March 13, 2008

Green Seal is in the final review process for the revision of Environmental Standard for Paints and Coatings (GS-11). As part of the revision, the standard for Anti-Corrosive Paints (GC-3) will be ***incorporated*** into the Paints Standard (GS-11). Registered stakeholders were invited to review and vote on the draft of the final revised standard from December 6, 2007 to January 3, 2008. Below are the comments received during the balloting period of the draft final revised standard. Any identifying remarks or reference to the commenter have been removed.

A brief summary of the standard revisions and discussion of the issues is listed after the comments.

By participating in Green Seal's standard setting process, the following organizations that provided comments played an important role in Green Seal's effort to encourage the design, manufacture and end use of environmentally superior products. Their assistance and involvement is greatly appreciated.

California Air Resources Board (CARB)
California Office of Environmental Health Hazard Assessment (OEHHA)
Center for New American Dream
Emulsion Polymers Council
Endurance Building Systems
Kelly-Moore
Modern Masters
National Paint & Coatings Association (NPCA)
PPG Industries
Rohm-Haas
Rust-o-leum
Sico
Stonhard
Textured Coatings of America, Inc (Tex-cote)
Ultimate Coatings
Zinsser

Comment*:*
1) There is a problem with the wording for reflective coatings. It should include side walls. The proposed standard was never intended for roofs, only walls. There are two national cool roof standards but no cool wall standard.

The wording for reflective coatings should read," Exterior side walls."

2) If accepted, the cool walls should have correct solar reflectance and thermal emittance standards along with the correct physical properties.

3) GS-11 can use "Exterior side walls" as a credit for LEED 7.1, Urban Heat Islands, non-roof. It makes a good fit.

Other then that, I'm happy with just about all the other GS-11 changes.

Comment*:*
In the proposed standard there is an error in section 3.6.1. A rating of 8 or greater is the scale used in ASTM D3273. Test methods D5589 and D5590 use a scale of 0-4 and a rating of less than 1 would be acceptable.

Comment*:*
While I have voted Affirmative, it is with the following qualifications:

The currently stated wording in the proposed standard wording for "reflective coatings" should be amended to specifically state, "solar reflective, thermally emissive coatings for Exterior Side Walls."
Standards for cool roofs are already established by LEED and CRRC. This GS-11 Standard is not designed concerning roofs, therefore the mention of "Roofs" in the section title should be REMOVED as it is confusing.

This GC-11 Standard, when so clarified, enables "cool wall" coatings to become a clear category which architects, construction specifiers and contractors can directly utilize. LEED 7.1, "Urban Heat Islands, non-roof" will also be benefitted making the category further of value.

Comment:
Clarification Needed-4.5 Colorant Added at the P.O.S. VOC Content Limit

1. What is Green Seal's average VOC level calculation?

2. As stated in 4.5, it will be very difficult to manage allowable VOC levels at point of sale. In addition, if our assumptions are correct regarding your average VOC calculations, Green Seal's maximum allowable VOC levels with colorant will eliminate accent colors and in some cases deep colors.

Comment:

3.5.1 - Scrubbability (Abrasion resistance) for Interior paints:
Draft for revision dated Dec.06/2007 asks for: Flats : 400 cycle / Non-flats : 700 cycles by using ASTM D2486-03

Our Vote : Negative

Explanation
A) The proposal does not indicate clearly whether the test is exclusive to white paints or does it apply as well to tint bases. This aspect should be emphasized clearly,as the level of colorants will have a significant impact on scrub performance.
B) We appreciate Green Seal efforts to have dropped the scrub cycles from initially proposed values,however we find them still very high and unrealistic.It is imporatant to remember that ASTM D-2486-06 uses abrasive scrub medium,nylon bristle and shim to conduct the test. We would like to see the scrub cycles dropped further to a max 200 cycles for flats and 350 for non-flats or remove the abrasive-medium and shim from the test, if the scrub cycles are preferred to be kept high absolutely.

4.5 - Colorant Added at the POS - VOC Content Limit:
Draft for revision dated Dec.06/2007 proposes to tolerate a VOC level increase after colorant addition up to max 30gr/lt.

Our Vote : Negative

Explanation
The level proposed is pefectly acceptable for pastel bases,where the colorant level in average does not exceed 3 oz/gal,however it does not reflect the reality for medium and especially for accent tint bases, where colorant levels could go as high as to 12oz/gal.
Our suggestions would be the following:
A) Either to segregate the bases and establish the VOC increase limits accordingly:
- for pastel bases : max 25 gr/lt
- for medium bases : max 50 gr/lt
- for accent bases or deep colors : max 70 gr/lt

B) Or to use the proposed level (30gr/lt) only for pastel bases and exclude medium and accent bases.

Addendum "C" - Zero VOC Claim Criteria :
Draft for revision dated Dec.06/2007 proposes to consider a product zero-VOC,if VOC levels including colorants at the
POS are below detectable limits.

Our Vote : Negative

Explanation
As a colorant manufacturer besides being a paint producer ,we are completely aware of the difficulties and problems encountered in the market place with zero-VOC colorants and therefore find the timing for such a decision technically and economically

premature. Besides the well known technical drawbacks, switching to zero VOC colorants will necessitate a second set of tinting machines at the stores to accomodate Green Seal requirements,which will generate additional cost increase. We understand and respect Green Seal concerns, but expect an acceptable time limit to allow the transition.

Comment:
Dear Moderator,

APE's are not to my knowledge *banned* anywhere else at the current time. I believe it would serve your purposes to limit their use to a fraction of a percent.

Comment:
Section 4.1, which basically states that products shall not contain ingredients that are carcinogens, etc. This is a concern since we have encountered issues with trace levles (such as silica due to the extender pirment ore bodies).

Section 4.5, which deals with the VOC of tinted products. The level of 30g/L can be exceeded in deeper colors.

Section C.1, Zero VOC, which states that both the product and colorant must be zero-VOC in order to claim a product is zero-VOC. In some cases the manufacturer cannot control the colorants used by the customer.

We are concerned about the performance test requirements. There are many paints that meet customer requirements that will not pass some of the Green Seal proposed requirements. We understand that Green Seal wants to convey that desirable environmental properties can be obtained without sacrificing performance. However, paint uses are so broad that generic performance requirements as proposed by Green Seal will end up disqualifying many appropriate coatings and perhaps qualifying materials that are not appropriate but that pass the Green Seal tests.

Examples:

1. The Corrosion Resistance test does not specify a substrate or a film thickness.
2. The Fade Resistance test of 1000 hr of Xenon Arc or QUV A with a color change of less than 1 is also problematic. Xenon Arc and QUV A are completely different tests and 1000 hours in one cabinet is vastly different than 1000 hours in the other. The test does not specify a color and results will vary with color. The specification also does not specify the units for the color chnage of <1 or the equation/instrument used to measure the change.
3. Flexibility for Exterior Topcoats. A mandrel bend test is not appropriate for many types of exterior topcoats.

Comment:
Regretfully, […] will have to vote "NO" on the Revised GS-11 Paints Standard. We believe that out major concerns about the Revised GS-11 Standard were not adequately

addressed in Green Seal's Response to Comments.

1.0 Scope of the Standard

As we explained in our initial comments, the current GS-11 standard covers architectural paints, to change the scope of this standard at this time would lead to confusion and inconsistencies; therefore […] recommends that Green Seal not change the scope of GS-11. […] also suggests that other coatings are much different than architectural coatings – as such others coatings should not be included in GS-11. Green Seal argues that other coating products are similar enough in formulation and environmental and human health impacts to be considered together. We continue to disagree with this reasoning.

4.2 Specific Compound Prohibitions (Alkyl Phenol Ethoxylates)

Green Seal has agreed to review Specific compound prohibitions including alkyl phenol Ethoxylates (APE's) and glycols for colorants added at the point-of-sale. However, we continue to believe that removing Alkyl Phenol Ethoxylates is actually very complicated because a good number of emulsions and other raw material. manufacturers do not have direct control on their composition.

6.0 Packaging Requirements

We maintain our belief that the current packaging requirements are adequate. […] is concerned about any potential changes to the packaging requirements based on "environmental impacts of the end-of-life management of paint" since any such decisions can only be made based on a technically sound life cycle assessment.

Phase-In of the New GS-11 Standard

The issue of phase-in of the new standard is critical because product development and launch cycles in the industry can be 6-12 months. It may take 3-6 months just to get labels and packaging squared away. If the new standard is implemented immediately after adoption and Green Seal expects labeled products to be pulled from the shelves if it doesn't meet the new standard, then that would be a significant financial hardship to manufacturers. Also, what will happen to companies that are in the process of getting green seal certified? They may be forced to stop the process because they won't meet the new standard.

Comment:
Consider the following:

Using the EU definition of a VOC: B.P. less than 250°C.

Creating a 'high-gloss' coating category at a slightly higher VOC level than for non-flats; e.g.: 150 g/l.

Creating a standard for clear coatings.

The 'Prop 65' toxin standards are extremely strict. Many extender and color pigments have naturally-found trace amounts of chemicals found on the list, with more added all the time. None of these are intentionally added. Allowing a ceiling of only 100 ppm may be difficult for certain colorants, extenders, etc. to meet.

Oherwise, these are good standards that should last for years without the need for revision.

Comment:
1.0 Scope
My comments concerning the scope are extremely important and concern the fundamental raison d'etre for this document, the Green Seal Organization, and the whole "Green" movement. This standard is written for latex paint. Latex paint is not used as a flooring product by any educated, informed specifier, engineer, owner, contractor, or flooring company except as a decorative material in a floor that is not used or will be recoated on a regular basis. You are specifying materials that will last well short of 1 year on a floor that is in use, while the products that are normally specified last 10-20 years or longer. That is not "green", not "sustainable", not economical, and certainly not efficient. Most of my customers would consider the inconvenience of continuous recoating as unacceptable. You are keying in on some arbitrary point of reference (e.g. exclusion of silica, something used in concrete – i.e. every floor, wall and ceiling) to exclude all of the relevant products used by the whole industry. Also, understand that most floor coatings are not only not latex paints, most floor "coatings" are flooring systems that are applied at thicknesses much greater than can be achieved by any of the materials that will meet this standard.
Please remove flooring from the scope of this standard. Certainly, there is an opportunity to have a flooring specific standard that is relevant and will meet relevant "green" objectives without this severe compromise in performance. I (and I am certain others in the industry) would be delighted to assist in the development of such a standard.
In your previous response to this request you stated:
"While Green Seal recognizes that long-term durability is an important concern within the life-cycle of a product and includes key performance criteria to address this issue …"
I think that all informed users of coatings would concur that setting a D4060 wear index of 200 as the only performance criteria is woefully inadequate.
I would like to reiterate, please remove flooring from the scope!! This inclusion has been ill informed, not sustainable, and contrary to the underlying purpose of this standard.

2.7 Ingredient
Many agencies of the government have spent countless time and money setting limits for various substances. You have arbitrarily selected 0.01% as your universal limit. However, no one in the industry has been detecting or reporting at that level. They are looking for hazardous materials at 1%, carcinogens at 0.1% and certain targeted materials, such as lead, at ppm. Selecting this arbitrary level for all materials is accomplishing nothing except to ignore all of the existing research and currently

available published data (on MSDS).

2.9 Mutagen
Listing this section is not very useful, as this does not referred to a published list of materials.

3.2.1 Adhesion
ASTM D3359 is not relevant for, and cannot be adapted to adhesion of coatings on concrete substrates (simply adding in the comment "intended substrate" from your last revision does not override the significance and usability of the ASTM test). The correct test is ASTM D7234.

3.4 Floor Coatings
You have removed bond strength and impact resistance, 2 key requirements for floor coatings. I have argued that this standard should not include floor coatings (see comments on section 1.0) from the point that the requirements of this standard are not relevant to the products used as floor coatings/systems. However, this is presumably a dual criteria document – contents and performance, and yet you remove all the key performance requirements. Therefore, you have verified my argument that this standard is not relevant to flooring.

3.4.2 Scrubbability (Abrasion Resistance)
You do not specify a wheel CS-10 or CS-17. Again, a wear index of 200, even with the more severe CS-17 wheel is not a limiting property to any flooring system, even latex paint. (Again, I refer to my comments on Section 1.0, that this document is not properly designed as a performance standard for flooring, and flooring should be removed from the scope).

4.1 Compound Prohibitions
I refer here to your response to the request by more than one commenter on the use of silica and carbon black:
"Other chemicals such as crystalline silica, listed on IARC as carcinogenic to humans when inhaled in occupational circumstances and carbon black, IARC 2B, are prohibited due to their inclusion on the established lists due to their hazards within the production, manufacture, distribution and use of the material and either have acceptable alternatives or are not essential in all paint formulations."
Even in Prop 65, these materials are listed as "airborne, unbound particles of respirable size". When using these materials in the plant, in transport and during the installation, compliance with these regulations is mandated by OSHA, regardless of your standards. Simply removing them from use and suggesting that acceptable alternative exist is not based on fact. If flooring was removed from the scope (see comments to Section 1.0), and all coatings in this standard are less than 5 mil, you could make the argument that alternatives exist for silica, but certainly not carbon black. Please reveal the source of your information here. The fact is that concrete uses silica, and buildings have no alternative to concrete.
Please qualify this comment with these exemptions (as per Prop 65).

4.4 VOC Content Limit
Your revision in the latest draft to read:
Alternatively, another comparable scientifically validated test method may be used, but must be documented in sufficient detail for Green Seal review.
ASTM D2369-07 has been recently revised to accommodate multi-component coatings. Is this not sufficient for Green Seal?

Comment:
We agree with the comments given by […] and are voting "NO" on the Revised GS-11 Paints Standard. We are concerned about the new performance requirements, because of the amount of increased amount of time and resources (both internal and external) that must be spent to ensure that the products meet the multiple product-specific performance requirements, even though they meet customers needs. We do not think that a change is needed to the existing standard.

As a paint manufacturer, we are also concerned with the transition period of a new standard. We believe there should be a fair grandfathering period that allows paint manufacturers to adjust any formulations needed to meet the new requirements, without giving up their original certification.

Comment:
[…] appreciates Green Seal's December 6, 2007 revisions to the GS-11 standard; however, as previously communicated in our September 24, 2007 comments on the August 13, 2007 version of the standard, […] maintains that Green Seal should not (1) include prohibited compounds without specific scientifically-based criteria against which compounds should be judged, or (2) broadly rely on existing classifications from other organizations without any further evaluation or review. In the event that Green Seal does maintain such prohibitions, de minimus levels should be incorporated.

Comment:
1. The word "product" is not adequately defined resulting in a standard that is ambiguous. Ingredient and paint and coating are defined but nearly all of the GS-11 criteria call out that the ?product? meets required provisions. This lack of specificity and clarity causes ambiguity and may result in lack of standardization in certification implementation that should be avoided by properly defining the product to mean the ?coating? including the colorant and all ingredients in the coating. There is concern that this lack of clarity could lead to certified products with VOCs and toxic ingredients in the colorant part.

2. The definition of a VOC in 2.22 is inadequate and should be modified. Although organic compounds which participate in atmospheric photochemical reactions are important to reduce, they are not the only VOCs of concern. According to the preamble of the GS-11 standard, ?The intent of Green Seal?s environmental requirements is to reduce, to the extent technologically and economically feasible, the environmental impacts associated with the manufacture, use and disposal of products.? There are VOCs

in paints which have significant environmental impact the formation of ground level smog. However, there are some VOCs in paints that which do not participate in smog reactions but have significant human and eco-system environmental impacts. The VOC definition needs to be expanded explicitly to include all VOCs that may cause chronic or short term health impacts not just those that cause smog formation. The definition should be expanded to include ??Carbon-containing compounds (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonates and ammonium carbonate) with vapor pressures at standard conditions approximately ranging between those for n-pentane through n-heptadecane and shall include formaldehyde and acetaldehyde.? There is particular concern that the current definition in GS-11 uses a boiling point of 250?C while a common chemical paint ingredient, texanol, boils at 254?C exempting it from calculation. The definition should be modified as in GS-37 to properly account for texanol as a VOC since it is a chemical being emitted from the coatings during drying and during use.

3. The labeling criteria are inadequate since they do not require criteria to ensure that the label includes explicitly clear instructions/directions for proper and appropriate temporary ventilation during the use phase while the paint is drying. We agree that labeling is adequate for use of personal protective equipment but we think additional criteria should be added to safeguard occupants in indoor spaces where the coatings are applied.

4. Inclusion of criteria that packaging shall be recyclable is good but it is weakened by the exception that it need not be recyclable if it contains a minimum of 10% recovered material content. This exception should be deleted.

5. Asthma is a chronic respiratory disease that impacts more than 9% of the total population. It is characterized by variable airflow obstruction, commonly presenting with symptoms of cough, wheeze, shortness of breath, or chest tightness, which may be mild, moderate, severe and even life-threatening. Symptoms may occur during exposure, immediately after exposure or up to 24 hours later in a ?late phase,? even interrupting sleep. A chemical is considered capable of causing asthma if it is specifically listed as an asthmagen by the Association of Occupational and Environmental Clinics (AOEC). GS-11 needs criteria to prohibit any paint constituent intentionally added or known to be present as a contaminant that comprises at least 0.01% by weight of the product that is specifically listed as an asthmagen by the Association of Occupational and Environmental Clinics (AOEC).

6. Additionally GS-11 fails to provide indoor air quality criteria to protect occupants indoors from short acute and long term chronic exposure risks. Other product categories of materials such as carpets, adhesives and other building materials have successfully instituted provisions to safeguard occupants from these chemical exposures. It is important to note that among the exposed occupants are sensitive individuals such as the elderly, infants, children, infirm, and those with pre-disposed health problems (asthma, respiratory disease). GS-11 needs to add similar testing provisions and criteria to protect occupants in indoor environments from possible adverse exposures to chemicals emitted

from the paint during USE as found in other certification programs. GS-11 does include chamber testing provision in 3.61 (i.e... ASTM D3273-00(2005) Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber)likewise chamber testing of the paint should be added to ensure that the coating emissions during use do not exceed the acute or chronic reference exposure limits set for health. The following criteria need to be added: Standard Practice for the Testing of Volatile Organic Emissions from Various Sources using Small Scale Environmental Chambers. (see attached).

7. In line with occupant exposure discussed in #6, is the GS-11 VOC content limit. The VOC level (g/L) for flat topcoat is set at 50, non-flat topcoat at 100, and others set between 100 ? 250 g/L.(exclude colorants). This standard is not pushing the green envelope forward but instead uses levels that can readily be met by most paint manufacturers. Paints of the categories below the GS-11 standard VOC levels are now available (see CHPS website, etc). Also, MPI Green Performance Standard (GPS-2) provides a maximum allowable limit of 50 g/L of VOCs for most paints. This GS-11 is too performance-based, with insufficient emphasis given on the INDOOR impact of exposed occupants.

8. The present GS-11 standard does not reward or provide incentives to those manufacturers that produce product that beats the stated standards. This single award level (rather the tiered approach like the carpet standard or LEED) bunched products that just meet the standards with those that are way below them. For example, the zero/no VOC paints have the same award as those with VOCs content level of 50 g/L (flat, topcoat). A tiered approach (e.g., bronze, silver, gold) with different VOC levels would provide the incentives for manufacturers to go for the ?gold?.

Comment:
1) Even though the ballot vote was 6-8 or 6-9 (I think that some votes were cast beyond the 2:00 p.m. PST, 5:00 p.m. EST deadline) there is no denying that only one proposed change directly tackles CO2 emissions and global warming: heat-reflective wall coatings.

There is conclusive proof from the US, Department Of Energy that reflective wall coatings can cut AC costs during summer by 22%. If you times that number by millions of homes throughout the USA then **billions** of pounds of CO2, the principal green house gas that contributes to global warming, can be removed from the atmosphere. That alone makes it necessary to be adopted by Green Seal.

Power plants, not car emissions, is the biggest contributor to global warming and reflective wall coatings combats an estimated 25% of that problem.

2) There is too much focus being placed on VOC reduction. Without credible physical and thermal property requirements, VOCs reduction laws are in my opinion, detrimental to the atmosphere.

The EPA, CARB and CDPH all reportedly voted against the GS-11 updates yet their own

VOC standards are severely flawed. Without credible thermal and physical property requirements they could in effect be doubling and/or tripling the amount of VOCs being emitted into the atmosphere.

It is absolutely incredulous for them to say, *" This GS-11 is too performance-based, with insufficient emphasis given on the INDOOR impact of exposed occupants."*

Green Seal needs to have more, not less rigorous standards, otherwise there will be more repaints and more, not less VOCs being sprayed into the atmosphere. A thermal image camera on a 1.6 DFT coating will show electromagnetic radiation being absorbed through a film. That same camera on a coating with high volume solids with MMO pigments and higher DFT will not.

BRIEF SUMMARY OF REVISIONS TO DRAFT FINAL REVISED GS-11/GC-3 STANDARD

Based on the comments received, Green Seal conducted additional research and consulted with academia, industry, trade associations and independent laboratories on the concerns and issues raised during the balloting period. The key revisions to the GS-11 draft of the final revised standard are summarized and further discussed below.

Scope

Based on the comments, Green Seal wishes to clarify the scope from the original GS-11 standard. Green Seal reiterates that there are few modifications from the original scope of the general architectural paint category. The proposed revised scope includes wall coatings, primers and undercoats, floor coatings, anti-corrosive paints, and reflective coatings. Wall coatings, primers and undercoats and floor paints have been certified under the original GS-11; therefore, the only change is a more explicit inclusion in the scope. Green Seal's decision to combine the standard for Anti-corrosive Paints GC-3 with the Paint Standard GS-11 was based on the fact that the GC-3 and GS-11 standards were identical, except for performance and volatile organic compounds (VOC) limits. The only new product category is reflective roof and wall coatings, which Green Seal believes is close enough in formulation and technology to be considered within the same standard and can provide an important environmental benefit.

After further discussions, Green Seal recognizes that the term "floor coatings" is overly broad, which may include a variety of types of floor coatings that have different considerations due to formulation or performance needs. Green Seal's intent was to not to address epoxy and urethane flooring systems, but to list floor paints as a product category certified under the original GS-11. Green Seal has modified the scope and changed all references to "floor coating" to "floor paints". The term "floor paint" is more descriptive of the latex or water-based epoxy floor paints that are included in the scope. "Floor coatings" such as 100% solids epoxy and epoxy/urethane floor coating systems with a thick application (dry film thickness greater than 16 mil) that are not applied by roller or brush and that include coarse aggregates, color chips or flakes as part of a multi-part flooring system, are not included in the scope of the standard. In addition, clear floor finishes are not included as "floor paints", but can be certified under Green Seal's Institutional and Industrial Floor-Care Products (GS-40). To address this distinction, Green Seal has added a definition of "floor paints": *Opaque coatings that are formulated for or applied to flooring surfaces that have a DFT of 16 mils or less and are applied by roller or brush. For the purposes of this standard, floor paints do not include epoxy or urethane flooring systems that include coarse aggregates, color chips or flakes as part of a multi-part flooring system. Floor paints also do not include floor finishes which are defined as any product that leaves a protective wax, polymer or resin coating that is designed to be periodically removed and reapplied*. Green Seal agrees that epoxy and urethane flooring coating systems can provide an environmental benefit due to the high performance and long-term durability and may consider a development of a standard in this product category in the future.

Green Seal has also added a definition of "Product" to clarify that any reference to "product" refers to manufacturer product and does not include additives added at the point-of-sale. Given the current infrastructure, many manufacturers do not have knowledge or control over the additives, specifically colorants, which are added at the point-of-sale. Green Seal will address the main human health concern of additives through the Colorant added at the point-of-sale VOC content limit criterion. Green Seal will continue to assess the technological innovations and infrastructure of the industry to determine the most appropriate or feasible approach to addressing the chemical components of additives added at the point-of-sale.

RESULT: Changed "floor coatings" to "floor paints" in Scope and added definition of "floor paints". Added definition of "product" that clarifies that any reference to product produced by manufacturer and does not include additives added at the point-of-sale.

Exterior Side Walls

Based on the comments, Green Seal agrees to include exterior side walls within the "reflective coating" category. The definition of Reflective Coating- *A coating designed and intended for the modification of light and heat radiation characteristics*- is intended to include coatings for both roof and wall coatings, but for clarity the following description has been added to the "reflective coating" definition: *For the purposes of this standard, reflective coating include both reflective roof and wall coatings.* Because performance for exterior side walls is largely dependent on the coating type, Green Seal has added the product categories of "Elastomeric Reflective Wall Coating" and "Non-Elastomeric Reflective Wall Coating" and lists the appropriate performance criteria for each product category. To assist with the distinction of the two product categories, Green Seal has added a definition of Elastomeric Reflective Wall Coatings and Non-Elastomeric Reflective Wall Coatings: ***Elastomeric Reflective Wall Coatings:*** *Reflective wall coatings that have elastic properties, and can stretch in the summertime heat and then return to their original shape without damage with a DFT of 17 dry mils or greater* and ***Non-Elastomeric Reflective Wall Coatings:*** *Latex and thermoplastic reflective wall coatings with a DFT of 5 dry mils or greater.*

RESULT: Clarification added to Reflective Coating definition. Specific performance requirements and definitions added for elastomeric reflective wall coatings and non-elastomeric reflective wall coatings.

Performance Requirements

Based on the comments, Green Seal reexamined each of the performance criteria as specified in the GS-11 Draft of the Final Revised standard. Changes and modifications are described below.

Performance Requirements-All Paints and Coatings

Green Seal has added the clarification: *All tests shall be performed on product produced by manufacturer and do not include additives at the point-of-sale.* The intent of this clarification is to provide instructions that performance requirements should be run on an

un-tinted white base, unless specified otherwise (namely Fade Resistance). While the manufacturer may elect to run the appropriate tests with the colorants and can submit these test results, Green Seal will not require test results for the tinted bases.

RESULT: Added clarification that performance tests should tested on product produced by manufacturer product or un-tinted white base.

Performance Requirements-Anti-corrosive Coatings
Green Seal agrees with the comments and has added a dry film thickness requirement and substrate for American Society for Testing and Materials (ASTM) D5894.

RESULT: Added dry film thickness specification and substrate

Performance Requirements-Floor paints
Green Seal agrees with the comments and has added a wheel and weight specification for ASTM D4060. Green Seal also wishes to change the ASTM test specified in the Alkali Resistance criterion. ASTM D1308 is more appropriate, is more commonly available test and can adequately test for alkali resistance.

RESULT: Added wheel and weight specification for ASTM D4060, changed alkali test to ASTM D1308.

Performance Requirement-Interior Topcoats
Green Seal recognizes that the Scrubbability test can have high variability due to the abrasive medium scrub brush and the weight, or shim that is used. Though the standard methodology of the ASTM D2486 is typically run with a shim, Green Seal will include an explicit clarification that the method should use a shim to avoid any potential confusion. Green Seal has added a specification to use the Leneta Calibration Scrub Panel Form P121-C to better ensure consistency, which is the calibration panel for 400 scrubs. Results should be reported to Green Seal in terms of the scrub cycles defined in the Leneta Calibration Scrub Panel Form P121-C. Based on comments, further discussions and the database of currently certified products, Green Seal has elected to lower the scrubbability limits from the proposed limits of 400 cycles for flat and 700 cycles for non-flat to 400 cycles for both flat and non-flat interior topcoats.

RESULT: Change scrubbability to 400 cycles and has removed designation of flat and non-flat and include the following specification: ASTM D2486 is to be run with a shim and results will be standardized using Leneta Calibration Scrub Panel Form P121-C.

Performance Requirements-Exterior Coatings
The U.S. Environmental Protection Agency (EPA) has a strict allowance of the phrasing that is allowed on the product label regarding mold and mildew claims under the Federal Insecticide Fungicide and Rodenticide Act (FIFRA). Any product that is marketed having an antimicrobial property beyond the allowed product claims must be registered under the U.S. EPA. Green Seal has determined that Biological Growth is not necessarily part of the routine testing and often requires additional time and resources to

establish performance. In addition, while previously a crucial consideration of performance, improvements in formulation have by large extent, lessened the concern surrounding Biological Growth. Green Seal believes that Biological Growth will be adequately regulated by the U.S. EPA under FIFRA. Green Seal will remain cognizant of the claims made by a product, but will no longer require additional testing of Biological Growth as a key performance criterion in the standard.

After additional research, Green Seal has made adjustments to the Fade Resistance category. Green Seal agrees with the comments that Xenon Arc and QUV-A are distinct methodologies; therefore, Green Seal has selected to include QUV-A according to the guidelines listed in ASTM G151. Green Seal has also added a specification to use a specific color (red) with the intended colorant in the system. If there is no intended colorant, a universal colorant should be used. In order to measure the failure, Green Seal has opted to set the limit of a color change of $\Delta E < 5$ to establish a quality performing paint.

Green Seal reexamined the mandrel bend test as required by the ASTM D522 as proposed in the proposed revised standard. Green Seal maintains that Flexibility is an important factor in determining the performance of an exterior product that is separate from the Adhesion test. ASTM D522 is also a commonly available method. To allow for appropriate methodology, Green Seal will accept both Test Method A and Test Method B within ASTM D522 for both the conical and cylindrical mandrel bend test method**.**

After additional research, Green Seal also wishes to change the ASTM test specified in the Water Resistance criterion as a water fog apparatus is not necessary and would require additional time and resources. ASTM 1308 is more appropriate, is more commonly available test and can be used as an adequate spot test for water resistance.

RESULT: Removed Biological Growth, modified test method for Fade Resistance and specified color and color change measurement, changed test method of Water Resistance to ASTM D1308

Performance Requirements-Non-Elastomeric Reflective Wall Coatings, Elastomeric Reflective Wall Coatings, Reflective Roof Coatings

As mentioned above, Green Seal has added performance requirements for elastomeric and non-elastomeric reflective wall coatings. Non-elastomeric reflective wall coatings performance criteria include Hiding Power, Application and Adhesion, Accelerated Weathering, Flexibility, Solar Reflectance and Thermal Emission. Solar Reflectance is divided into requirements for “light tones” and “dark tones”. A definition of which colors are considered “light tones” and “dark tones” is described and refers to the color families characterized by the Cool Roof Rating Council (CRRC). Elastomeric reflective wall coatings performance criteria include Accelerated Weathering, Elongation and Tensile Strength, Flexibility, Fungi Resistance, Solar Reflectance and Thermal Emission. Reflective roof coatings are divided into a separate product category, but no changes have been made to the performance criteria.

RESULT: Include performance criteria for non-elastomeric reflective wall coatings (Hiding Power, Application and Adhesion, Accelerated Weathering, Flexibility, Solar Reflectance, Thermal Emission), elastomeric reflective wall coatings (Accelerated Weathering, Elongation and Tensile Strength, Flexibility, Fungi Resistance, Solar Reflectance, Thermal Emission) and a separate category for reflective roof coatings.

VOC definition

Green Seal adopted the European Union's approach to defining VOCs in terms of boiling point at 250°C, but realized in doing so would exclude 2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (TMP-MIB), CAS No 25265-77-4. TMP-MIB is a widely-used coalescing agent that is considered a VOC according to the current U.S. EPA definition due to its possible contribution to atmospheric photochemical smog. Green Seal's intent is to be protective of environmental and human health and address VOCs that may contribute to photochemical smog in addition to components that may contribute to indoor air quality issues. In changing the definition of VOC to European definition, Green Seal did not wish to unknowingly alter the Green Seal VOC limits such it that would result in significantly less stringent VOC limits than other VOC regulatory bodies in the U.S. Therefore, while TMP-MIB is not included in the European definition of boiling point cut-off of 250°C, Green Seal believes that it was necessary to raise the boiling point cut-off to include semivolatile compounds that may be partially retained in the film after the 250°C marker. Green Seal has elected to raise the boiling point marker from 250°C to 280°C for both volatile organic compounds and volatile aromatic compounds. Green Seal has modified the VOC definition to read: *Any organic compound having an initial boiling point lower than or equal to 280°C measured at standard conditions of temperature and pressure*. In order to include any other compounds that U.S. EPA may determine to contribute to atmospheric photochemical smog with a greater boiling point than 280°C, Green Seal has specified that the VOC calculation shall also include any VOC that participates in atmospheric photochemical reactions as defined by the U.S. EPA in 40 CFR §51.100 (s). After further consultation, Green Seal acknowledges that International Organization for Standardization (ISO) 11890-2 and ASTM D6886 have differences in the methodology, namely in the column that is specified. For clarification, any Green Seal has decided to specify ASTM as the primary method. If the ISO method is used, a boiling point of 280°C must be used as the marker and shall include any VOC that participates in atmospheric photochemical reactions as defined by the U.S. EPA in 40 CFR §51.100 (s).

RESULT: Boiling point raised to 280°C, ASTM method stated first.

Colorant added at POS VOC limit

The calculation in the GS-11 Response to Comments did not take into consideration that the 400-600 g/L addition of VOCs in colorants includes water. Green Seal acknowledges the comments that assigned limit of 30 g/L VOC limit would eliminate deep and accent colors. As the VOC calculation is less water and exempt solvents and is largely dependent on the % solids of the product, Green Seal has elected to raise the VOC limits for the Colorants Added at the Point-of-Sale to 50 g/L. The average VOC that will be applied to products is the maximum suggested by the comments of 70 g/L for deep or

accent colors or added amount of 12 oz per gallon. The following are examples based on the adjusted limits. Assuming 11 g/L VOC content, as typical Green Seal-certified flat topcoat have a VOC of <11 g/L, and applying the 70 g/L added by 12 oz of Colorant added at point-of-sale:

> 11 g/L (base paint) + 70 g/L= 81 g/L VOC including colorant added at the point-of-sale, which meets the adjusted criteria of 100 g/L for flat topcoats.

Assuming a typical Green Seal-certified flat topcoat given the GS-11 limit of 50 g/L and using the Green Seal estimated average of 100 g/L:

> 50 g/L + 70 g/L = 120 g/L VOC including colorant added at the point-of-sale, which does not meet the adjusted criteria of 100 g/L for flat topcoats.

Green Seal also wants to emphasize that the way that the VOCs are structured in the standard allows for the flexibility to reduce VOCs in either the base paint or the colorants. The base paint must meet the VOC limits of the manufacturer product, but if there is an issue with the VOCs with the colorant added at the point-of-sale, the manufacturer or formulator is allowed the flexibility to decide which element—the base paint or the colorant--is most appropriate to lower in order to fit within the criteria. In addition, Green Seal allows the manufacturer to determine the amount of colorant by defining colorant as the maximum amount of colorant recommended for use by the manufacturer.

In addition, Green Seal acknowledges that this is a new category and therefore, has elected to provide a later implementation for this section as stated in the standard. The implementation of the Colorant added at the Point-of-Sale VOC Content Limit Section will be January 1, 2010. Green Seal wants to be fair in its implementation and recognizes that addressing this issue will take time and resources from manufacturers in order to take this issue into consideration. Any previously certified manufacturer and new certification products must submit the necessary documentation *prior to the implementation date* for adequate time to verify compliance. Any certified manufacturer that does not provide the necessary documentation with adequate time to verify compliance by the implementation date or whose product does not meet the criterion by the implementation date is considered to be non-compliant with the standard. The manufacturer will lose certification for that product and will no longer be authorized to use the Green Seal mark. The issuance of the standard will serve as an official notification that Green Seal will begin assessing Colorant Added at the Point-of-Sale for all previously certified and new applications for certification as of January 1, 2010.

RESULT: Changed VOC limits for Colorant added at the point-of-sale and will apply an average VOC limit of 70 g/L. VOC in Colorant added at the point-of-sale will begin implementation on January 1, 2010.

Packaging

Based on comments, Green Seal re-assessed the current packaging requirements. Paint, in general, presents an issue for many recycling facilities because oftentimes the paint

containers are not empty or are perceived to be hazardous waste. There are additional problems associated with metal cans, which are the primary recyclable container. The move towards lower VOC water-based paints, while no longer being considered hazardous waste, may be rusting metal cans, which complicates the recyclability. Green Seal wishes to encourage recyclable containers when possible, but also recognizes the limitations of the current system. Green Seal has elected to remove the recyclable criteria and has increased the amount of recovered material content to 20%. Green Seal has subsequently removed the definition of "recyclable" and "post-consumer material". Green Seal believes incorporating recovered material content is feasible based on the current types of packaging. The dominant packaging material--metal paint cans--contain a substantial amount of recovered material content[1]. Plastic containers, which are the growing sector of the packaging market, are either polypropylene (PP) or high density polyethylene (HDPE) and both materials can incorporate a substantial amount of recovered material content. Hybrid containers or a mix of metal and plastic containers will be accepted provided that it fulfills the recovered material content. Green Seal also believes that requiring 20% of recovered material content is establishing leadership levels. Incorporating recovered material content is not currently widespread in the industry and some effort or development may be needed to ensure packaging meets the criteria. Green Seal wishes to encourage the establishment of a takeback program to further divert packaging from the waste stream and includes this allowance in the packaging requirement. Green Seal will continue to examine the existing recycling system and packaging improvements for future revisions.

CHANGE: Removed recyclable container; changed recovered material content to 20%

Consumer Education and Labeling

Green Seal agrees with the comments that adequate ventilation time is an important requirement and has added "instructions for adequate ventilation during application and drying time" to the consumer education section. Green Seal has also added a specification that the label should include the information listed in the consumer education section or include a reference to the appropriate consumer education materials.

CHANGE: Added adequate ventilation on Consumer Education section; add label requirement about consumer education

Addendum

Green Seal has removed the Addendum section as it will be a part of a broader Green Seal program that will cover multiple product categories. The intent will be the same, to reward manufacturers that achieve even higher leadership levels than the criteria set out in the standard. The optional verification claims will only be available to certified products that fulfill all the criteria in the standard. Green Seal believes the optional verification program will provide recognition and incentive to reward manufacturers whose products go beyond the criteria listed in the standard. One of the major verifications will be "Zero VOC"--see further discussion below. Green Seal appreciates

[1] *The Inherent Recycled Content of Today's Steel*, Steel Recycling Institute (STI)

the feedback and input in the Addendum section and looks forward to implementing the program in the near future.

RESULT: Removed Addendum as it will be part of broader Green Seal future program

Additional Responses

Zero-VOC claim
Green Seal wishes to clarify the Zero-VOC claim that will be part of the broader optional verification program. The Zero-VOC verification claim is listed for those certified products that have zero VOC in the product *including colorants*. For products that are zero-VOC and either do not have control over the colorants or otherwise cannot make claims on the VOCs of the colorant added at the point-of-sale, Green Seal will allow the zero-VOC claim *if accompanied with a statement that the zero VOC claim does not include colorants*. What Green Seal wants to avoid is misinformation among end-users that the product is zero-VOC if this situation is not the case. However, Green Seal recognizes that there should be some incentive and distinction for manufacturers who are developing a product that has VOC levels lower than the required levels in the standard.

GS-11 is too performance-based; VOC Content Limits are not leadership levels
Green Seal recognizes the revision of the GS-11 Paint standard has improved the performance requirements, but believes that the performance is also part of the improved indoor impacts to human health and the environment. In terms of measuring VOCs, U.S. EPA, California Air Resources Board (CARB), Master Painters Institute (MPI) and South Coast Air Quality Management District (SCAQMD) specify U.S. EPA Method 24, which has been criticized for its inability to measure low levels of VOC. Green Seal is setting a precedent by specifying a direct GC/MS method, a much more accurate and stringent method of measuring VOCs. Green Seal's definition of boiling point is more inclusive than the current U.S. definition and while borrowed from the European Union, is more stringent by electing a higher boiling point. The VOC content limits in the proposed GS-11 are in line with the levels that were passed by CARB Suggested Control Measure of 2007 to be implemented in January 2010. In addition, as discussed previously, Green Seal is also addressing the issue of VOCs from colorant added at the Point-of-Sale, which is a new consideration area for VOC regulations.

Green Seal has elected not to use the SCAQMD Rule 1113 VOC limits. Green Seal standards are life-cycle based and include VOC limits, performance requirements, compound prohibitions and consumer education. Green Seal has to be cognizant of current technology so that the standard, in its totality, is achievable with the current technology. Green Seal standards are national standards intended to be applied in a variety of climate and outside environmental conditions and SCAQMD has admitted that some of the limits of Rule 1113 are not intended necessarily for areas outside their region. In addition, SCAQMD allows for an averaging provision whereby manufacturers can "compensate" with a non-compliant product with an over-compliant product. Green Seal does not believe that an averaging provision approach is necessary or pertinent to the GS-11 standard. In terms of the Master Painters' Institute, the Green Seal GS-11 VOC

content limits are either equal to or more stringent than the MPI GPS-1 requirements and the optional second tier (GPS-2) establishes levels similar to SCAQMD Rule 1113. Green Seal does not believe it is neither necessary nor pertinent to establish a tiered system with lower VOC limits. The "Zero-VOC Claim" will provide additional incentive and distinction in the market for those leaders in the marketplace. Green Seal will continue to evaluate the VOC levels achievable based on technological advances and may adjust the levels at a future revision date.

Addressing Indoor Air Quality-Chamber emission testing, addition of asthamagens

Green Seal has modified the definition of volatile aromatic compound and volatile organic compound to be defined by a boiling point of 280°C utilizing a direct GC/MS method. Green Seal believes these changes in addition to the compound prohibitions adequately address concerns of indoor air quality. The inclusion of asthamagens according to the Association of Occupational and Environmental Clinics (AOEC) would be premature and is not appropriate to include in the standard for paints and coatings at this time. In addition, Green Seal has elected not to include indoor air chamber testing in the standard as per the reasons stated below in the GS-11 Response to Comments dated Dec 6, 2007. Green Seal may reevaluate the decision to prohibit asthamagens and utilize indoor chamber testing at a later revision date.

> Green Seal acknowledges the comments and agrees that indoor air testing, which is included in LEED for Schools New Construction and Renovation Version 2007 and the Collaboration for High Performance Schools can provide valuable information about off-gassing from materials. However, Green Seal must take into account all criteria in the standard to ensure that the complete standard is not cost-prohibitive. Green Seal is cognizant about the limited amount of laboratories that are currently available to conduct small-chamber testing and the relatively high costs of the test, as small-chamber testing is not a routine test and no manufacturers have the capabilities to run the test in-house. Green Seal also agrees with the comments that there is some discussion about which compounds should be included in the list to test during small-chamber testing. While the precision and comprehensive list of compounds is increasing, small-scale chamber testing in some instances is limited due to a set number compounds which may or may not be the compounds of interest. A report by U.S. EPA in Fall/Winter 1998 concluded that low-VOC paint does not necessarily mean no-emissions as small-chamber testing demonstrated an off-gassing of formaldehyde. The report stated that the formaldehyde was likely from the biocide, the paint formulation, side reaction or other additives. Formaldehyde contained in the biocide, the paint formulation or other additives would be addressed the materials audit as formaldehyde is prohibited in the proposed list of Compound Prohibitions. In addition, formaldehyde-releasers, a likely source of side reactions that may release formaldehyde over time are also prohibited by the Specific Compound Prohibitions. Therefore, Green Seal accounts for several sources of formaldehyde in the materials audit in the formulation of the paint. In addition, Green Seal also includes other compounds in the Compound Prohibitions including hazardous air pollutants and ozone-depleting chemicals, which would likely contribute to indoor air quality issues. The descriptor of "volatile" has been added to the aromatic limit and the limit has been lowered in order to reduce the amount of volatile aromatic compounds in the product. The EPA report also criticizes EPA Method 24 as a determination of VOC levels. The methodology listed in the GS-11 proposed revision are gas chromatography methods based on boiling point, which are much more precise determinants of VOCs, particularly when defined according to boiling point and are more inclusive of compounds that would readily volatilize and contribute to VOCs and indoor air quality. Given the compound prohibitions and VOC methodology in the GS-11 proposed revision and given the limited availability of laboratories, high cost and increasing development of specific compounds, Green Seal believes that the previously listed criteria including Compound

Prohibitions, Specific Compound Prohibitions and VOC limits adequately address issues of indoor air quality and small-scale chamber testing is not warranted at this time and has been removed the requirement from the standard. Green Seal will revisit the inclusion of small-scale chamber testing during the next revision as improvements in the methods may be above what can be addressed through formulation materials audit and VOC Limits and a greater availability of laboratories may allow for inclusion in the standard.

Use of peer-reviewed lists

Green Seal admits that using peer-reviewed lists is a more restrictive approach and that not all products will be able to meet the standard, but in development of leadership standards, Green Seal wants to discourage the proliferation of established harmful compounds in the overall industry and encourage innovation towards alternative chemicals. In addition, Green Seal believes in a preventative approach for human health hazards and using established peer-reviewed lists discourages the formulation around the "laundry-list" of chemicals, which may incorporate alternate, but still hazardous materials. Green Seal has reviewed the scientific classifications that are cited within the standard to ensure that they are derived from international, national or other governmental criteria and databases, peer-reviewed and are periodically updated. Green Seal attempts to use the best, most current and advanced science as a basis for the criteria in the standard and human health and environmental criteria. In addition, during the standard development process, Green Seal examined the list of chemicals for its relevance and application to the product category. Green Seal subsequently established an exception for titanium dioxide. Crystalline silica and carbon black are discussed below.

Ingredient level of 0.01%

Green Seal's intent is to promote leadership and to reward those product and manufacturers that perform beyond the current regulations. As part of Green Seal's goal to be protective of environmental and human health, Green Seal set the level of an ingredient at 0.01% to promote a higher level of performance than required by Occupational Safety and Health Administration (OSHA). Several states have more stringent reporting requirements under their right-to-know laws. For example, California's Proposition 65 requires reporting of hazardous substances that are present above any detectable amount. Massachusetts requires extraordinarily hazardous substances be reported if they are present at a level of 0.0001% or greater and Pennsylvania requires special hazardous substances be reported at 0.01% level or greater. The threshold of an ingredient 0.01% is also used in a number of Green Seal standards, including the Recycled Paint Standard (GS-43). The established threshold of 0.01% or 100ppm also provides the allowance for trace materials or potential unintended by-products of reactions. Green Seal recognizes that while the 100ppm threshold may be difficult for certain colorants and extenders to meet, the limit of 0.01% by weight is applied to the product produced by the manufacturer and as stated before does not include additives, such as colorants, added at the point-of-sale.

APEO prohibition

Alkyl phenol ethoxylates (APEO's) degrade into nonylphenol and other products that are known to persist and bioaccumulate in waterways and aquatic life and act as endocrine disruptors. Other international paint and coating standards also prohibit APEO's and

include the ecolabels of the European Union, Nordic Swan and Australia. Certain APEOs, such as nonylphenol ethoxylates are being targeted on Wal-mart's "preferred substances list" and are being phased out on retail shelves due to the concerns. The Sierra Club is requesting the U.S. EPA to ban nonylphenol ethoxylates from industrial and household cleaners and in other areas where the wastewater treatment are not equipped to remove nonylphenol ethoxylates. As Green Seal wishes to promote environmentally preferable products, Green Seal believes is technologically feasible to prohibit APEOs used in paint and coatings. As with the other compound prohibitions, the ingredient level is set to threshold level of 0.01% by weight of the product. Green Seal wants to clarify that the compound prohibitions include the product produced by manufacturer and does not cover APEOs contained in colorants added at the point-of-sale. Many manufacturers do not have knowledge or control over the colorants that are added at the point-of-sale. However, the colorant added at the point-of-sale VOC content limit will act as a potential limit to the use of APEOs as a solvent. Addressing VOCs added by colorants will promote better technology towards lower VOC colorants and therefore potential reduction of APEOs. Green Seal will continue to assess the technological innovations and infrastructure of the industry to determine the most appropriate or feasible approach to addressing the chemical components of additives added at the point-of-sale in the future.

Carbon Black and Crystalline Silica

Carbon Black is listed in International Agency for Research on Cancer (IARC) as a *Group 2B: Possibly Carcinogenic to Humans*. Green Seal believes based on the evidence that the carcinogenic effects of inhalation or local sarcomas, carbon black is warranted to be prohibited in the standard. Green Seal believes that the prohibition is not unreasonable given that carbon black, within the category of architectural paints and reflective coatings, is not an essential ingredient of the product produced by the manufacturer. Carbon black may be a component of colorants added at the point-of-sale and while Green Seal is cognizant of this addition, the chemical prohibitions in the standard currently do not cover additives at the point-of-sale. In likelihood, the addition of carbon black is likely to be a small amount relative to the product, potentially <0.01% by weight of the product, and should not be a major human health concern due to the minimal exposure of the user to the carcinogenic properties of carbon black. Green Seal will continue to look examine feasible alternatives to carbon black in additives added at the point-of-sale.

IARC lists "crystalline silica (inhaled in the form of quartz or cristobalite from occupational sources)" as *Group 1: Carcinogenic to Humans*. National Toxicology Program (NTP) lists "silica, respirable size" as known to be human carcinogen. While California's Proposition 65 is cited in the standard only in terms of reproductive toxins, it lists "silica, crystalline (airbourne particles of respirable size)" as having carcinogenic effects. Each of the listings are specific of the form of crystalline silica that have proven carcinogenic effects—respirable size or inhaled from occupational sources. Based on discussions and additional research, Green Seal believes that "free crystalline silica" should not be added as part of manufacturer formulation. During spray application or sanding of the dry film may exposure the end-user to the respirable form of crystalline

silica. The inhalation of crystalline silica is known and proven to be carcinogens by IARC, NTP and California's Proposition 65 and respirable amounts are limited by occupational health regulatory bodies like OSHA, National Institute for Occupational Health and Safety (NIOSH) and the American Conference of Industrial Hygienists (ACGIH). Crystalline silica also appears on a number of states right-to-know acts. However, other forms of crystalline silica, contained as part of naturally occurring raw materials such as titanium dioxide or diatomaceous earth are not in a form that presents a carcinogenic danger and are not intentionally added by the manufacturer. Green Seal recognizes that other forms of crystalline silica, like quartz, are naturally occurring elements and may be a component of other mineral-based raw materials. In the case of titanium dioxide, crystalline silica is often in its amorphous form. IARC lists amorphous silica separately, classified as *Group 3: Not classifiable as carcinogenic to humans*. Diatomaceous earth as the primary sole source of crystalline silica has been determined to have a safe use level of 6% in interior latex paints by the California Office of Environmental Health Hazard Assessment (OEHHA) for the Safe Use Determination issued Dec 26, 2003.

Transition (Phase-in) Time of GS-11 Revision

Green Seal recognizes that the revision of the GS-11 standard is significantly different than the original GS-11 and GC-3 standards and understands that meeting the additional requirements in the standard may require additional time and resources. In order to address this concern, Green Seal will allow a certain amount of transition time for currently certified products. The transition time will be 12 months from date of issuance for currently certified product manufacturers to achieve certification under the revised standard. Green Seal has also established a waiting list of new certified products during the revision process. Once the standard is issued, those manufacturers on the waiting list are encouraged to apply for certification based on the revised issued standard. Once the new standard is issued, any products that are currently in process (have not been awarded certification) must adhere to the new revised standard. Green Seal may make a designation on the website for certified product manufacturers that are still certified under the original GS-11 and those who adhere to the new issued standard, but *both certifications will be valid during the transition time*. Green Seal will also include a section in the issued standard outlining the transition time. The section will state that any references to GS-11 or GC-3 should refer to the revised standard. Once the transition time has ended or Green Seal decides that the specification section is no longer warranted, it will be removed from the revised GS-11 standard. Manufacturers should note that as the certification process takes 3-4 months or longer, *the submission of the necessary materials should be at a minimum 3-4 months prior to the 12 month date of issuance*. After the transition period, any manufacturer that has failed to provide the supplemental materials for the new revised standard without proper time to review the materials and therefore has not been verified to meet the new revised standard, will lose certification and will no longer be licensed to use the Green Seal mark. Currently certified product manufacturers or any products whose review is in process (have not been awarded certification) will be provided notification of the expected timeline, including an emphasis to consider the review time to achieve certification, when the new revised standard is issued.

RESULT: Added the following clarification to the standard:

Until April 1, 2009:

- *Products previously certified under the original GS-11 (issued 1993) and GC-3 (issued 1997) will need to be verified that they meet the requirements in the revision of GS-11 (issued 2008) by the above date. Any products that have yet to be verified to meet the requirements in the revision of GS-11 will be identified as such on the Green Seal web site, www.greenseal.org. Certifications under the original GS-11 and GC-3 and the revision of GS-11 will be valid during this time.*
- *Purchasing specifications and other specifications citing GS-11 should refer to the revision of GS-11.*
- *GC-3 is included in the revision of GS-11 and any references to GC-3 should be to the revision of GS-11.*