CALL FOR COMMENTS

Proposal for Revisions to Criteria for Microbial-Based Cleaning Products

March 10, 2021. Green Seal® is inviting feedback on proposed revisions to the standard criteria for microbial-based cleaning products (MBCPs) to allow spray packaging and reduce labeling requirements. We are seeking comments from all stakeholders including industry experts, public health researchers, product designers, raw material suppliers, product testing laboratories, purchasers, end users, and the public. Instructions for submitting comments are on Page 3 of this document.

Summary of Proposed Revisions:

> **Allow Products Sold in Spray Packaging:** Products that are intentionally formulated with non-pathogenic microorganisms can be certified if designed for use and/or sold in spray packaging.
>
> **Reduce Labeling Requirements:** Products that are intentionally formulated with non-pathogenic microorganisms will no longer be required to list eight precautionary statements on product labels. Green Seal proposes to maintain the requirements for disclosure of microorganisms on product labels and Safety Data Sheets, and to allow a flexible approach to providing buyers and product users information regarding the detriment of antimicrobial agents on product functional performance.

Green Seal Standards with Criteria Proposed for Revision

- GS-8 Standard, General Purpose Cleaning Products for Household Use
- GS-37 Standard, General Purpose Cleaning Products for Industrial and Institutional Use
- GS-48 Standard, Laundry Care Products for Household Use
- GS-51 Standard, Laundry Care Products for Industrial and Institutional Use
- GS-52 Standard, Specialty Cleaning Products for Household Use
- GS-53 Standard, Specialty Cleaning Products for Industrial and Institutional Use

Green Seal® is the leading U.S. ecolabel, symbolizing transparency, integrity, and proven environmental leadership. We develop life-cycle-based standards and certify products and services that can prove they meet our strict criteria for human health, reduced environmental impacts, and effective performance. Operating as a nonprofit since its founding in 1989, Green Seal has certified thousands of products and services in over 450 categories, and is specified by countless schools, government agencies, businesses, and institutions.

Document Guide

Section I. Instructions for Submitting Comments

Green Seal develops standards though an open, transparent process that prioritizes stakeholder input. Public comment periods are a mechanism for soliciting input and promoting Green Seal's intended outcomes for product certification against the new or revised criteria.

Guidelines for Submitting Comment

- Comments should be specific in nature.
- Comments should include a technical or market-focused justification.
- Comments should include references from reputable sources.
- Comments should include actionable solutions.

Public Comment Closing Date

This comment period is open for 30 calendar days. The comment period closes on April 9, 2021.

Submit Comments via Email

Submit all comments to standards@greenseal.org using the subject line: "MBCP Criteria Revision."

Requests for Comment Period Extension

Any request for comment period extensions should be submitted via email to standards@greenseal.org. If granted, extensions will be publicly announced on Green Seal's website.

Comment Review Process

Upon receiving comments, Green Seal will confirm receipt and may reach out to schedule a brief conference call to request clarifications.

Within 90 days of the close of the comment period, Green Seal publishes a Response to Comments document which includes the text of all written comments submitted during the Public Comment Period and summarizes actions taken and justifications for inaction regarding the changes to the standard.

For Questions About this Process

For other inquiries, contact Director of Science and Standards, Brie Welzer, at bwelzer@greenseal.org.

Section II. Proposal Overview

In 2011, Green Seal issued criteria for products formulated with microbes, along with requirements for products that are formulated with enzymes. Green Seal is now proposing to adjust the criteria related to microbial-based cleaning products (MBCPs) to remove unnecessary barriers to certification and burdensome requirements that are not critical for the verification of health protections. These adjustments will allow Green Seal to reward health and environmental leadership, e.g., products in the top 20% of the market in regard to health and environmental protections. Certifying MBCP that can meet Green Seal standards will provide greater assurance and easier access to important information regarding ingredient transparency and effective product use. See the Intended Outcome section below for more details.

In 2020, Green Seal completed an assessment of the criteria set for MBCPs that involved a market review and outreach with stakeholders. The results of the assessment highlighted two criteria necessary for revision:

1.) A prohibition on spray packaging

2.) Excessive labeling requirements

Proposed Deletion of Prohibition on Spray Packaging: MBCPs exist on the market as stain removers, odor eliminators, laundry pre-treaters, and general-purpose cleaners. These products, and the majority of general-purpose cleaners on the North American market, are packaged and applied via spray bottles (squeeze pump handle, adjustable nozzle) for the convenience of the user. The spray mechanism allows for a limited amount of product to disperse onto a surface. Green Seal has determined that these products are no more hazardous to respiratory health than cleaning products formulated without microorganisms. Therefore, allowing this packaging type is acceptable for these products due to their safety profiles.

Proposed Simplification of Labeling Requirements: Current labeling criteria lists eight statements that must be printed on the labels of MBCPs. Green Seal has determined that these labeling requirements are excessive and too rigidly defined, making them impractical for product labels. Additionally, Green Seal proposes that these statements are unnecessary due to the safety profiles of these products. Green Seal proposes to delete many of the label statements and maintain but adjust two requirements. Green Seal proposes to maintain ingredient disclosure of microorganisms on product labels and Safety Data Sheets and to require manufacturers to post instructions for users to avoid applying these products in presence of antimicrobial agents, which would lower their efficacy as cleaners.

Intended Outcomes

Recognizing Leadership on Today's Market

Market research conducted by Green Seal demonstrated the major product types in this product category - odor eliminators, drain de-cloggers, laundry pre-treaters, and pet odor and cleaning products - are spray-applied. It was evident from a limited review of the North American market that approximately 95% of these products are intended for use and/or sold in spray packaging, except for drain cleaners which are more commonly poured. Therefore, the current requirements for these products set an aspirational bar, i.e., this requirement does not reflect leadership practices on the North American market. By removing this barrier for microbial-based cleaning products, Green Seal will more accurately reflect today's leadership on this market in regard to health and environmental protections.

Maintaining Strong Health Protections

Green Seal has set a highly health protective requirement for these products that goes significantly beyond US and Canadian regulation. In this case, Green Seal determined that the proposed revisions did not compromise the health protective framework of the standard. Studies show low health risks associated with MBCPs compared to solvent-based alternatives. This distinction and specific green chemical accomplishments of MBCPs were noted by Green Seal in 2011 when the criteria for MBCPs was first issued. Green Seal's rigorous disclosure requirements and parameters for microbes set a strong health-protective framework for verifying low risk to human health. Specifically, Green Seal requires that manufacturers disclose to Green Seal the microbe species, verification that microbial strains are categorized within the World Health Organization's Risk Group 1: "a microorganism that is unlikely to cause human and animal disease,"[1] and these products are required to adhere to Green Seal's overall health-protective requirements (for example, prohibitions on carcinogens, mutagens, reproductive toxins, verification that products will not cause skin or eye damage, and will not harm aquatic life).

Providing Significant Environmental Benefits

Allowing spray packaging for this product category provides greater recognition of green chemistry applications. These products are often less harmful to ecosystems in their production and disposal compared to conventional cleaning products. There is evidence that, compared to products formulated with petroleum-based surfactants and solvents, MBCPs are less toxic to aquatic life[2] and biodegrade more readily than conventional options. It is also expected that these products have low, or no volatile organic compounds (VOCs) and are generally more neutral (safer for skin and eyes) than conventional and greener products with synthetic ingredients.

Following Standard Development Best Practices

Green Seal systematically reviews standards in accordance with international best practices to ensure standards remain relevant, feasible for all types of enterprises, and reflect good sustainability practices. Standard revisions carried out within a transparent, stakeholder-engaged process.

[1] WHO Laboratory biosafety manual. https://www.who.int/csr/resources/publications/biosafety/Biosafety7.pdf
[2] Surfactants in aquatic and terrestrial environment: occurrence, behavior, and treatment processes. https://link.springer.com/article/10.1007/s11356-015-5803-x

Section III. Red-Lined Tracked Changes

Green Seal proposes revisions to the following standards:

- GS-8 Standard, General Purpose Cleaning Products for Household Use
- GS-37 Standard, General Purpose Cleaning Products for Industrial and Institutional Use
- GS-48 Standard, Laundry Care Products for Household Use
- GS-51 Standard, Laundry Care Products for Industrial and Institutional Use
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Text in the boxes below show the details of the proposed revisions.
The red text shows proposed additions. The text ~~with strikethrough lines~~ are proposed deletions.

Spray Packaging, Revision to the Standard Scope

Applicable Standards: All listed above.

This standard does not include products that contain *enzymes* ~~or *microorganisms*~~ that are sold in *spray packaging*.

Labeling Requirements, Household Products, Microorganisms Annex

Applicable Standards: GS-8, GS-48, GS-52

G. Labeling Requirements. Products containing *microorganisms* shall ~~include the following on the label:~~ list "microorganisms," or an equivalent term approved by Green Seal, on the ingredient line and the Product Safety Data Sheet. Products shall also include language on the label, website, or other marketing materials that inform users the product may not be effective in the presence of antimicrobial agents such as chlorine bleach.

- ~~A declaration that the product contains *microorganisms*~~
- ~~A statement that immune-compromised individuals should avoid exposure to products containing *microorganisms* from both direct use and incidental contact during or shortly after application to these products, especially when the treated areas are still wet~~
- ~~Contact with open cuts or sores should be avoided~~
- ~~Users should wash their hands after using the product~~
- ~~Instructions that *microorganisms* may not be effective in the presence of *antimicrobial agents* such as chlorine bleach~~
- ~~Instructions that the product shall not be used on food-contact surfaces~~
- ~~Instructions that products containing *microorganisms* should not be sprayed directly into the air.~~

~~**The following statement can appear on the product label**~~

- ~~A statement that immune-compromised individuals should avoid exposure to products containing *microorganisms* from both direct use and incidental contact during or shortly after application to these products, especially when the treated areas are still wet~~

Labeling Requirements, Institutional and Industrial Products, Microorganisms Annex

Applicable Standards: GS-37, GS-51, GS-53

G. Labeling Requirements. Products containing *microorganisms* shall ~~include the following on the label:~~ list "microorganisms," or an equivalent term approved by Green Seal, on the ingredient line and the product Safety Data Sheet. Products shall also include language on the label, website, or other marketing materials that inform users the product may not be effective in the presence of antimicrobial agents such as chlorine bleach.

- ~~A declaration that the product contains *microorganisms*~~
- ~~A statement that the product should not be used in patient areas of hospitals and that immune-compromised individuals should avoid exposure to products containing microorganisms from both direct use and incidental contact during or shortly after application to these products, especially when the treated areas are still wet~~
- ~~Contact with open cuts or sores should be avoided~~
- ~~Users should wash their hands after using the product~~
- ~~Instructions that *microorganisms* may not be effective in the presence of *antimicrobial agents* such as chlorine bleach~~
- ~~Instructions that the product shall not be used on food-contact surfaces~~
- ~~Instructions that products containing *microorganisms* should not be sprayed directly into the air.~~

~~**The following statement can appear on the product label**~~

- ~~A statement that immune-compromised individuals should avoid exposure to products containing *microorganisms* from both direct use and incidental contact during or shortly after application to these products, especially when the treated areas are still wet~~

Section IV. Research Record

The following section summarizes research studies on the functions, compositions, packaging, and unique attributes of microbial-based cleaning products (MBCPs). This section includes references to the presence and demand for these products on the North American markets.

Overview of Microbial-Based Cleaning Products

The terms "microbes" and "bacteria" are commonly used to refer to pathogens – microorganisms that cause human sickness and disease. However, it is estimated that less than 1% of microorganisms on Earth cause human disease.[3] Non-pathogenic microbes, primarily bacterial species, are included as functional ingredients in household and institutional cleaning products. Upon application for cleaning, the microbes produce enzymes which degrade stains and soils. The use of microbes in cleaning products can provide a safer and environmentally preferable alternative to petroleum-based surfactants and solvents in cleaning products.

These products are widely available globally on consumer and institutional markets, including in the US and Canada. These products are marketed as odor elimination, stain removal, drain de-clogging, and pet odor and clean-up. They have also been studied for use as sanitizers and disinfectants. For example, MBCPs have and are currently being studied as safer alternatives to chlorine disinfectants in healthcare settings, particularly as a protective measure against healthcare-associated infections.[4] Specialty cleaning products with microorganisms have also been applied for decades for restoration and protection of historic artifacts. [5]

Functional Overview.
MBCPs are known to have formulas as simple as bacterial cultures and water. However, more commonly, products contain additional ingredients such as surfactants, buffers, emulsifiers, and fragrances. Microbial cultures, such as bacterial strains, are selected for their ability to breakdown target soils via enzymatic action. Enzymes, such as protease, break down the contaminants into smaller, digestible compounds which are then consumed by the microorganisms in the product and microorganisms that were residing on surfaces. Common "targets" or contaminants include:

- Biofilm
- Petroleum compounds – crude oil, gasoline, diesel fuel
- Organic matter, e.g. food, urine, dust mites,
- Chlorinated solvents
- Hydrogen sulfide
- Grease lines (commercial kitchens)
- City sewage / wastewater treatment plants

Odor Elimination. These products can be employed as a means of odor control[6] specifically through the microorganisms' ability to out-compete the microbes associated with odor problems, and the naturally

[3] Microbiology by the Numbers, *Nature*, https://www.nature.com/articles/nrmicro2644
[4] Impact of a Probiotic-Basedk Cleaning Intervention on the Microbiota Ecosystem of the Hospital Surfaces: Focus on the Resistome Remodulation. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4757022/
[5] The Potential Use of Microorganisms as Restorative Agents: An Update. https://www.mdpi.com/2071-1050/11/14/3853
[6] Environmental, Health and Legal Aspects of Cleaners Containing Living Microbes as Active Ingredients. http://www.tb-klade.at/wp-content/uploads/2015/06/IFZ-EWP-3-2010.pdf

occurring metabolic action in which "substances creating odour [sic] problems such as NH_3 can be metabolised, [sic] or the formation of H_2S may be avoided by transforming SO_4^{2-} into S_2,"[7]. Ammonia (NH_3) and hydrogen sulfide (H_2S) are gases that give off unpleasant smells, and the metabolism of these compounds by microorganisms gives way to less-offensive by-products.

Types of Microbes in Cleaning Products. More than 30 species have been identified in these products, mostly bacteria, though yeast and fungal species have also been noted. Common microbes are species within the genus *Bacillus*, as well as *Bifidobacterium*, *Lactobacillus*, *Rhodopseudomonas*, and *Saccharomyces*.[8] The most common microorganism in this category of cleaning products is *Bacillus subtilis*, which is non-pathogenic, ubiquitous in nature (dirt, water bodies, raw food),[9] and has been historically used as a probiotic supplement for digestive health and for the production of fermented food.[10]

Safety Profile of MBCPs.

Ingredients in conventional cleaning products such as solvents and surfactants can pose health risks including acting as skin irritants and allergens[11], and reproductive toxins[12]. Long-term exposure to solvents can also lead to effects on multiple organs such as damage to the respiratory, cardiovascular, and nervous systems.[13] Microorganisms are considered a healthier, green chemistry alternative to these ingredients.

Microorganisms have been used for decades in several industries such as processing food and animal feed and in many cases can be considered harmless to human health.[14] The World Health Organization classifies the risk of microorganisms into four groups – with Risk Group 1 classified as a "microorganism, or material containing microorganisms, that are already present in the environment, and are unlikely to cause human, plant, in sector animal disease, disrupt a region or an industry." Labs that use microorganisms in this Risk Group require no safety equipment or ventilation requirements.[15] Green Seal currently requires that any microorganisms in cleaning products are classified as WHO Risk Group 1 or an equivalent biosafety designation – a requirement that would also apply to any products sold as spray packaging.

While any health assessment of MBCPs would be specific to the strain of microorganism used, for microorganisms in WHO Risk Group 1, reviews have concluded no "clear immediate hazard could be identified" from exposure. Also, several of the microorganisms found in cleaning products have been considered GRAS – generally recognized as safe – by the U.S. Food and Drug Administration or given a rating of QPS – qualified presumption of safety for use in other categories. For example *Bacillus subtilis*

[7] Status of Microbial Based Cleaning Products in Statutory Regulations and Ecolabelling in Europe, the USA, and Canada. https://doi.org/10.1016/j.fct.2017.12.057
[8] Biosafety and the Environmental Uses of Micro-Organisms: Conference Proceedings. https://doi.org/10.1787/23114622
[9] Final Risk Assessment of Bacillus Subtilis, US EPA, https://www.epa.gov/sites/production/files/2015-09/documents/fra009.pdf
[10] The safety of Bacillus subtilis and Bacillus indicus as food probiotics. https://sfamjournals.onlinelibrary.wiley.com/doi/full/10.1111/j.1365-2672.2008.03773.x
[11] Contact allergens and irritants in household washing and cleaning products. https://doi.org/10.1111/j.1600-0536.2009.01647.x
[12] ECHA Classification and Labeling Inventory Database. https://echa.europa.eu/information-on-chemicals/cl-inventory-database
[13] Impact of Solvents Leading to Environmental Pollution https://www.jchps.com/specialissues/Special%20issue3/06%20jchps%20si3%20nanni%2049-52.pdf
[14] Status of Microbial Based Cleaning Products in Statutory Regulations and Ecolabelling in Europe, the USA, and Canada. https://doi.org/10.1016/j.fct.2017.12.057
[15] WHO Laboratory biosafety manual. https://www.who.int/csr/resources/publications/biosafety/Biosafety7.pdf

is commonly used as a dietary probiotic due to its ability to utilize growth nutrients, produce high levels of enzymes and grow quickly in aerobic and anaerobic conditions.[16] Strains that are used in other functions are expected to have a "sufficient track record of safe use and handling," if they are classified as a WHO Risk Group 1.[17]

Inhalation Exposure

The main pathways of exposure to microorganisms from cleaning products is inhalation after a product is sprayed onto a surface. With spray applications, a percentage of the aerosolized particles emitted out of a trigger nozzle do not reach the intended surface and therefore remain in the inhalation range (sometimes referred to as the "breathing zone") of the product user. Additionally, following a spray application, it is known that a small percentage of cleaning product particles that hit the surface and become resuspended.

Studies on probiotic cleaning products in professional settings have noted a low respiratory exposure to the microorganisms within the product and did not identify adverse health effects. For example, a study conducted on biological de-greasing stations concluded that "no respiratory protection was recommended as the study showed that workers…had very low respiratory exposure to bioaerosols." [18] Several studies have been conducted using probiotic cleaners in hospital settings, noting these products as effective in reducing pathogens and antimicrobial resistance,[19,20,21] and with results identifying no known adverse health effects to hospital patients.

While studies in household settings are less robust than in institutional and professional settings, there is evidence that in-home use of MBCPs are relatively safe for product users. A study in 2018 noted that while the trigger spray of a MBCP does generate aerosolized spores, the spores consisted of mainly non-respirable particles and the overall counts were below recommended safe exposure levels, except in the use of a carpet spot cleaner. The study concluded that carpet-based cleaning products presented a low potential for inhalation exposure and thus, minimal risk of adverse health effects for the user.[22]

Environmental Benefits

Because of the variety of the formula compositions for products in these categories, it is expected that the environmental impacts are dependent on the full composition of each product. For example, in certain cases, a cleaner formulated with microbes may be more harmful to the environmental through a choice of a certain additive (an area that would be addressed by Green Seal's other protective criteria). However, through the substitution of synthetic and petroleum-based ingredients with naturally-occurring microorganisms, these products can have several life-cycle benefits.

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[16] Novel insight on probiotic *Bacillus subtilis*: Mechanism of action and clinical applications. https://www.researchgate.net/publication/312364707_Novel_insight_on_probiotic_Bacillus_subtilis_Mechanism_of_action_and_clinical_applications

[17] Biosafety and the Environmental Uses of Micro-Organisms: Conference Proceedings. https://doi.org/10.1787/23114622

[18] Current knowledge of the health and environmental risks of microbial-based cleaning products. Scientific opinion of the Panel on Microbial Ecology of the Norwegian Scientific Committee for Food and Environment. https://vkm.no/download/18.5d0520eb16b30ebbc06dbc82/1560760721358

[19] Reducing healthcare-associated infections incidence by a probiotic-based sanitation system: A multicentre, prospective, intervention study. https://doi.org/10.1371/journal.pone.0199616

[20] Impact of a probiotic-based cleaning intervention on the microbiota ecosystem of the hospital surfaces: focus on the resistome remodulation. https://doi.org/10.1371/journal.pone.0148857

[21] Hard surface biocontrol in hospitals using microbial-based cleaning products. https://doi.org/10.1371/journal.pone.0108598

[22] Safety assessment of the use of Bacillus-based cleaning products. https://pubmed.ncbi.nlm.nih.gov/29175187/

A review of several microbial cleaners noted "most microbial cleaner products contain much lower levels of acids and surfactants… are less alkaline and indicate a potential for reducing the amount of organic solvents used." [23] Surfactants and solvents can be toxic to aquatic and terrestrial life when discharged at high levels[24,25], and solvents are considered volatile organic compounds (VOCs). VOCs have high impacts on both indoor and outdoor air quality through the creation of ground-level ozone and smog, which has numerous environmental effects: impacts on photosynthesis in vegetation[26], contributions to climate change, and contamination of groundwater[27].

The use of microorganisms is also supported in large-scale industrial applications. For example, the U.S. EPA supports using bioremediation – the use of natural biological agents such as bacteria, enzymes, or fungi, to break down organic compounds – for carbon-based contaminants (grease, oil) as an alternative to solvent cleaners.[28] The endpoints of these reactions are carbon dioxide and water – less harmful than chemicals used in conventional cleaners.

There is even evidence that use of these products may generate long-term performance as microorganisms applied via the product outcompete other pathogenic microbes over time.[29] Thus, less product may be needed with fewer applications resulting in resource savings in manufacturing, distribution, and corresponding savings in waste reduction.

The use of MBCPs is not expected to pose any environmental risks. The main pathway through which microorganisms used in cleaning products would reach the environment is by disposal through sewage systems where most would encounter a wastewater treatment plant. The conditions in such a plant would make it unlikely that microorganisms would survive, and studies have shown that decay rate of bacterial communities in these environments is high.[30] Even if microorganisms were to be introduced into an ecosystem, the risk of the microorganisms survival, persistence, and outcompeting native bacterial communities is very low.[31]

Uncertainties Regarding Health and Environmental Risks

Green Seal recognizes that these products there is limited information on these products regarding long-term health and environmental effects. These products are not regulated on the North American market. MBCPs are not identified or classified as more hazardous than other types of cleaning products. Since 2011, when Green Seal opted for a precautionary approach by de facto prohibiting certification for these

[23] Environmental, Health and Legal Aspects of Cleaners Containing Living Microbes as Active Ingredients. http://www.tb-klade.at/wp-content/uploads/2015/06/IFZ-EWP-3-2010.pdf
[24] Surfactants in aquatic and terrestrial environment: occurrence, behavior, and treatment processes. https://link.springer.com/article/10.1007/s11356-015-5803-x
[25] Impact of Solvents Leading to Environmental Pollution. https://www.jchps.com/specialissues/Special%20issue3/06%20jchps%20si3%20nanni%2049-52.pdf
[26] Impacts of ozone on trees and crops. https://globalchange.mit.edu/sites/default/files/MITJPSPGC_Reprint07-21.pdf
[27] What are volatile organic compounds (VOCs)? https://www.epa.gov/indoor-air-quality-iaq/what-are-volatile-organic-compounds-vocs
[28] Application of Microbial Cleaning Technology for Removal of Surface Contamination. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7149890/
[29] Biosafety and the Environmental Uses of Micro-Organisms: Conference Proceedings. https://doi.org/10.1787/23114622
[30] Decay of sewage-associated bacterial communities in fresh and marine environmental waters and sediment. https://doi.org/10.1007/s00253-018-9112-4
[31] Current knowledge of the health and environmental risks of microbial-based cleaning products. Scientific opinion of the Panel on Microbial Ecology of the Norwegian Scientific Committee for Food and Environment. https://vkm.no/download/18.5d0520eb16b30ebbc06dbc82/1560760721358

products when sold for designed for use in spray packaging. Since 2011, there has continued to be the production, use, and disposal of these products with no publicly recorded or reported adverse health or environmental effects in institutional, professional, or household settings. This body of evidence, at the time of publication, indicates that WHO Risk Group 1 (non-pathogenic) microorganisms pose no known health or environmental risks that would support their exclusion from spray-packaging products or warrant excessive labeling requirements. Therefore, with the intention of offering recognition to all types of cleaning products that can meet Green Seal's rigorous standards, Green Seal is proposing to remove this barrier and allow certification for these products in spray packaging.

Green Seal implements systematic maintenance of standards and supporting evidence. At least bi-annually, Green Seal monitors updates to chemical and biological hazard classifications. In the case that new evidence emerges regarding the safety of these products, Green Seal will consider revisions to existing criteria.

Labeling Requirements

As noted above, Risk Category 1 microorganisms, as functional ingredients in cleaning products, are not classified as hazardous and are not known currently to cause adverse health or environmental effects.

Product labels on the household and professional markets do not require precautionary statements on either labels or on Safety Data Sheets related to the inclusion of microorganisms in the cleaning product. For example, Safer Choice[32,33], ECOLOGO[34], and Cradle to Cradle,[35] for which these products are eligible for recognition, do not require precautionary statements on the product label.

However, transparency in this product space is lacking at a federal levels in the United States even as more legislation is passed that requires ingredient transparency on labels.[36] Green Seal recognizes this lack of transparency as problematic and has therefore proposed to maintain the requirement for ingredient disclosure of microorganisms. Green Seal is also maintaining a flexible labeling requirement in which manufacturers must provide language on labels, a product website page, or marketing materials that informs the user the product will not be effective when used with antimicrobial cleaning agents, such as bleach, which is in alignment with the approach by Ecologo (UL Standard 2798). Because antimicrobial agents will neutralize the effects of these products, this requirement decreases potential product waste.

Additionally, the Green Seal standards relevant to this proposal currently include specific labeling requirements including instructions for proper use, training (for institutional products), and responsible disposal of the product, to which MBCPs would need to conform. As a result, it is Green Seal's position that, even with the deletion of most labeling requirements defined in the Microorganisms Annexes of

[32] EPA's Safer Choice Standard. https://www.epa.gov/sites/production/files/2013-12/documents/standard-for-safer-products.pdf
[33] EPA's Safe Choice Supplemental Considerations for Partnership on Microorganism-based Products. https://www.epa.gov/sites/production/files/2013-12/documents/considerations_for_microorganisms.pdf
[34] ECOLOGO Certification Program. https://www.ul.com/resources/ecologo-certification-program
[35] Cradle to Cradle Certified™ Product Standard Version 3.1 https://s3.amazonaws.com/c2c-website/resources/certification/standard/C2CCertified_ProductStandard_V3.1_160107_final.pdf
[36] SB-258 Cleaning Product Right to Know Act of 2017. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB258

these standards, certified MBCPs would still be held to a leadership level for ingredient transparency, user instructions, and disposal instructions.