May 14, 2009

Green Seal is in the final stages of developing the Green Seal Environmental Standard for Stains and Finishes, GS-47. Registered stakeholders were invited to review the Draft Final Standard and submit comments. There were a few comments from stakeholders that warranted modifications to the criteria, but did not result in fundamental changes to the standard. These changes are highlighted below for your review. Also included are the comments and responses for your review. After reviewing the Draft Final V2 Standard for Stains and Finishes, GS-47, please complete the ballot below to express your opinion of the standard as a whole.

All Registered Stakeholders are requested to submit a ballot to fulfill their responsibilities to the standard-development process. If you have no opinion of the standard, please mark the ballot with "Abstain".

Ballots must be received by email at 8:00 PM Eastern/5:00 PM Pacific on May 29, 2009. Completed ballots must be sent electronically to: standards@greenseal.org.

By participating in the process of setting environmental standards, you play an important role in our efforts to encourage the design, manufacture, and use of environmentally responsible products and services. Thank you in advance for your participation.

Sincerely,
Nana Takyi Wilberforce, PhD
Environmental Scientist

The language from the Draft Final Standard is included in bold, followed by comments, and Green Seal's response to the comments. Any modifications to the language in the Draft Final Standard are included in italics in the response.

1.0 SCOPE

This standard establishes environmental, health, and performance requirements for stains and finishes. This standard is intended for products generally applied to metal and wood substrates. The standard includes sealers but does not include paints[1], floor polishes[2], specialty (industrial, marine, or automotive) coatings, or products sold in aerosol cans.

[1]Paints are defined as any pigmented liquid, liquefiable, or mastic composition designed for application to a substrate in a thin layer that converts to an opaque solid film after application that hides the substrate. Paints are covered under the Green Seal Environmental Standard for Paints and Coatings (GS-11) and recycled content (consolidated and reprocessed) latex paints are covered under the Green Seal Environmental Standard for Recycled Context Latex Paint (GS-43).

[2] Floor polishes are defined as products designed to polish, protect, or enhance floor surfaces by leaving a protective wax, polymer, or resin coating that is designed to be periodically removed (stripped) and reapplied. They are covered in the Green Seal Environmental Standard for Floor-care Products (GS-40).

Comment:
For the sake of clarity, it would be helpful if the substrates the standard is intended for are listed clearly in the scope. There are stains and finishes for other common architectural substrates. Also, there is nothing in Section 4.1 Table 1 to indicate that the VOC content limits are for wood stains and finishes as is apparent from the body of the standard.

The beginning of the scope paragraph could read something like this:

This standard establishes environmental, health and performance requirements for a variety of stains and finishes intended and labeled for use on wood and select metal substrates.

Response:
Green Seal acknowledges your comment. The scope already included the key substrates of wood and metal, thus it is not necessary to modify the scope.

2.0 PRODUCT-SPECIFIC PERFORMANCE REQUIREMENTS

2.1 **Penetrating Stains**

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[1]Paints are defined as any pigmented liquid, liquifiable, or mastic composition designed for application to a substrate in a thin layer that converts to an opaque solid film after application that hides the substrate. Paints are covered under the Green Seal Environmental Standard for Paints and Coatings (GS-11) and recycled content (consolidated and reprocessed) latex paints are covered under the Green Seal Environmental Standard for Recycled Context Latex Paint (GS-43).

[2] Floor polishes are defined as products designed to polish, protect, or enhance floor surfaces by leaving a protective wax, polymer, or resin coating that is designed to be periodically removed (stripped) and reapplied. They are covered under the Green Seal Environmental Standard for Floor-care Products (GS-40).

- **Blush resistance. When prepared and tested on a 1 mil thick dry film according to ASTM D 1735 for 2 hours, the penetrating stain shall have a rating of 8 as per ASTM ST 500 after a 24-hour recovery period.**

2.1.1 Interior wood stains

- **Chemical Resistance. When tested according to ASTM D 1308 using the covered spot test for one hour exposure over the intended substrate, the interior penetrating stain shall demonstrate a rating of 8 after a one -hour recovery period.**

2.1.2 Waterproofing Sealers

- **Water Resistance. Waterproofing sealers shall show a minimum of 60% water repellent efficiency when tested according to ASTM D 4446.**

Comment:
Product-Specific Performance Requirements
Section 3.1 on Penetrating Stains needs to be divided into two completely separate sections, one for Penetrating Stains and the other for Waterproofing Sealers with different performance requirements. Waterproofing Sealers should be established as a separate category for purposes of specifying performance requirements. As currently written, the draft final standard gives the appearance of a blush resistance requirement for Waterproofing Sealers. This is inappropriate for this category and does not seem to be the intent of Green Seal's response to comments since many Waterproofing Sealers are pore-lining rather than film-forming compositions and could not be prepared as a one mil thick dry films for testing under ASTM D 1735. Water repellent efficiency is the only performance requirement necessary for the Waterproofing Sealer category. We recommend a Section 3.4 be added for Waterproofing Sealers with Water Resistance as the only performance requirement.

Comment:
We strongly recommend that Section 3.1-Penetrating Stains be divided into two completely separate sections: one for Penetrating Stains and the other for Waterproofing Sealers with different performance requirements. Waterproofing Sealers should be established as a separate category for purposes of specifying performance requirements. As currently written, the draft final standard gives the appearance of a blush resistance requirement for Waterproofing Sealers. This is inappropriate for this category and does not seem to be the intent of Green Seal's response to comments since many Waterproofing Sealers are pore-lining rather than film-forming compositions and could not be prepared as a one mil thick dry films for testing under ASTM D 1735. Water repellent efficiency is the only performance requirement necessary for the Waterproofing Sealer category. We recommend a Section 3.4 be added for Waterproofing Sealers with Water Resistance as the only performance requirement.

Response:
Green Seal agrees with the comment and has modified the performance requirement accordingly:

PRODUCT-SPECIFIC PERFORMANCE REQUIREMENTS

Penetrating Stains

- *Blush resistance. When prepared and tested on a 1 mil thick dry film according to ASTM D 1735 for 2 hours, the penetrating stain shall have a rating of 8 as per ASTM ST 500 after a 24-hour recovery period.*
- *Chemical Resistance. When tested according to ASTM D 1308 using the covered spot test for one hour exposure over the intended substrate, the interior penetrating stain shall demonstrate a rating of 8 after a one -hour recovery period.*

Waterproofing Sealers

- *Water Resistance. Waterproofing sealers shall show a minimum of 60% water repellent efficiency when tested according to ASTM D 4446.*

2.0 PRODUCT-SPECIFIC ENVIRONMENTAL AND HEALTH REQUIREMENTS

2.1 VOC Content Limits. The VOC concentration of the product shall not exceed those listed below in grams of VOC per liter of product as determined by ASTM D6886-03 Standard Test Method for Speciation of the VOCs in Low VOC Content Waterborne Air-Dry Coatings by Gas Chromatography using 280°C as a specified limit. Alternatively, ISO 11890-2 Paints and Varnishes --Determination of VOC content, Part 2: GC/MS method, may be used, but must use 280°C as a marker. Another scientifically validated test method may be used if accompanied by justification for the method modification and documented in sufficient detail.

Table 1: VOC limits on stains and finishes intended and labeled for use on wood and select metal substrates

Coating type		VOC Content (g/L as applied)
Finishes	Varnishes	350
	Lacquer	550
	Clear Brushing Lacquer	680
	Shellacs/Pigmented	550
	Shellacs/Clear	730
Stains		250
Sealer		200
Waterproof Sealers		250

Comment:
First, the interesting comment regarding the climatic conditions in Southern California poses a good question: where else in the US can you get the humidity near the ocean, work on houses in the snowy mountains, and look at jobs in the dry desert, then go back to your shop (which is 1 hour from each of these climates) and facilitate the needs of your customers in each of those drastic climatic differences?

2. The fact is there are several companies in the SCAQM District that manufacture goods, pre-finish these goods, and ship them all over the country. I am sure that they would disagree with your remarks that their coating materials only allow them to achieve "satisfactory results." Further, some of the most expensive and exotic finish systems and styles are designed and utilized in Southern California for on-site application methods as well as factory applied methods.

3. The reality is that the coating manufacturers that want to develop coating that are high performance, industrial grade and are required to meet the SCAQMD standards do. This is a fight between large batches of old formulas vs. smaller, less profitable, batches of new formulas. For coatings companies, it is a matter of simple economics. If you are making large batches of formulas that were developed 20 years ago, your profit is naturally higher than making smaller batches of coatings that still have the cost of development tied to them.

4. Every major coatings company in North America and several Global companies sell conforming coatings in Southern California that perform very well. Their sales people are trained to sell their coatings in this region, and would not have jobs if the coatings only performed in a satisfactory manor. Further, if the coatings sold in the SCAQMD failed once a finished piece was shipped out of SCAQMD, there would certainly not be as many coatings companies competing for business.

Hopefully these truths point out a few interesting items to review before making your final decision regarding CARB standards vs. SCAQMD standards. If Green Seal sets a standard that is achievable, but only for those who are innovative, then Green Seal will truly set a president in this new environmental era.

Response:
Green Seal acknowledges your comments. While the limits imposed on stains and finishes by SCAQMD may provide good results in the climatic conditions found in Southern California, these same products may be challenged in performance in other areas of the country where temperatures and moisture may be more variable. Most of the low VOC alternatives mandated by SCAQMD will perform adequately in a dry environment as they are "water resistant" but not waterproof. A waterproof product is required in construction and remodeling situations where either cold or inclement weather can occur. It should be noted that SCAQMD acknowledges that some of the limits "may have performance difficulties in extreme temperature and humidity conditions" but discounts those concerns for their revisions because of Southern California's unique climatic conditions. In addition, SCAQMD includes an averaging provision whereas a manufacture is allowed to sell a product that does not meet the VOC level, if it demonstrates compliance with another product. Green Seal does not consider decisions on the

VOC limits in the GS-47 Stains and Finishes Standard as a case of CARB verses SCAQMD but rather on what works best regardless of the climatic conditions. Green Seal continues to support and applaud innovative measures to lower the VOC limits of products below the set limits in the current GS-47 Stains and Finishes Standard.

Comment:
Low Solids Coating Category
We would like to, again, recommend the addition of a Low Solids Coating Category with a VOC limit of 120 grams per liter, determined not on a "less water, less exempt compound" basis, but rather determined as the VOC actually in the container.

Green Seal responded as follows to earlier comments recommending addition of the Low Solids Coating category to GS-47 with a VOC limit of 120 g/L (actual):

"Green Seal has determined that due to their molecular contents stains and finishes are already low solid coatings and has elected not to add low solid coating category to the current standard."

This response leads us to believe the comments recommending addition of the Low Solids Coating category lacked sufficient detail to allow an informed decision. As a result, we would like to offer additional information in support of our original comment and request.

The Low Solids Coating category first appeared as a revision to the South Coast Air Quality Management District's architectural coating VOC rule (Rule 1113) in 1996. It was introduced to allow and encourage the use of low solids coatings with very low VOC emissions that could not comply with VOC limits based on the "less water" method of VOC calculation (see equation below for "VOC Regulatory"). Prior to this action by South Coast, products that emitted higher amounts of VOCs and complied with limits based on the "less water" method were used in place of these revolutionary new low solids products. Even solvent borne coatings were able to comply with such limits, while these low solids water borne coatings could not. This unintended consequence of the "less water" method of calculating VOC content only affected coatings designed to function best at low solids content, defined as no more than one pound of solids per gallon of product. All modern VOC rules now include the Low Solids Coating category with a limit of 120 g/L "actual" VOC (see equation below for "VOC Actual").

The "less water" calculation for VOC subtracts the volume of water and exempt solvents from the VOLUME of the coating, as shown in the equation below:

$$\text{VOC Regulatory} = \frac{\text{[Weight of VOC]}}{\text{[Volume of coating – Volume of water – Volume of Exempts]}}$$

The unintended consequence of this calculation is that for very low solids waterborne coatings, the very high content of water results in a "blow up" of the VOC content. For

example, if a coating has a weight of VOC of 0.5 pounds in one gallon [about 60 grams in one liter] of coating, and a volume percent of water of 80 percent [that is, 80% of the gallon or the liter is water, the remainder being solids and volatile organic compounds], the VOC content is multiplied by 5X – that is, the VOC content less water and exempts becomes 2.5 pounds per gallon or about 300 grams per liter!!!

It is for this reason that all VOC regulations developed since 1996 have included a low solids category with a different method for calculating the VOC content. For these products, the regulatory VOC content does NOT subtract the water and exempt solvents from the volume. Thus, for these products the VOC content would be

$$\text{VOC Actual} = \frac{[\text{Weight of VOC}]}{[\text{Volume of coating}]}$$

We recommend that Green Seal contact us or the California Air Resources Board for more information on this very important category.

Only a few categories have need for the remedy provided by designation as a Low Solids Coating. Examples within the scope of GS-47 include semitransparent stains, stain controllers (a type of sealer) and waterproofing sealers. No new product-specific performance requirements are needed to accommodate addition of the Low Solids Coating category to GS-47. Existing performance requirements would apply based on the labeled use of the Low Solids Coating (e.g., a Low Solids Coating labeled for use as a Waterproofing Sealer must meet the Product-Specific Performance Requirements for a Waterproofing Sealer). Without the Low Solids Coating category, many environmentally responsible architectural specialty coatings with very low VOC emissions would, ironically, be prohibited under GS-47. Including the Low Solids Coating category with a VOCActual limit of 120 g/L encourages innovative formulation of lower-VOC coatings for applications where low solids technology is appropriate.

In light of the information above, we respectfully restate our request for addition of the Low Solids Coating category to GS-47 with a VOCActual limit of 120 g/L, as defined below:
"Low Solids Coating: A coating containing 0.12 kilogram or less of solids per liter (1 pound or less of solids per gallon) of coating material as recommended for application by the manufacturer. The VOC content for Low Solids Coatings shall be calculated including the volume of water and exempt compounds."

Comment:
Low Solids Coating Category
We would like to, again, recommend the addition of a Low Solids Coating Category with a VOC limit of 120 grams per liter, determined not on a “less water, less exempt compound” basis, but rather determined as the VOC actually in the container.

Green Seal responded as follows to earlier comments recommending addition of the Low Solids Coating category to GS-47 with a VOC limit of 120 g/L (actual):

"Green Seal has determined that due to their molecular contents stains and finishes are already low solid coatings and has elected not to add low solid coating category to the current standard."

This response leads us to believe the comments recommending addition of the Low Solids Coating category lacked sufficient detail to allow an informed decision. As a result, we would like to offer additional information in support of our original comment and request.

The Low Solids Coating category first appeared as a revision to the South Coast Air Quality Management District's architectural coating VOC rule (Rule 1113) in 1996. It was introduced to allow and encourage the use of low solids coatings with very low VOC emissions that could not comply with VOC limits based on the "less water" method of VOC calculation (see equation below for "VOC Regulatory"). Prior to this action by South Coast, products that emitted higher amounts of VOCs and complied with limits based on the "less water" method were used in place of these revolutionary new low solids products. Even solvent borne coatings were able to comply with such limits, while these low solids water borne coatings could not. This unintended consequence of the "less water" method of calculating VOC content only affected coatings designed to function best at low solids content, defined as no more than one pound of solids per gallon of product. All modern VOC rules now include the Low Solids Coating category with a limit of 120 g/L "actual" VOC (see equation below for "VOC Actual").

The "less water" calculation for VOC subtracts the volume of water and exempt solvents from the VOLUME of the coating, as shown in the equation below:

$$\text{VOC Regulatory} = \frac{[\text{Weight of VOC}]}{[\text{Volume of coating} - \text{Volume of water} - \text{Volume of Exempts}]}$$

The unintended consequence of this calculation is that for very low solids waterborne coatings, the very high content of water results in a "blow up" of the VOC content. For example, if a coating has a weight of VOC of 0.5 pounds in one gallon [about 60 grams in one liter] of coating, and a volume percent of water of 80 percent [that is, 80% of the gallon or the liter is water, the remainder being solids and volatile organic compounds], the VOC content is multiplied by 5X – that is, the VOC content less water and exempts becomes 2.5 pounds per gallon or about 300 grams per liter!!!

It is for this reason that all VOC regulations developed since 1996 have included a low solids category with a different method for calculating the VOC content. For these products, the regulatory VOC content does NOT subtract the water and exempt solvents from the volume. Thus, for these products the VOC content would be

$$\text{VOC Actual} = \frac{[\text{Weight of VOC}]}{[\text{Volume of coating}]}$$

Only a few categories have need for the remedy provided by designation as a Low Solids Coating. Examples within the scope of GS-47 include semitransparent stains, stain controllers (a type of sealer) and waterproofing sealers. No new product-specific performance requirements are needed to accommodate addition of the Low Solids Coating category to GS-47. Existing performance requirements would apply based on the labeled use of the Low Solids Coating (e.g., a Low Solids Coating labeled for use as a Waterproofing Sealer must meet the Product-Specific Performance Requirements for a Waterproofing Sealer). Without the Low Solids Coating category, many environmentally responsible architectural specialty coatings with very low VOC emissions would, ironically, be prohibited under GS-47. Including the Low Solids Coating category with a VOCActual limit of 120 g/L encourages innovative formulation of lower-VOC coatings for applications where low solids technology is appropriate.

In light of the information above, we respectfully restate our request for addition of the Low Solids Coating category to GS-47 with a VOCActual limit of 120 g/L, as defined below:
"Low Solids Coating: A coating containing 0.12 kilogram or less of solids per liter (1 pound or less of solids per gallon) of coating material as recommended for application by the manufacturer. The VOC content for Low Solids Coatings shall be calculated including the volume of water and exempt compounds."

Comment:
Conjugated Oil Varnish Category
We would also strongly encourage Green Seal to add a Conjugated Oil Varnish category to Section 4.2. The corresponding VOC content limit would be 450 g/l.

Response
Green Seal appreciates the clarification about low solids coatings and has decided to include low solid coatings in the scope of GS-47, Stains and Finishes Standard. Existing performance requirements would apply based on the labeled use of the Low Solids Coating. Also, Conjugated Oil Varnish which is a clear or semi-transparent wood coating, labeled as such, excluding lacquers or shellacs, based on a natural occurring conjugated vegetable oil (Tung oil) and modified with other natural or synthetic resins has been added to the scope of the GS-47 Stains and Finishes Standard. Existing performance requirements would apply based on the labeled use of the conjugated oil varnish. The VOC content limit of the conjugated oil varnish shall be 450 g/L as applied.

3.0 PRODUCT-SPECIFIC PERFORMANCE REQUIREMENTS
The product shall meet the following performance requirements for all of the labeled and marketed uses that apply. All tests shall be performed on product produced by the manufacturer and do not include additives at the point-of-sale.

Definition
Low Solids Coating. Stains and Sealers containing 0.12 kilogram or less of solids per liter (1 pound or less of solids per gallon) of coating material as

recommended for application by the manufacturer. The VOC content for Low Solids Coatings shall be calculated including the volume of water and exempt compounds. Existing performance requirements would apply based on the labeled use of the Low Solids Coating.

Conjugated oil varnish. A clear or semi-transparent wood coating, labeled as such, excluding lacquers or shellacs, based on a natural occurring conjugated vegetable oil (Tung oil) and modified with other natural or synthetic resins; a minimum of fifty per cent of the resin solids consisting of conjugated oil.

4.0 PRODUCT-SPECIFIC ENVIRONMENTAL AND HEALTH REQUIREMENTS

Table 2: VOC limits on stains and finishes intended and labeled for use on wood and select metal substrates

Coating type		*VOC Content (g/L as applied)*
Finishes	*Varnishes*	*350*
	Conjugated Oil Varnish	*450*
	Lacquer	*550*
	Clear Brushing Lacquer	*680*
	Shellacs/Pigmented	*550*
	Shellacs/Clear	*730*
Stains		*250*
Sealer		*200*
Waterproof Sealers		*250*
Low Solids Coating		*120*

2.2 **Chemical Prohibitions. The product shall not contain the following ingredients:**

- **Alkylphenol ethoxylates**
- **Carcinogens**
- **Mutagens**
- **Reproductive toxins**
- **Hazardous air pollutants**
- **Ozone depleting compounds**
- **Phthalates**
- **2-butoxyethanol**
- **Heavy metals including lead, mercury, cadmium, hexavalent, chromium, and antimony in the elemental form or compounds.**
- **Halogenated solvents**
- **Formaldehyde donors**
- **Volatile aromatic solvents**

An exception shall be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black. Carbon black allowed under this exception shall be less than or equal to 1% by weight of the product.[3] Crystalline silica is prohibited according to the specific form as listed; therefore, crystalline silica as part of naturally occurring mined raw materials is exempted, but free crystalline silica shall not be added as an ingredient.

Comment:
3. Chemical Prohibitions
Section 4.2: We recommend this section be revised, similar to that found in GS-11 for Paints and Coatings, to limit the allowable content of Volatile Aromatic Compounds to 0.5%. The same logic that led Green Seal to set this as the limit in GS-11 for Paints and Coatings last May should also be applied to Stains and Finishes in GS-47. This would allow trace levels, which should have no significant health implication.

Section 4.2: In reference to crystalline silica, Section 4.2 states:

"….crystalline silica as part of naturally occurring mined raw materials is exempted, but free crystalline silica shall not be added as an ingredient."

This is ambiguous, since the definition for ingredient includes trace contaminants. We recommend this section be re-worded to use the already defined term "intentional introduction" by stating:

"….crystalline silica as part of naturally occurring mined raw materials is exempted, but free crystalline silica shall not be intentionally introduced into the coating."

Comment:
Volatile Aromatic Compounds: We recommend this section be revised, similar to that found in GS-11 for Paints and Coatings, to limit the allowable content of Volatile Aromatic Compounds to 0.5%. The same logic that led Green Seal to set this as the limit in GS-11 for Paints and Coatings last May should also be applied to Stains and Finishes in GS-47. This would allow trace levels, which should have no significant health implication.

Crystalline Silica
In reference to crystalline silica, Section 4.2 states:

"….crystalline silica as part of naturally occurring mined raw materials is exempted, but free crystalline silica shall not be added as an ingredient."

[3] Titanium Dioxide: EC Number 236-675-5, CAS Number 13463-67-7
Carbon Black: EC Number 215-609-9, CAS Number 1333-86-4

This is ambiguous, since the definition for ingredient includes trace contaminants. We recommend this section be re-worded to use the already defined term "intentional introduction" by stating:

"….crystalline silica as part of naturally occurring mined raw materials is exempted, but free crystalline silica shall not be intentionally introduced into the coating."

Response:
For clarification, crystalline silica is only prohibited according to the specific form as listed. Green Seal has made the necessary changes to the requirement accordingly. Green Seal has also determined that prohibiting Volatile organic compounds may not be feasible and has elected to limit the allowable content of Volatile Aromatic Compounds to 0.5%:

2.3 Volatile Aromatic Compound Content Limit. The product shall contain no more than 0.5% by weight of sum total of volatile aromatic compounds. Testing for the concentration of these compounds will be performed if they are determined to be present in the product during a materials audit.

2.4 Chemical Prohibitions. The product shall not contain the following ingredients:[4]

- *Alkylphenol ethoxylates*
- *Carcinogens*
- *Mutagens*
- *Reproductive toxins*
- *Hazardous air pollutants*
- *Ozone depleting compounds*
- *Phthalates*
- *2-butoxyethanol*
- *Heavy metals including lead, mercury, cadmium, hexavalent, chromium, and antimony in the elemental form or compounds.*
- *Halogenated solvents*
- *Formaldehyde donors*

An exception shall be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black. Carbon black allowed under this exception shall be less than or equal to 1% by weight of the product.[5]

Comment:
Green Seal has added 2-butoxyethanol to the list of prohibited compounds in GS-47, without any discussion or scientific justification. We strongly object to the recent

[4] As clarification, crystalline silica is only prohibited according to the specific form as listed.
[5] Titanium Dioxide: EC Number 236-675-5, CAS Number 13463-67-7
Carbon Black: EC Number 215-609-9, CAS Number 1333-86-4

unjustified addition of 2-butoxyethanol to the list of prohibited chemicals in section 4.2 and ask that it be removed. 2-BE is not prohibited in coatings in the new GS-11 standard and was not prohibited in the previous draft of GS-11. Green Seal has not provided justification for its prohibition in GS-47. 2-BE is not a carcinogen, reproductive or developmental toxicant, or a hazardous air pollutant. 2-BE is widely used in both water- and solvent-based coatings and stains and we are not aware of any harmful effects from its use in these products.

2-BE was not prohibited in the first draft or discussed in the comments. Prohibition of specific compounds or classes of compounds should be justified by credible toxicological and risk information using a weight of the evidence approach. In the future, Green Seal should announce changes to these prohibitions so stakeholders have the opportunity to review the merits of Green Seal's arguments and make appropriate comments. Since Green Seal has done neither, we ask that 2-butoxyethanol be removed from the list of prohibited compounds in the final version of the GS-47 standard.

Comment
We strongly object to the recent unjustified addition of 2-butoxyethanol to the list of prohibited chemicals in section 4.2 and ask that it be removed. 2-BE is not prohibited in coatings in the GS-11 standard and was not prohibited in the previous draft. We have provided not justification for its prohibition in GS-47. 2-BE is not a carcinogen, reproductive or developmental toxicant or hazardous air pollutant. 2-BE is widely used in both water- and solvent-based coatings and stains and we are not aware of any harmful effects from its use in these products.

2-BE was not prohibited in the first draft or discussed in the comments. Prohibition of specific compounds or classes of compounds should be justified by credible toxicological and risk information using a weight of the evidence approach. In the future, Green Seal should announce changes to these prohibitions so stakeholders have the opportunity to review the merits of Green Seal's case and make appropriate comments. Since Green Seal has done neither, we ask that 2-butoxyethanol be removed from the list of prohibited compounds in the final version of the GS-47 standard.

Response:
Research has shown that solvents such as 2-butoxyethanol (111-76-2) are rapidly absorbed through skin with potential systemic effects. However, it has been brought to our attention that this ingredient does not have safer alternatives for this product category of stains and finishes, and there is significant potential for performance-related problems with restricting 2-butoxyethanol may cause. As a result, Green Seal has elected to remove 2-butoxyethanol from the list of chemical prohibitions.

2.3 Chemical Prohibitions. The product shall not contain the following ingredients: [6]

[6] As clarification, crystalline silica is only prohibited according to the specific form as listed.

- *Alkylphenol ethoxylates*
- *Carcinogens*
- *Mutagens*
- *Reproductive toxins*
- *Hazardous air pollutants*
- *Ozone depleting compounds*
- *Phthalates*
- *Heavy metals including lead, mercury, cadmium, hexavalent, chromium, and antimony in the elemental form or compounds.*
- *Halogenated solvents*
- *Formaldehyde donors*

An exception shall be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black. Carbon black allowed under this exception shall be less than or equal to 1% by weight of the product.[7]

[7] Titanium Dioxide: EC Number 236-675-5, CAS Number 13463-67-7
Carbon Black: EC Number 215-609-9, CAS Number 1333-86-4