includes chemical groups such as hydrofluoroolefins (HFOs) and fluoropolymers that have different chemical behaviors and hazard profiles than traditional PFAS.

Green Seal Response: We appreciate this recommendation. We agree that there is inconsistency in the definition of PFAS among different groups. However, the proposed definition aligns with PFAS regulations adopted in several state regulatory agencies and Type I ecolabel standards that certify products with known uses of PFAS. For example, "a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom" is the definition used in 2021 legislation from the states of Maine, California, and Washington. Green Seal has also aligned with Cradle to Cradle (Ed. 4.0) and the GreenScreen Standard for Food Service Ware. Other academic publications[1] and regulatory agencies, such as the Swedish Chemicals Agency, and the Organisation for Economic Co-operation and Development (OECD) also use a very similar definition of PFAS.

Regarding Hydrofluoroolefins

HFO gases have been cited as alternatives to traditional hydrofluorocarbons because of their lower global warming potential for use in several applications, such as aerosols.[2] However, it is Green Seal's understanding that HFO gases are most commonly used in the automotive industry as refrigerants. Green Seal acknowledges that a cleaning product that utilizes aerosol packaging could use an HFO as the propellant in that packaging. There are also restrictions on aerosol packaging and allowed propellants in several of our cleaning product standards. Green Seal has very rarely received applications for cleaning products in aerosol packaging, and at the time of publication, no currently certified cleaning products are sold in aerosol packaging. Green Seal will take this information under advisement, and in the case that Green Seal receives more information on the use of HFOs in cleaning products from product applications, Green Seal will consider an ingredient exemption for this group of chemicals.

Regarding Fluoropolymers

We agree that fluoropolymers have documented uses in personal care products. "According to 2017 VCRP data, PTFE is reported to be used in 377 cosmetic products." [3] While fluoropolymers may have different properties than the two most prevalent legacy PFAS, PFOA and PFOS, as noted in HCPA's comment, Green Seal sees sufficient evidence to include fluoropolymers as a prohibited sub-class for cleaning and personal care products. There is not a record of safety on the use of fluoropolymers.[4] PFAS, including fluoropolymers such as polytetrafluoroethylene (PTFE), have been deemed to be non-essential in personal care products, i.e., PFAS perform "uses that are not essential for health and safety, and the functioning of society. The use of substances is driven primarily by market opportunity." Market alternatives are readily available to PFAS in personal care products, evidenced by several manufacturers' ability to phase out PFAS in recent years. [5] Similarly to above, if uses of fluoropolymers are deemed to be essential in other product categories, Green Seal will consider an exemption under our exemptions policy.

Outcome: No actions were taken on the definition of PFAS.

Regulating PFAS as a Chemical Class

HCPA recommends Green Seal restrict use of PFAS in products by regulating their use by functional ingredient, as opposed to regulations as a chemical class.

Green Seal Response: We appreciate this recommendation; however, Green Seal sees sufficient evidence to regulate PFAS as a chemical class in cleaning and personal care products. Recent academic publications cite the

[1] Scientific Basis for Managing PFAS as a Chemical Class. https://pubs.acs.org/doi/full/10.1021/acs.estlett.0c00255
[2] Transitioning to Low-GWP Alternatives in Aerosols. https://www.epa.gov/sites/default/files/2016-12/documents/transitioning_to_low-gwp_alternatives_in_aerosols.pdf
[3] Safety Assessment of Fluoropolymers as Used in Cosmetics. https://www.cir-safety.org/sites/default/files/fluoro032017slr.pdf
[4] Are Fluoropolymers Really of Low Concern for Human and Environmental Health and Separate from Other PFAS? https://pubs.acs.org/doi/abs/10.1021/acs.est.0c03244
[5] The concept of essential use for determining when uses of PFASs can be phased out. https://doi.org/10.1039/C9EM00163H

need to regulate and manage PFAS as a class of chemicals.[6,7,1] mainly due to the fact that multiple carbon-fluorine bonds result in chemicals in the class being persistent in the environment. Several PFAS have been identified as hazardous, and of particular concern are the substitutions used to replace legacy PFAS that have also been found to be harmful.[8,9] As part of Green Seal's standard development process for technical excellence, we are guided by the precautionary principle, summarized as "when there are threats of serious or irreversible damage, lack of full scientific certainty shall be not used as a reason for postponing cost-effective measures to prevent environmental degradation" (Principle 15 of the Rio Declaration, 1992). Additionally, PFAS have been deemed non-essential in cleaning and personal care products.[5] As a result, Green Seal sees an opportunity to reward manufacturers who have opted for greener chemistry solutions for their products in these categories as safer alternatives are widely available on the market.

As Green Seal explores setting leadership criteria for PFAS in other standards and product categories, whether or not the use of PFAS is considered essential will be considered. While the definition of PFAS may be consistent across standards, the criteria of how they are regulated in each can differ based on what is feasible and leadership on the market of each standard. Green Seal's intent with this revision is to prohibit all non-essential uses of PFAS and to encourage greener supply chains when safer alternatives are available.

Outcome: No actions were taken on how PFAS are regulated as a chemical class.

Testing and Verification Methods for PFAS Compounds

The San Francisco Department of the Environment recommends Green Seal include in the criteria the methods by which compliance will be verified, and suggest manufacturers must submit products to Green Seal for testing or provide accredited laboratory results verifying claims.

Green Seal Response: We appreciate this request for clarification and agree methods for verification should be clearly identified for stakeholders. The method by which Green Seal will verify the proposed prohibition on PFAS is the same process used to verify certified product formulas meets requirements for carcinogens, mutagens, heavy metals, reproductive toxins, etc. Green Seal conducts a review of a product's formula that includes a 100% disclosure of all raw materials, including by-products and impurities. Green Seal works directly with raw material suppliers to ensure confidential disclosure of all raw material components. We also review manufacturing practices through an audit that includes submission of product batch tickets.

Outcome: No actions were taken to include additional requirements on product testing to verify compliance to PFAS criteria.

The San Francisco Department of the Environment recommends Green Seal adopt total fluorine testing using combustion ion chromatography or a similar method available in commercial laboratories to verify compliance with PFAS criteria. They also recommend an adoption limit of 10ppm total fluorine whether intentionally added or present as a contaminant.

Green Seal Response: We appreciate this recommendation and agree that total fluorine testing has been established as an effective method to measure intentional additions of PFAS, and PFAS contamination in some

[6] Regulating PFAS as a Chemical Class under the California Safer Consumer Products Program. https://ehp.niehs.nih.gov/doi/pdf/10.1289/EHP7431
[7] The high persistence of PFAS is sufficient for their management as a chemical class. https://pubs.rsc.org/en/content/articlehtml/2020/em/d0em00355g
[8] Hazards of PFAS. https://www.cleanproduction.org/images/ee_images/uploads/resources/PFAS_Hazards_FactSheet_Aug2018.pdf
[9] Fact Sheet: Human Health Toxicity Assessment for GenX Chemicals. https://www.epa.gov/system/files/documents/2021-10/genx-final-tox-assessment-general_factsheet-2021.pdf

product categories. For example, our understanding is that total fluorine testing is useful, and necessary, in product categories such as fiber-based food packaging where PFAS contamination in supply chains is a documented issue, and a formula review of the product is not easily done. Green Seal has not seen evidence that total fluorine testing would be an effective method to regulate intentional or unintentional additions of PFAS into cleaning and personal care products. As mentioned above, Green Seal's 100% formula review would include a review of any intentional additions, or chemical contamination sources of PFAS in product formulas. For possible contamination, we have not seen evidence that PFAS contamination occurs in the manufacturing of cleaning and personal care products; PFAS are not known by-products of cleaning and personal care product manufacturing processes, and are not added to raw materials in these products for non-advertised uses. We do acknowledge that municipal water supplies could be one way that PFAS contamination enters a cleaning product. However, most levels of PFAS in the U.S. range in the parts per trillion.[10] As a result, a test limit of 10ppm total fluorine would not be a meaningful test showing a reduction or limit in PFAS contamination.

Outcome: No actions were taken to include total fluorine testing as a required test method to verify compliance to the PFAS prohibition criteria.

The San Francisco Department of the Environment recommends the standard include language that Green Seal will conduct random product testing to verify PFAS compliance, and what consequences exist if products are not in compliance. Also, they suggest the standard include language that verification must be repeated upon each recertification.

Green Seal Response: We appreciate this recommendation and agree that random product testing would be a beneficial addition to Green Seal's processes to ensure compliance with Green Seal's hazard criteria. Currently, Green Seal does not conduct random product testing. As a small nonprofit, this level of review is unfortunately cost prohibitive. As part of our current review process, Green Seal reviews 100% of a product's formula in addition to requiring manufacturers to submit testing to verify several aspects of their product depending on the standard such as performance testing, chamber emission testing for VOCs, biodegradability testing, etc.

Green Seal products undergo compliance monitoring: a process in which they are periodically re-reviewed to the same rigor as the original certification, i.e. 100% of the formula is reviewed, the client is audited and must re-submit compliance documentation such as batch tickets, labels, and product testing when applicable. This language of compliance monitoring, and the associated re-verification the product adheres to all current criteria is not included in the standard. Standard development best practices state that the only language in the standard should be a requirement for certification. For example, guidance and requirements for on-going compliance should be included elsewhere. This information is currently included on Green Seal's website here. However, we acknowledge that this information is not referenced in the context of standard revisions so that stakeholders understand how standard revisions will be implemented throughout a product's certification. We will work to acknowledge how compliance monitoring will factor into standard revisions, and reference that information for transparency and clarity.

Outcome: No actions were taken on random product testing of products for PFAS. Green Seal will take action to reference how compliance monitoring factors into standard revisions in the future.

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[10] PFAS Contamination of Drinking Water Far More Prevalent Than Previously Reported. https://www.ewg.org/research/national-pfas-testing/

Final Note Acknowledging Participating Stakeholders

Green Seal appreciates our stakeholders' time, expertise, and commitment to constructive collaboration as we pursue common goals: to encourage the production and use of safer, greener cleaning products in household and professional settings. We pledge to remain vigilant regarding newly defined hazards or stronger evidence of health risks noted for any product eligible for Green Seal certification and to continuously raise the bar to reflect today's sustainable product leaders on the North American market.