# PROPOSED REVISIONS FOR GREEN SEAL STANDARDS:

## GS-51 – INDUSTRIAL & INSTITUTIONAL LAUNDRY CARE PRODUCTS,
## GS-48 – HOUSEHOLD LAUNDRY CARE PRODUCTS

**<u>Criterion revisions</u>: Product Performance; Carcinogens and Reproductive Toxins; Antimicrobial Agents.**

**<u>Criterion clarifications</u>: Packaging Sustainability Requirements; Certification and Labeling Requirements; Annex A – Definitions.**

**<u>Criterion deletions</u>: Product Performance; Chronic Aquatic Toxicity; Energy, Air, Water, and Waste; Distribution; Secondary Packaging.**

Green Seal's mission is to advance a green economy by identifying products that provide leadership levels of performance and protection of human health and the environment. Our science-based standards must be applicable and appropriate for the products currently available on the market, and our vision can be realized only when a substantial minority of products can meet the requirements in the standards.

Green Seal issued the first editions of GS-48 and GS-51 in 2013. In 2014, Green Seal reviewed stakeholder feedback and new industry information to determine whether the criteria were relevant to the market, and if the standard accurately reflected sustainability leadership. The resulting revisions are summarized in this document.

The goals of these proposed revisions are the following:

- To resolve issues that have arisen during the certification process by making the requirements more specific or more practical
- To ensure that the criteria are based on current and accessible evaluation methods
- To ensure that the criteria reflect the current practice and environmental leadership in the industry
- To ensure consistency among Green Seal's standards for cleaning products (i.e., GS-8, GS-37, GS-48, GS-51, GS-52, and GS-53)[1]
- To identify and remove duplicative criteria
- To clarify the requirements

[1] Green Seal Standards for: Cleaning Products for Household Use (GS-8), Cleaning Products for Industrial and Institutional Use (GS-37), Laundry Care Products for Household Use (GS-48), Laundry Care Products for Industrial and Institutional Use (GS-51), Specialty Cleaning Products for Household Use (GS-52), and Specialty Cleaning Products for Industrial and Institutional Use (GS-53).

Green Seal is proposing revisions to the following criteria:

**Section 2.0: Product-Specific Performance Requirements** – Revisions to provide more relevant performance testing parameters. Proposed revisions include changes to water hardness, cold water temperatures, stain removal analysis, color care, fabric appearance, and softening performance.

**Section 3.5: Carcinogen Releasers** – Revision of the evaluation threshold to be consistent with Green Seal's other cleaning product standards and the clarification of the term "carcinogen releasers".

**Section 6.8: Fragrance and Allergen Labeling** – Clarification to provide more relevant requirements to this class of products.

**Sections 5.6 and 5.7: Packaging Sustainability Requirements** – Clarification related to bisphenol A, phthalates, chlorinated materials, and heavy metals.

**Sections 6.8 and 6.9: Labeling Requirements** – Clarification to improve the practicability of the criteria.

**Section 3.16: Chronic Aquatic Toxicity and Antimicrobial Agents** – Deletion of this criterion to reduce duplication.

**Section 3.26: Antimicrobial Agents** – Deletion of the documentation requirement.

S**ection 4.2: Energy, Air, Water, and Waste; and Distribution** – Deletion of these two criteria, which required documentation in order to inform future criteria development. However, Green Seal does not intend to develop criteria for these issues during the manufacturing or distribution phases; therefore this documentation requirement is unnecessary.

**Editorial Changes** – Other minor revisions proposed to improve the readability of the standards.

Below are summaries of these proposed revisions and redlined (edited) versions of the criteria. The red text are proposed additions and the ~~black crossed-out text~~ are a proposed deletions. To see these changes as they would appear in a future standard, view the Proposed Standard with Accepted Changes (PDF) on the Landing Page for this standard revision:

## Product-Specific Performance Requirements

Since Green Seal issued laundry care standards in 2013 we have received new information about accepted evaluation practices in the laundry care industry. We have also identified updates to national standards that are referenced in GS-48 and GS-51. In response to this new information and information gathered during the certification process, we propose several changes to the following criteria: wash cycle temperature, performance in hard water, stain removal analysis, color care evaluation, fabric appearance, and softening appearance.

## Product Performance Testing, Water Temperature and Hardness (GS-48, Section 2.1)

**Wash Cycle Temperature – Benchmark Product Evaluation:** Green Seal references national standards to ensure consistency with industry product performance evaluations. When GS-48 was first developed in 2013, ASTM D4265[2] only specified one water temperature (90 +/- 2°F (32 +/- 1°C) for the evaluation of a benchmark product. The 2014 edition of ASTM D4265 now specifies water temperatures based on the type of washing machine used (Conventional Deep-fill Top Loader, Front-loading High Efficiency (HE), and Top-loading HE).

To remain consistent with ASTM standards, we propose to mirror these requirements and test a benchmark product using the water temperature specified for each machine type.

**Wash Cycle Temperature – Test Product:** We propose to revise the definition of "cold water" for the test product evaluation. The updated version of ASTM D4265 revised the definition for cold water, reducing it to 80°F.

In response to ASTM's temperature reduction, Green Seal proposes to specify a wash cycle temperature of 68 +/- 5°F (20 +/- 3°C) for test products. According to market research, 68 +/- 5°F is representative of the current leadership of effective cold water wash laundry products.

In the past, laundry detergent products required warm water to clean effectively. The warming of washing machine water requires energy[3], and this energy expenditure amounts to the most significant environmental impact for laundry products. Today's market offers a wide range of laundry products that clean effectively in water that is colder than the 80°F specified by ASTM. Due to their ability to perform in cold water, these products require far less energy for the laundering process. To accurately reflect this leadership on today's market, Green Seal proposes 68 +/- 5°F as a wash cycle temperature for test products.

**Water Hardness – Requiring One Evaluation Instead of Two:** In the current edition of GS-48, Green Seal requires product tests for two concentrations of water hardness (soft (35 ppm) and hard (150 ppm)). We propose to require a performance test for only one value of water hardness, rather than two evaluations at different hardness values. According to stakeholder feedback, one evaluation is sufficient to ensure that a product performs as expected. For example, if a laundry detergent works in wash water with a hardness of 120 ppm, it will perform equally well in water with a lower mineral content[4].

**Water Hardness – Specific Claims:** For some regions with particularly hard or soft water, manufacturers may formulate products that claim to work specifically in hard or soft water. For products undergoing certification, Green Seal proposes to verify these claims by allowing an alternate concentration of water hardness for this evaluation. This exception will be mentioned below the Product Performance table.

**Water Hardness – A Range of Acceptable Values:** In the current editions of GS-48 and 51, we require products to be evaluated in wash water with a water hardness of exactly 150 ppm and 120 ppm. Product evaluators from testing laboratories have stated that it is difficult to achieve exact values of water hardness. We have also learned that there is no benefit to testing a detergent at exactly 120 ppm; an

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[2] ASTM D4265 Standard Guide for Evaluating Stain Removal Performance in Home Laundering
[3] ENERGY STAR Best Practices - Clothes Washer Tips, http://www.energystar.gov/index.cfm?c=clotheswash.clothes_washers_performance_tips
[4] Detergent Considerations for Consumers: Laundering in Hard Water, *Journal of Extension*, http://www.joe.org/joe/2011august/rb6.php

evaluation of the detergent at other similar hardness values (e.g. 125 ppm, 130 ppm) will demonstrate the same cleaning performance in moderately hard water. Therefore, to allow for a more practicable evaluation of detergent in water hardness, we propose to offer an acceptable range of hardness values: 120 – 150 ppm.

This proposed range also reflects the performance testing defined in ASTM D4265. Prior to the 2014 edition of this standard, ASTM required an evaluation of detergent at 150 ppm. The 2014 edition specifies 120 ppm.

**Proposed Revisions for GS-48**

**2.1 Product Performance.** Each product shall demonstrate that it performs its intended use effectively at the most dilute/least concentrated manufacturer-recommended dilution level for routine use. Concentrate products shall be diluted, as required, just prior to testing using unheated water from the tap. Performance tests shall be conducted as comparison tests against a *benchmark product* under the following test conditions:

| Product | Wash Cycle Temperature | Rinse Cycle Temperature | Water Hardness |
|---|---|---|---|
| *Benchmark Product* | ~~90 +/- 2°F (32+/- 1°C) per ASTM D4265‡, or manufacturer recommended temperature~~<br>• If using an AATCC reference detergent, set to the temperature specified by ASTM D4265 for the machine type being used[2]<br>• If using a market-leading product, set to the lowest temperature recommended by the manufacturer | ~~< 85°F (29°C) per AATCC‡~~<br>Set to the temperature specified by AATCC 124[3] | ~~Soft water (35 ppm) and hard water (150 ppm) calcium and magnesium ratio as calcium carbonate per ASTM D4265~~<br>Moderately hard water (120 – 150 ppm)**<br>The Ca/Mg ratio of the hardness minerals (expressed as $CaCO_3$) should be adjusted for different water hardness according to ASTM D4265[4] |
| Test Product | Cold water (~~80~~ 68 +/- 5°F, ~~27~~ 20 +/- 3°C)*~~*~~ or the lowest claimed effective temperature, if lower than cold water | | |

~~‡ Temperature as specified in the most recent version of the method~~

~~** An exception shall be made for *antimicrobial pesticide products, which should use*~~

* **Exception:** For *antimicrobial pesticide products,* the test shall be conducted at the temperature needed for antimicrobial activity. If antimicrobial activity does not contribute to other functions of this product, then the *cold water* temperature shall be used for testing those other purposes.

** **Exception:** Where a manufacturer can demonstrate marketing is regional in an area of lower or higher water hardness, an alternate hardness range similar to the regional average shall be recommended to the certifying body for review on a case-by-case basis.

[2] ASTM D4265 Standard Guide for Evaluating Stain Removal Performance in Home Laundering. ASTM D4265 specifies these temperatures: Section 8.5.1: Conventional Deep-fill Top Loader—86 +/- 5°F (30 +/- 3°C) wash cycle, ambient rinse. Section 8.5.2: Front-loading HE—77 +/- 5°F (25 +/- 3°C) wash cycle, ambient rinse. Section 8.5.3: Top-loading HE—75 +/- 5°F (23.8+/- 3°C) wash cycle, ambient rinse.

[3] AATCC 124 currently specifies a rinse cycle temperature of lower than 85°F (29°C).

[4] ASTM D4265, Section 8.2.1. Water Hardness Ranges Ca/Mg Ratio: 0 – 60 ppm, 4:1. 61 – 120 ppm, 3:1. 121 ppm and over, 2:1.

### Product Performance Testing, Cleaning (GS-48 and GS-51, Section 2.1.1.1)

Green Seal proposes to simplify the Cleaning requirement. According to stakeholder feedback, it is unnecessary to require both instrumental and visual analysis for stain removal evaluation. We propose to require one method of analysis.

Additionally, we propose to change the wording of the stain options. A modified Spangler artificial sebum soil is one of the options for the four required stains. It is not an additional requirement. Therefore we propose to replace the word "and" with "or" to make the requirement clearer.

### Proposed Revision to GS-48:

> **2.1.1.1 Cleaning.** *Laundry detergent products* shall demonstrate general detergency and stain removal on manufacturer recommended *laundry* (e.g., cotton, polyester, or cotton/polyester blend) using ~~ASTM International (~~ASTM~~)~~ D4265 with instrumental ~~and~~ or visual analysis ~~for determination, for a~~. A minimum of four of the following stains shall be used, and shall include those stains marketed for use by the product: tea, blueberry, grass, ballpoint pen ink, used motor oil, blood, wine, coffee, mustard, spaghetti sauce, gravy, makeup, chocolate syrup, grape juice, or ~~and~~ a modified Spangler artificial sebum soil.~~,~~ ~~including those stains marketed for use by the product~~.

### Proposed Revision to GS-51:

> **2.1.1.1 Cleaning.** *Laundry detergent products* shall demonstrate general detergency and stain removal using ~~ASTM International (~~ASTM~~)~~ D4265[4] with instrumental ~~and~~ or visual analysis for determination, for a minimum of four stains, including those stains marketed for use by the product.

### Product Performance Testing, Color Care (GS-48 and GS-51, Section 2.1.1.2)

**Machine Washing Load:** Green Seal references national standards to ensure consistency with performance evaluations common in the industry. In 2014, ASTM D4265 was re-issued with updated criteria. One update allowed evaluations using either 4 or 6 pound washing machine loads. Prior to the 2014 re-issuance of ASTM D4265, only 4 pound loads were accepted.

To remain consistent with this national standard, we propose to allow either 4 or 6 pound loads in product evaluations.

**Wash Cycles:** In the current GS-48 and GS-51 standards, Green Seal requires 15 wash cycles for the evaluation of color care. According to stakeholder feedback, an evaluation of color strength after 5 washes is sufficient. For comparison, industry groups evaluate color care after one wash cycle.

We propose to require an evaluation of color change after 5 cycles instead of 15.

**Visual Analysis:** According to stakeholder feedback, it is unnecessary to require both instrumental and visual analysis for color care evaluation. We propose to require one method of analysis.

**Proposed Revision to GS-48:**

> **2.1.1.2 Color Care.** *Laundry detergent products* shall demonstrate that they maintain color fastness of cotton and cotton/polyester blend *laundry* using the procedure in ASTM D4265 or AATCC 124 (using machine washing and a 4 or 6 pound load size) by assessing color change after ~~15~~ 5 wash cycles, with appropriate instrumental ~~and~~ or visual analysis ~~for determination~~.

**Proposed Revision to GS-51:**

> **2.1.1.2 Color Care.** *Laundry detergent products* shall demonstrate that they maintain color fastness using the procedure in ASTM D4265 or American Association of Textile Chemists and Colorists (AATCC) 124 (using machine washing), by assessing color change after ~~15~~ 5 wash cycles, with appropriate instrumental ~~and~~ or visual analysis ~~for determination~~.

**Product Performance Testing, Stain and Spot Removal Performance (GS-48 and GS-51, Section 2.1.2)**

In the current editions of GS-48 and GS-51, we require both instrumental and visual analysis to review stain removal. This criterion in the standards requires the review of multiple stain types and colors, some of which do not require instrumental analysis for evaluation. Therefore we see a benefit in keeping this performance requirement flexible.

Green Seal proposes to allow for either instrumental or visual analysis when evaluating product performance for a stain-removing product.

Additionally, we propose to change the wording of the stain options. A modified Spangler artificial sebum soil is one of the options for the four required stains. It is not an additional requirement. Therefore we propose to replace the word "and" with "or" to make the requirement clearer.

**Proposed Revision to GS-48:**

> **2.1.2 Stain and Spot Removal Performance[5].** *Stain removing products* and *bleaching products* shall demonstrate performance equivalent to or better than an appropriate *benchmark product* in their category for removing stains on manufacturer recommended *laundry* (e.g., cotton, polyester, or cotton/polyester blend) using ASTM D4265, with instrumental ~~and~~ or visual analysis ~~for determination for a~~ A minimum of four of the following stains shall be used, and shall include those stains marketed for use by the product: tea, blueberry, grass, ballpoint pen ink, used motor oil, blood, wine, coffee, mustard, spaghetti sauce, gravy, makeup, chocolate syrup, grape juice, or ~~and~~ a modified Spangler artificial sebum soil~~, including those stains marketed for use by the product~~.

[5] This method is the same as 2.1.1.1 Cleaning for *laundry detergent products*, thus it does not need to be repeated for *laundry detergent products* that are also intended for stain and spot removal.

**Proposed Revision to GS-51:**

**2.1.2 Stain and Spot Removal Performance[6].** Products sold solely as s*tain removing products* and *bleaching products* shall demonstrate performance equivalent to or better than an appropriate *benchmark product* in their category for cleaning and removing stains on manufacturer-recommended *laundry* (e.g., cotton, polyester, or cotton/polyester blend) using ASTM D4265, with instrumental ~~and~~ or visual analysis~~ for determination, for a~~ A minimum of four stains ~~including~~ shall be used, and shall include those stains marketed for use by the product.

[6] This method is the same as 2.1.1.1 Cleaning for *laundry detergent products*, thus it does not need to be repeated for *laundry detergent products* that are also intended for stain and spot removal.

**Product Performance Testing, Fabric Appearance (GS-48 and GS-51, Section 2.1.1.3)**

After a review of independent research and stakeholder feedback, we propose to delete the Fabric Appearance criterion. It is redundant, since other requirements in the standard address this area of product performance. Specifically, the Color Care requirement demonstrates that a detergent will not quickly fade the colors of a fabric.

With the Fabric Appearance criterion, Green Seal originally intended to evaluate how a detergent can alter a fabric, for example, through pilling or damage to the fabric surface. Through the standard development process for GS-48 and GS-51, the evaluation method cited for Fabric Appearance, AATCC Test Method 124, ended up focusing on "smoothness appearance." We have since learned from testing laboratories that the smoothness appearance is typically a quality considered for the performance of laundry machines or fabric coatings and is not considered a useful test subject for detergent performance.

Our research has not identified a method that evaluates how a detergent affects fabric appearance with regard to pilling/abrasion. As stated above, other performance requirements in the standard provide sufficient evaluation of fabric appearance.

Additionally, the criterion that requires detergents to perform in cold water will also indirectly support the use of ingredients that are less harsh on fabrics. For example, many product manufacturers formulate products with enzymes to allow detergents to perform in colder water temperatures. Certain enzymes have proven to protect fabric from damage and to improve the fabric quality.

For these reasons, Green Seal proposes to delete the requirement for Fabric Appearance.

**Proposed Revision to GS-48:**

~~**2.1.1.3 Fabric Appearance.** *Laundry detergent products* shall demonstrate that they maintain the integrity of a mixture of cotton, synthetic, and blended textiles after treatment using the procedure in ASTM D4265 or AATCC 124 (using~~

~~machine washing and a 4 pound load size) by assessing *smoothness appearance* after 15 wash cycles, with appropriate instrumental and visual analysis for determination.~~

**Proposed Revision to GS-51:**

~~**2.1.1.3 Fabric Appearance.** *Laundry detergent products* shall demonstrate that they maintain the integrity of textiles after treatment using the procedure in ASTM D4265 or AATCC 124 (using machine washing), by assessing *smoothness appearance* after 15 wash cycles, with appropriate instrumental and visual analysis for determination.~~

### Product Performance Testing, Softening Performance (GS-48 and GS-51, Section 2.1.3)

Green Seal refers to the Consumer Specialty Products Association (CSPA) standard series DCC-13 for this performance evaluation. We have been informed that the DCC-13 standard series requires an evaluation after only one wash cycle.

Therefore we propose to delete the requirement for fifteen wash cycles for the evaluation of softening performance.

**Proposed Revision for GS-48 and GS-51:**

**2.1.3 Softening Performance.** Products sold solely as *softening products* shall demonstrate performance equivalent to or better than an appropriate *benchmark product* in their category on cotton and cotton/polyester blend *laundry* using the Consumer Specialty Products Association (CSPA) DCC-13 series evaluating softness (13B), water absorbency (13D), and static control (13F, using one of described evaluation methods) ~~using a minimum of 15 wash cycles~~.

## Product-Specific Sustainability Requirements

### Carcinogen Releasers (GS-48 and GS-51, Section 3.5)

Chemicals known to produce or release carcinogens are typically used as preservatives in products. The current editions of GS-48 and GS-51 prohibit carcinogen releasers that are *intentionally introduced* to the product at any level.

Green Seal has limited the addition of these compounds in other cleaning product standards. For example, in GS-37, carcinogen releasers are prohibited in the undiluted product above 100 ppm (0.01%).

For laundry products, Green Seal has determined that prohibiting carcinogen releasers above 0.01% in the undiluted product is an accurate reflection of environmental leadership in the laundry product market. Therefore, it is unnecessary to prohibit these compounds at lower concentrations.

We propose to prohibit these compounds above 100 ppm and to clarify the language to indicate that the criterion applies to ingredients that produce or release chemicals that are carcinogens into the final product.

**Proposed Revision to GS-48 and GS-51:**

> **3.5 *Carcinogens and Reproductive Toxins.** The *undiluted product* shall not contain any *components* that are *carcinogens* or *reproductive toxins*. The *undiluted product* shall not contain any components at 0.01% or more that, according to published uses[6], are typically added for the purpose of releasing substances into a raw material or the final product, if those substances are *carcinogens*. ~~known to produce or release carcinogens~~
>
> [6] Published uses include sources such as peer-reviewed research, industry practice, or manufacturer documentation.

**Chronic Aquatic Toxicity (GS-48 and GS-51, Section 3.16)**

Green Seal has reviewed the Globally Harmonized System for the Classification and Labeling of Chemicals (GHS) approach to Hazards to the Aquatic Environment[5]. The GHS approach to chronic aquatic toxicity is based on three factors: acute aquatic toxicity, biodegradability, and bioaccumulation.

Data on chronic aquatic toxicity are limited and require a significant effort to find, if they are available at all. In addition to being acutely toxic, chemicals posing a risk for chronic aquatic toxicity are bioaccumulative in the environment, non-biodegradable, or both. Based on the GHS, if a chemical is readily biodegradable and does not bioaccumulate, then it is not likely to persist in the environment long enough to cause chronic aquatic toxicity.

GS-48 and GS-51 have criteria that evaluate a product for aquatic biodegradability (3.14), bioaccumulation (3.15), and toxicity to aquatic life (3.13). It is, therefore, unnecessary and duplicative to include chronic aquatic toxicity as a separate criterion in these standards, and requires additional effort that does not contribute to increased environmental protection. This revision would also ensure that GS-48 and GS-51 would become consistent with requirements in other Green Seal cleaning product standards (GS-8, GS-37, GS-52, and GS-53).

For these reasons, Green Seal proposes to delete the requirements for chronic aquatic toxicity.

**Proposed Revision to GS-48 and GS-51:**

> ~~**3.16 *Chronic Aquatic Toxicity**. The product *as used* shall not contain any *components* at 0.01% or more that have *chronic aquatic toxicity*.~~

[5] United Nations, 2007. Chapter 4.1 Hazards to the Aquatic Environment. http://www.unece.org/fileadmin/DAM/trans/danger/publi/ghs/ghs_rev02/English/04e_part4.pdf

### Antimicrobial Agents (GS-48 and GS-51, Section 3.26)

Antimicrobial agents are often used as preservatives in cleaning products to prevent the product from spoiling or changing color. At high concentrations, these agents can pose environmental and human health impacts such as skin sensitization and toxicity. The current GS-48 and GS-51 criteria for antimicrobial agents states that "documentation or test results indicating the dosage necessary for product preservation must be provided to the certification program."

We have determined that this criterion is duplicative because other criteria in GS-48 and GS-51 will limit antimicrobial agents. Specifically, GS-48 and GS-51 already limit the use of chemicals that are skin sensitizers. As an example, Kathon CG is a common preservative that contains the active ingredients methylchloroisothiazolinone (MCI) and methylisothiazolinone (MI). The skin sensitization potential of MCI and MI limits their combined use to 15 ppm in a product. Thus, the overall amount of Kathon that can be used is limited by the requirements in these standards. Similarly, the skin sensitization potential of the biocide preservative benzisothiazolinone (BIT) limits its use to 500 ppm in a product.

Skin sensitization limits and maximum recommended use levels are routinely provided by the manufacturers of common preservatives and are available for Green Seal certification reviews. Based on this rationale, no additional protection is provided by requiring documentation or test results for the preservative level.

For the reasons above, Green Seal proposes to delete the requirements for documentation related to the dosage of antimicrobial agents.

### Proposed Revision to GS-48 and GS-51:

> **3.25** ~~**3.26**~~ ***Antimicrobial Agents.** Except for *antimicrobial pesticide products*, the use of *antimicrobial agents* is permitted only for the ~~purposes other than~~ preservation or stabilization of the product ~~is prohibited~~. ~~Documentation or test results shall be provided to the certification program demonstrating the dosage necessary to preserve the product.~~

## Manufacturing Requirements

### Energy, Water, Air, and Waste (GS-48 and GS-51, Sections 4.2 and 4.3)

Energy, water, air, waste, and distribution reporting criteria were added to certain Green Seal standards in order to gather data to inform the development of potential future criteria. However, we have determined that energy, water, air, and waste in the manufacturing stage of laundry-care products are not significant contributors in the life-cycle of these products. These data reporting requirements add an additional burden for the applicant and a longer certification review time, and do not provide an added benefit to the product review or certification. Consequently, Green Seal is proposing to remove these criteria from GS-48 and GS-51.

**Proposed Revision to GS-48:**

**4.2 *Energy, Water, Air, and Waste.** The following information shall be reported to the certifying body for the manufacturing processes included in the converting of the raw materials into the finished product (gate-to-gate report – excluding the production of raw materials and *primary packaging*) on an annual basis or when any changes are made to the processes, with alternate reporting units acceptable upon approval by the certification program:

| **Report** | **Units** |
|---|---|
| Energy | millions of British thermal unit (BTU)/ton of product |
| Water | gallons/ton of product |
| Air Emissions | regulated air pollutant tons/ton of product |
| Solid Waste | dry ton/ton of product |

**4.3 *Distribution.** To the extent feasible, the distance and mode of transportation of raw materials (including *primary packaging*) and finished products shall be documented[8].

[8] It is expected that this includes at least the mode of transportation from the manufacturing facility.

**Proposed Revision to GS-51:**

**4.2 *Energy, Water, Air, and Waste.** The following information shall be reported for the manufacturing processes included in the converting of the raw materials into the finished product (excluding the production of raw materials and package – it is a gate-to-gate report) on an annual basis or when any changes are made to the processes, with alternate reporting units acceptable upon approval by the certification program:

| **Report** | **Units** |
|---|---|
| Energy | millions of British thermal unit (BTU)/ton of product |
| Water | gallons/ton of product |
| Air Emissions | regulated air pollutant tons/ton of product |
| Solid Waste | dry ton/ton of product |

**4.3 *Distribution.** To the extent feasible, the distance and mode of transportation of raw materials (including packaging) and finished products shall be documented[7].

[7] It is expected that this includes at least the mode of transportation from the manufacturing facility.

## Packaging Requirements

Green Seal is proposing clarifications to the packaging sustainability requirements based on our certification evaluations. We recognize that the current language in the Heavy Metal Restrictions section of GS-48 and GS-51 is vague in regard to the definition of "Heavy Metals." Stakeholder feedback has identified confusion about the prohibition of bisphenol A, phthalates, and chlorinated materials in product packaging.

### Heavy Metal Restrictions and Other Restrictions (GS-48 Section 5.5 and GS-51 Section 5.6)

Proposed clarifications include:

- Identification of specific heavy metals,
- Clarification that the restrictions on phthalates, bisphenol A and chlorinated packaging materials are intended for plastic packaging
- A clearer definition of the term "Intentional Introduction."

Green Seal proposes these clarifications to ensure that these requirements are unambiguous.

### Proposed Revision to GS-48:

**5.5 *Heavy Metal Restrictions.** The heavy metals~~, including~~ lead, mercury, cadmium, and hexavalent chromium~~,~~ shall not be *intentionally introduced.* Residual amounts that were not *intentionally introduced* shall not exceed a concentration of 0.01% in the packaging. Further, the sum of the concentration levels of these metals ~~present in the packaging~~ shall not exceed 100 ppm by weight (0.01%); an exception is allowed for *primary packages* that would not exceed this maximum level but for the addition of *post-consumer materials*. ~~*Intentional introduction* does not include the use of one of the metals as a processing aid or intermediate to impart certain chemical or physical changes during manufacturing, where the incidental retention of a residual of that metal in the final packaging or packaging *component* is not desired or deliberate, if the final packaging or packaging *component* complies with the incidental concentration restrictions of 100 ppm~~.

**5.6 *Other Restrictions.** Phthalates, bisphenol A, and chlorinated packaging material are prohibited from being *intentionally introduced* to plastic packaging; an exception is allowed for packages that would not have added phthalates, bisphenol A, or chlorinated packaging material but for the addition of post-consumer material.

**Annex A. Definitions. ~~Intentional Introduction~~ Intentionally Introduced.** ~~The act of deliberately utilizing a material in the formation of a package or packaging *component* where its continued presence is desired in the final package or packaging *component* to provide a specific characteristic, appearance, or quality.~~ Intentional introduction refers to use of materials or chemicals for their desired or deliberate presence in the final product or packaging. It does not include the use of a substance as a processing aid or intermediate to impart certain

chemical or physical changes during manufacturing, where the presence of the substance would be an incidental retention of a residual amount.

**Proposed Revision to GS-51:**

**5.5 *Heavy Metal Restrictions.** The heavy metals~~, including~~ lead, mercury, cadmium, and hexavalent chromium~~,~~ shall not be *intentionally introduced*. Residual amounts that were not *intentionally introduced* shall not exceed a concentration of 0.01% in the packaging. Further, the sum of the concentration levels of these metals shall not exceed 100 ~~parts per million~~ ppm by weight (0.01%); an exception is allowed for *primary packages* that would not exceed this maximum level but for the addition of *post-consumer materials*. ~~*Intentional introduction* does not include the use of one of the metals as a processing aid or intermediate to impart certain chemical or physical changes during manufacturing, where the incidental retention of a residual of that metal in the final packaging or packaging *component* is not desired or deliberate, if the final packaging or packaging *component* complies with the incidental concentration restrictions of 100 ppm.~~

**5.6 *Other Restrictions.** Phthalates, bisphenol A, and chlorinated packaging material are prohibited from being *intentionally introduced* to plastic packaging; an exception is allowed for *primary packages* that would not have added phthalates, bisphenol A, or chlorinated packaging material but for the addition of *post-consumer material*.

**Annex A. Definitions. ~~Intentional Introduction~~ Intentionally Introduced.** ~~The act of deliberately utilizing a material in the formation of a package or packaging *component* where its continued presence is desired in the final package or packaging *component* to provide a specific characteristic, appearance, or quality.~~ Intentional introduction refers to use of materials or chemicals for their desired or deliberate presence in the final product or packaging. It does not include the use of a substance as a processing aid or intermediate to impart certain chemical or physical changes during manufacturing, where the presence of the substance would be an incidental retention of a residual amount.

## Labeling Requirements

### Label Language (GS-48 and GS-51, Sections 6.1.2 to Section 6.1.3.2)

Applicants for certification commented on the lack of clarity of certain labeling requirements. Confusion arose because the criteria did not state clearly that they applied to products that are used with wash water. Green Seal proposes to add, where applicable, specific reference to products used with wash water. Additionally, we propose clarifications to the sections below to provide more detailed and specific labeling requirements.

**Proposed Revision for GS-48:**

**6.1.2 Dosing Directions.** ~~Where applicable,~~ For products that are used with wash water[11], the product label shall clearly and prominently provide directions for dosing normal loads, small loads or those with light soils, and large loads or those with heavy soils (e.g., state amount of product in common and measurable terms such as milliliters, ounces, teaspoons, pumps, or capfuls).

**6.1.2.1 Water Hardness Dosing.** ~~Where applicable, for~~ For products that are used with wash water[11], the product label shall clearly and prominently provide recommended dosing requirements for ~~different~~ the expected water hardness levels.

**6.1.3 Use Directions.** ~~Where applicable, the~~ The product label shall clearly and prominently provide directions for use, and any appropriate precautions~~,~~ or recommendations for the use of personal protective equipment.

**6.1.3.1 Cold Water Wash Directions.** ~~Where applicable, for~~ For products that are used with wash water[11], the product label shall clearly and prominently provide directions for using *cold water* wash temperatures or lower temperatures when possible; an exception shall be made for *antimicrobial pesticide products,* which should state the temperature needed for antimicrobial activity.

**6.1.3.2 Full Loads.** ~~Where applicable,~~ For products that are used with wash water[11], the product label shall clearly and prominently provide the recommendation to ~~run full loads of laundry to reduce the environmental impact from doing *laundry*~~ adjust the detergent dose and washing machine water settings to match the size of the load[12].

[11] Products that are used with wash water include *laundry detergent, softening, bleaching,* sour, and *laundry prewash products*.
[12] If this recommendation is followed, it will reduce the environmental impact from doing laundry.

**Proposed Revision for GS-51:**

**6.2.2 Dosing Directions.** ~~Where applicable,~~ For products that are used with wash water[12], the product label shall clearly and prominently provide directions for dosing normal loads, small loads or those with light soils, and large loads or those with heavy soils (e.g., state amount of product in common and measurable terms such as milliliters, ounces, teaspoons, pumps, or capfuls).

**6.2.2.1 Water Hardness Dosing.** ~~Where applicable, for~~ For products that are used with wash water[12], the product label shall clearly and prominently provide recommended dosing requirements for ~~different~~ the expected water hardness levels.

**6.2.3 Use Directions.** ~~Where applicable, the~~The product label shall clearly and prominently provide directions for use, and any appropriate precautions~~,~~ or recommendations for the use of personal protective equipment. A product certified from a multi-component system shall include a statement on the label that the manufacturer recommends the product be used with a multi-component system.

**6.2.3.1 Cold Water Wash Directions.** ~~Where applicable, for~~ For products that are used with wash water[12], the product label shall clearly and prominently provide directions for using *cold water* wash temperatures or lower temperatures when possible; an exception shall be made for *antimicrobial pesticide products*, which should state the temperature needed for antimicrobial activity.

**6.2.3.2 Full Loads.** ~~Where applicable,~~ For products that are used with wash water[12], the product label shall clearly and prominently provide the recommendation to ~~run full loads of laundry to reduce the environmental impact from doing *laundry*~~ adjust the detergent dose and washing machine water settings to match the size of the load[13].

[12] Products that are used with wash water include *laundry detergent*, *softening*, *bleaching*, sour, and *laundry prewash products*.
[13] If this recommendation is followed, it will reduce the environmental impact from doing laundry.

**Fragrance and Allergen Labeling (GS-48, Sections 6.6 and New Section 6.6.2, GS-51, Sections 6.7 and New Section 6.8.2)**

The current requirement that fragrance composition be provided for all intentionally added fragrance components is not practicable for proprietary fragrance mixtures. Therefore, we propose to revise the criterion so that it applies to fragrance chemicals present at above 0.01% in the product. GS-48 and GS-51 already prohibit nitro-musks, polycyclic musks, and phthalates, which are possible fragrance chemicals-of-concern.

Finally, Green Seal is proposing to add the option of referring end-users to a subset list of IFRA-approved chemicals as an option that protects proprietary fragrances mixtures, but provides more specificity than a reference to the entire IFRA list.

We propose to remove the fragrance references in the Ingredient Line section, and add a new section for fragrance labeling requirements.

**Proposed Revision to GS-48**

**6.6 *Ingredient Line.** The product label shall list the product ingredients using the naming convention of the International Nomenclature of Cosmetic Ingredients (INCI) in order of predominance. Where an INCI name does not exist for an ingredient, alternative nomenclature may be used.[14] Ingredients in concentrations of less than 1% may be listed in any order after those in concentrations of more than 1%. ~~The general term 'fragrance' may be used for~~

~~*fragrance components*; however, a list of *fragrance components* shall be made available to end-users in an easily accessible means, such as the company website, IFRA website, or technical data sheet. A chemical function or chemical class descriptor may be used to protect trade secret information.~~

**6.6.1 *Consumer and User Communication.** The product ingredient line shall be made available to end-users in an easily accessible means in addition to the product label, such as the company website or technical data sheet.

**6.6.2 *Fragrances.** The general term 'fragrance' may be used for *fragrance components*; in this case, the product label shall direct end-users to additional information. A list of the *fragrance components* that are present in the product at 0.01% or more shall be made available to end-users in an easily accessible means, such as the company website or technical data sheet. Chemical class descriptors may be used to protect trade secret information. Alternatively, the product label may provide a link to the list of fragrance materials approved by IFRA, or a subset of this list.

[15] Alternative nomenclature may include International Union of Pure and Applied Chemistry (IUPAC) name, CAS name, CSPA Dictionary name, and or the common chemical name.

**Proposed Revision to GS-51**

**6.7 *Ingredient Line.** The product label shall list the product ingredients using the naming convention of the International Nomenclature of Cosmetic Ingredients (INCI) in order of predominance. Where an INCI name does not exist for an ingredient, alternative nomenclature may be used.[14] Ingredients in concentrations of less than 1% may be listed in any order after those in concentrations of more than 1%. ~~The general term 'fragrance' may be used for *fragrance components*, however a list of *fragrance components* shall be made available to end-users in an easily accessible means, such as the company website, IFRA website, or technical data sheet. A chemical function or chemical class descriptor may be used to protect trade secret information.~~

**6.7.1 *Consumer and User Communication.** The product ingredient line shall be made available to end-users in an easily accessible means in addition to the product label, such as the company website or technical data sheet.

**6.7.2 *Fragrances.** The general term 'fragrance' may be used for *fragrance components*; in this case, the product label shall direct end-users to additional information. A list of the *fragrance components* that are present in the product at 0.01% or more shall be made available to end-users in an easily accessible means, such as the company website or technical data sheet. Chemical class descriptors may be used to protect

trade secret information. Alternatively, the product label may provide a link to the list of fragrance materials approved by IFRA, or a subset of this list.

[14] Alternative nomenclature may include International Union of Pure and Applied Chemistry (IUPAC) name, Chemical Abstract Service (CAS) name, Consumer Specialty Products Association (CSPA) Dictionary name, and or the common chemical name.

**Fragrance and Allergen Labeling (GS-48 and GS-51, Section 6.9)**

GS-48 currently requires that the product label declare, separate from the ingredient line, if a fragrance has been added or if no fragrance has been added. It also requires the label to indicate any allergen components in the product (e.g., "Contains allergen [*allergen's* INCI name]").

While it is appropriate to list any allergen component separately from the ingredient line, it is not necessary to separate the fragrance language from the ingredient line. The requirement to separate the fragrance language is inconsistent with Green Seal's other cleaning product standards. Although Green Seal's cleaning product standards have several labeling requirements, the location of the language on the label is generally left to the discretion of the manufacturer unless there are compelling reasons to be prescriptive.

Since there are no compelling reasons to require the fragrance disclosure to be separate, Green Seal is proposing to remove the language "separate from the ingredient line" from GS-48 and allow the location of the fragrance declaration to be at the manufacturer's discretion.

GS-51 currently requires that products indicate on the safety data sheet "fragrance added" if a fragrance has been added or "no fragrance added" if no fragrance has been added. Green Seal is proposing that GS-51 also require the product label to declare if a fragrance has been added or if no fragrance has been added. This revision would make GS-51 consistent with GS-37 and with the proposed language for GS-48.

**Proposed Revision to GS-48:**

**6.7 *Fragrance and Allergen Labeling.** The product label shall declare~~,~~ ~~separate from the ingredient line,~~ if a *fragrance* has been added or if no *fragrance* has been added and shall also indicate any *allergen components* in the product (e.g., "Contains allergen [*allergen's* INCI name]"). Where an INCI name does not exist, alternative nomenclature may be used.[14]

[14] Alternative nomenclature may include International Union of Pure and Applied Chemistry (IUPAC) name, CAS name, CSPA Dictionary name, and or the common chemical name.

**Proposed Revision to GS-51:**

**6.8 *Fragrance and Allergen Labeling.** ~~Products shall declare on the SDS "fragrance added" if a fragrance has been added or "no fragrance added" if no fragrance has been added.~~ The product label and SDS shall declare if a *fragrance* has been added or if no *fragrance* has been added. The product label and SDS shall also indicate any *allergen components* present in the product at 0.01% or

more (e.g., "Contains allergen [*allergen's* INCI name]"). Where an INCI name does not exist, alternative nomenclature may be used.[15]

[15] Alternative nomenclature may include International Union of Pure and Applied Chemistry (IUPAC) name, CAS name, CSPA Dictionary name, and or the common chemical name.