



Transcript

Webinar: Choosing Greener Insulation, March 3, 2016

**Green Seal
Environmental
Scientist
Brie Welzer:**

Good afternoon and thank you for joining us for the Green Seal webinar. I am glad to be today's moderator. My name is Brie Welzer and I'm an environmental scientist in Green Seal's Science and Standards Department. Today you will also be hearing from Green Seal's Senior Vice President of Outreach and Strategic Relations, Mark Petruzzi, and Vice President of Science and Standards, Dr. Daniel Pedersen. Over the next 40 minutes we will be presenting on various aspects of our proposed standard and following those presentations we will begin a Q&A, a question and answer, session which will last until 4:00pm Eastern time. At 4:00pm the webinar will end. This webinar will be recorded and the video will be posted on Green Seal's website. We will email all webinar registrants once that video has been posted with the link.

During this webinar we will provide a brief introduction to our non-profit organization, an overview of the sustainability on today's insulation market. We will summarize a few of the health and environmental issues and impacts of insulation products, and we will dive into the technical requirements and the decision-making process behind the development of our proposed standard for insulation.

If you would like to ask a question at any time during this presentation, go to your GoToWebinar console, which is on the right-hand side of your screen and that will allow you to submit your question. We'll be watching but we're going to wait until the Q&A session and then I will be reading these submitted questions aloud in the order that they were received. If you have difficulty submitting questions email your question to Ben Walsh. I'll leave it up there for a little longer in case you'd like to jot that down. I know some people who are not used to the GoToWebinar system. It can be a little confusing.

Before diving in I'd like to remind everyone about our request to you. Please register and comment on our proposed standard for architectural thermal insulation materials. We greatly benefit from your expertise, whether you bring your perspective from industry, as a manufacturer, your public health perspective, your perspective from an association, or if you have feedback because you purchased insulation as a homeowner or an institutional purchaser. Our closing date for comments is the end of this month, March 31st. Thank you in advance to all of those who have already registered. We're really looking forward to reading your comments. I'm now happy to hand over the mic to Mark Petruzzi. Take it away, Mark.

**Green Seal
Senior Vice
President of
Outreach and
Strategic
Relations Mark
Petruzzi:**

Thank you, Brie, and good afternoon, everyone. Let me make sure I get the mouse. Got ahead of myself. Good afternoon, everyone. I thought I would take a few minutes today just to set the table here for what we're going to talk about later and why we're developing an insulation standard, but a little background on Green Seal for those who may not be [in-depthly 00:02:58] familiar with who we are, and then talk about the landscape of insulation criteria and green insulation as we've seen it and why we're developing GS-54.

We are a non-profit organization and we're a mission-based organization. We are in our 27th year as an organization. We are an organization that does not do any lobbying. We don't do any rubber

rafts in front of oil tankers. We're a science-based, mission-based organization that seeks to transform the marketplace. That's a little different from many of the other environmental NGOs, but our primary program, and probably our most visible program since our inception, is our environmental standards and certification to those standards. We have some lovely head shots of almost all of our staff.

Insulation is just one of our standards that we are developing. We currently have 32 final standards that cover almost 400 different product and service categories. As a result of covering so many different product and service categories there are a wide range of purchasers from local and state and federal government, K-12 schools, higher education, health care, food service, hospitality, hotels and motel, green building programs, even most recently sports venues and some of the green work there. When Green Seal develops a new standard we tend to go out to these same purchasing categories and let them know that we've got a new standard. Often we develop new standards at the behest of purchasers that say, "I'd really like to buy green widgets but there's no good way to identify a green widget. Green Seal, can you help?"

One of the questions we frequently get asked is, "Who gave Green Seal the authority to do this?" This is what I like to refer to as our resume slide. We are an organization that complies with the International [inaudible 00:04:43] that deal with what we do and how we do it. There are 2 standards in the 14000-series, ISO 14020 and 14024, that actually lay out how a program such as ours should operate in terms of developing standards and doing conformity assessment to those standards. We are the U.S. member of GEN, which is the Global Ecolabelling Network. I'll have another slide on that in a second. We've also been audited by our peers under their GENICES program for conformity with ISO 14020 and 24, so we're very proud to have that peer review that we are, in fact, in compliance with those 2 standards.

EPA has some guidelines that I'll talk about also in a minute for 3rd party standards and eco-labels that they are working on to identify credible programs for use in federal procurement and we currently have been following that process and are participating. Consumers Union, the publishers of Consumer Reports have some criteria for what makes a good eco-label and then we meet all of those. Since 1992, when the 1st edition of the Federal Trade Commission Guides for Environmental Marketing Claims came out, up until the 2012 most recent edition, we are very well aware of. We've commented and helped FTC draft those guidelines and we hold not just ourselves but also our clients accountable to those FTC Green Guides, [inaudible 00:05:58] shorthand is frequently called.

Then this is a map that doesn't quite have all the members identified but all the little red flags, the pins, all over are the 26 member programs of the Global Ecolabelling Network. As you can see in North America there's 2 GEN members, EcoLogo and Green Seal and we do work closely with our other GEN members globally in terms of being aware of what standards they've developed. Probably the most frequent way we work with them is through mutual recognition of each other's certifications. If a product or service has been certified by one of our other ecolabelling GEN members, often we can recognize that if that product or service is wanting to be sold in the United States where the Green Seal may be more recognizable than the certification that they've already achieved. This will be important. We'll come back to this in a little while, too, and make a reference.

As I mentioned, we have standards that cover about 400 different products and services, so these are just ... cleaning products is one that many of those purchasers that I mentioned typically use in their ROPs and contracts and points and credits and rating systems and Green Guides, but we also have standards for services, such as hotels and restaurants and janitorial cleaning contractors, paper products, paints and coatings, stains and sealers, windows, a wide range of product and service types. Insulation will be a nice addition to the depth and breadth of Green Seal's current state of standards.

Another question I always like to answer is why 3rd party certification matters. Purchasers today typically rely on a lot of different 3rd party certifications or verifications, often without even thinking about it. Because it's already required in procurement areas it's a natural extension to have 3rd party certification for sustainability issues. Many of these environment and human health concerns are quite complex and companies don't always have all the data to provide to customers. Customers may not have any interest or time to review all of the data and come to their own conclusions.

With many of the purchasing situations out there having mandates, executive orders, policies, even legislation, requiring the purchase of sustainable products, using 3rd party certification makes it much, much easier to comply with those because they can just let the 3rd party certification do all the heavy lifting and then check off the box that they have procured products or services that comply with their mandates. More importantly, the role of the 3rd party is to make sure that purchasers are actually getting what they think they're getting, that they are buying a product or a service that is going to perform up to their expectations that it has reduced human health and environmental impacts.

Are there really hundreds of good ecolabels out there? I'm sure many of you have probably seen a picture or a slide or a newspaper article lamenting the hundreds of ecolabels that are out there. We've been equally frustrated by that. It is not, as I often say, like the boy scouts where companies are trying to get as many merit badges or certifications as possible. Ideally they should just get the one that's really applicable to their product and service and one that is recognizable and accepted by the widest number of purchasers. There has been a growing trend, fortunately, for de-cluttering the marketplace. One of these is the effort that I mentioned about EPA draft guidelines for ecolabels and standards and federal procurement.

Up on the upper right there, those are the 4 pages of 67 draft guidelines that they have put forth. The guidelines address everything from how the program sets its standards to how it does the conformity assessment and how the program itself operates on a day-to-day basis. Right now that's being piloted in 3 categories, 2 of which are building related: paint, flooring, and office furniture. Green Seal is participating on the paint panel and also on the overall governance committee for this pilot because we are definitely interested in having the landscape of ecolabels out there be reduced and de-cluttered and to drive more positive attention and utilization to the credible ones.

In order to do that you have to have credible standards. That's really what we're here to talk about today. The standards have to be based on science and what purchasers and manufacturers alike can rely on when you look at a Green Seal standard is that ultimately it's going to verify that the product is effective, that it's going to work as it's intended to work, for its intended function, that the product is, in fact, safer for human health, and the product is greener, more sustainable, better environmentally, more preferable. There's a lot of terms out there but greener is a good shorthand for that. All of Green Seal's standards can be found as free downloadable .PDFs on our website for any of final standards at GreenSeal.org/standard. Please feel free to download any other ones that may be of interest.

The process, how we develop standards. We're in the midst of what is usually months, sometimes years, of process where we do some additional research. We do scoping. We put out a proposed standard. We then seek an active bunch of stakeholders to give us comments and feedback on that. Occasionally it goes for several rounds of comment, but then ultimately we issue a final standard and then that's not the end of the story. We also have to review and revise those standards periodically to make sure that they still represent leadership over time. Right now we're getting a snapshot of 2016. What's leadership in today's marketplace? Obviously 2 years, 5 years, 10 years from now that won't be the case. As I mentioned in the earlier conformity requirements, the things we hold ourselves accountable to, ISO 14020 and 14024 are the 2 standards that guide our operations.

Once we have final standards we can then take applications for certification. Because we don't make anything and we don't sell anything we can have an evaluation of these products or services without any bias or conflict of interest. The standard is a transparent document. There's no hidden requirements. A purchaser or a manufacturer can download the full standard and know exactly what a product or service has to do in order to get Green Seal certification. Our fees are also fixed fees. A lot of questions that I've gotten over my time at Green Seal about our fees, but we don't take a percentage of the sales. If you sell one box of a Green Seal-certified product, great. If you sell a million boxes that's great, but we don't get any percentage of sales or royalties off that. That's part of our non-profit status. We can't have any direct financial interests in the products or services that we certify.

We do on-site inspections of the manufacturing site or the service location for something like a hotel or a restaurant. We talked a little about the FTC guides. We do review not just the label of the product itself but also the catalogs, the literature, the website verbiage for compliance with the Green Seal labeling requirements as well as the FTC Green Guides and also to make sure that there's no unsubstantiated environmental claims related to that product. Once products are certified they do have to agree to participate in our ongoing compliance monitoring to make sure that they still meet the standard as time goes on.

I'd thought I'd highlight a couple of publications, recent ones that we've done. On the upper left we recently did a Green Building operations manual for the Department of Housing and Urban Development for public housing authorities. It also has gotten a lot of use by colleges and universities which also maintain a lot of residential dwellings that have fairly high turnover every semester or at least over the summer and unit maintenance and turnover is a bit part of the public housing authority guides. A book on Greening Food and Beverage Services for the American Hotel and Lodging Association. That's being used by hospitality programs and culinary colleges. The NACO Green Purchasing Tool Kit, that's a free online web tool for the 3,067 counties in the United States, but there is a section in there on how to use their pre-certifications in your procurement and, as we mentioned, that's an easy way to comply when the mayor says, "Thou shalt buy green," or the board of commissioners says, "Thou shalt buy green," there's a good tool to help you get started on that.

Then some fun ones on the right. We did an audit of the Pentagon facility assessment, everything from the roofing maintenance all the way down to the flooring and the cleaning and janitorial operations. Then those are 4 posters that we did as part of a National Park Service series on green cleaning, lighting, HVAC, landscaping for the park, but they were also foldout posters and brochures that park visitors could take home with them. It also had some tips on how they could be green at home, not just when they're visiting the National Park Service and what the Park Service is doing. We do get engaged in a lot of facility-type operational guides.

The existing green building programs that are out there, as you are probably familiar, generally tend to address insulation from the standpoint of performance, some minimum R-value level, and installation requirements and may include single attributes, recycled content, renewable content, or low emitting or low emissions-based products, but not a lot of lifecycle-based multi-attribute guidance out there. These current tools generally have some good uptake but even some of the more recent ones like Environmental Product Declarations and Health Product Declarations, they tend not always to be the most purchaser-friendly or quick decision-making tools. If you recall the map of the earth with all of the GEN members dropped as red pins, currently 12 of our GEN sister ecolabelling programs do have standards related to insulation, including EcoLogo, but that standard dates to 2005, I believe. It's about 10, 11 years old. It doesn't really reflect the current marketplace. We have certainly scoured the existing landscape of the current tools for choosing greener insulation but haven't really found anything that addresses the purchasing needs and the marketplace needs. That definitely feeds into why we are developing GS-54.

The concept of environmentally preferable, too, for any of you who have been following green procurement for some time, at the bottom is executive order 12873. That's a number I will never

forget, which was Bill Clinton's first executive order that included green purchasing for the federal government and included this term "environmentally preferable product". At that top is an executive order from President Obama from March of last year that still uses essentially the same definition of environmentally preferable product, that a product that is environmentally preferable should look at raw material, production, manufacturing, packaging, distribution, use, et cetera. Our lifecycle-based standards have always been our preference but in the federal parlance and then in the term "environmentally preferable product" these are something that continues to be used and continues to be cited, and so there certainly is a need for a lifecycle-based standard.

In case you haven't seen one, this is just an example of an Armstrong gypsum ceiling tile environmental product declaration. It's fairly lengthy, as you can see, 18 pages, and has a lot of data and information but from a procurement standpoint it's not a quick and easy, "Oh, what's the green choice that I should buy to buy a greener ceiling tile?" We certainly have been participating in and engaged in a lot of the transparency and information efforts in the marketplace, but they're not exactly a quick and easy procurement tool at this point. Similarly, the health product declaration, this is the open standard, is a rather lengthy document and the reports generated out of that, like the declare label, also tend to be multi-page effort. What we've heard for procurement is that we need something easy so we know what is really the green choice in this category.

One of the things I also like to hearken back to is that we've had a lot of product information on things like personal care products and food items for many, many, many years, but that doesn't always mean that purchasers use them to make a good decision. You still have to interpret all of the information or ingredients or recommended daily allowance percentages on there, what's high, what's low, what's a good level, what's a bad level, and if you don't have the same information for all those products then you can't really make an apples to apples comparison.

One of my favorite studies to cite is a Journal of the American Dietetic Association study. They did some eye tracking of consumers and discovered that even with the full nutrition facts label, which is fairly straightforward, most people don't read past the first 5 items on there. Even when you have a face full of information to use on making a purchasing decision most people don't have the capacity or the patience to go beyond the first 3, 4, 5 items on there. We think that presents a real opportunity to take all of these complicated performance, human health, and environmental issues and boil them down into something simple like a Green Seal certification so purchasers can see that and they can certainly dive deeper if they want to and read the full standard and all of the rationale for why the criteria are in there, but at the end of the day will help greener insulation products find greener purchasers.

**Green Seal
Environmental
Scientist
Brie Welzer:**

Thank you so much, Mark. Great. On to the next section. This is Brie Welzer. I will be summarizing some of the environmental and health impacts of insulation products. I'm really just barely skimming the surface. These are very complicated issues, but if you want to dive in more and you want to see some of our further information and references on our handout section, check out the technical review .PDF. It may be very interesting to you. Certainly if you have some questions about this material you can find much more about what we're going to be talking about now. I'd also like to mention that I will not be covering many of the beneficial steps that some manufacturers have taken to tackle some of these health and environmental issues. Daniel will be diving more deeply into the current environmental leadership on the insulation market today when he describes the criteria in our proposed standard.

All right, the key function of insulation is to reduce the heating and cooling needs of a building or home, which itself is an environmental benefit. For example, insulation that is properly installed significantly reduces the energy that is needed to maintain that comfortable indoor environment which means, therefore, it's reducing the amount of fossil fuel use, the amount of greenhouse gasses, and it improves our air quality by limiting those emissions. If you look at the blue box, here's an example for fiberglass and slag wool but it works for all types of insulation. The amount of energy that is saved during the lifetime of this product as it's used, it saves hundreds of

thousands of times the energy that is needed to produce it, or the energy consumed in the manufacturing process.

The amount of energy that is consumed in the manufacturing process varies significantly from one type to another, but generally products made from animal wool, recycled paper, or cloth require the least amount of energy for their production. Recycled content is another great way to save energy. By incorporating this recovered material ... for example consumer-recycled content, post-consumer recycled content like glass bottles, pre-consumer content like the scraps produced during a manufacturing process of plastic, and also the post-industrial content, such as mining waste, which is incorporated into mineral wool. In each of these cases putting that material into the insulation, into the final product, reduces the use of natural resources. It reduces the emissions produced. It saves energy. It also diverts waste from the landfills.

Plastic-based insulation products use a gas which is referred to as a blowing agent to give them their foamy, light shape, and also to provide the thermal resistance. During the manufacturing of these products and the products life and its disposal, small amounts of the blowing agent is released into the environment. The issue with these emissions is that some blowing agents, when they exist in the atmosphere they absorb infrared radiation and they can also remain in the atmosphere for tens or hundreds of years, which means that they contribute to global warming. Some types of foam insulation this is not so much of an issue because they have switched to ultra-low global warming blowing agents or they've incorporated blowing agents with zero global warming potential. There are a few examples of blowing agents on the screen.

VOCs. VOCs are hydrocarbons, compounds made of hydrogen and carbon and they easily evaporate. The term for that evaporation we call off-gassing. When products off-gas those emissions might pose health risks to workers and building occupants who inhale them. You can see some of the health risks there. Products tend to off-gas at higher rates immediately after they are manufactured and then it falls off throughout the course of their lifetime. Once insulation materials are sealed in the wall it is possible that VOCs could affect, or continue to affect, the health of building occupants. Also because many different types of products off-gas the combination of those VOCs can start to pose a problem for indoor air quality and then you get the headaches, the dizziness, the worsening of asthma. Some manufacturers have responded by manufacturing very low, ultra-low products, or products with ultra-low VOC levels or no VOCs in their formulas.

Many insulation materials, including foam and cellulosic insulation materials are formulated with flame retardants so that they can meet safety regulations and building codes despite being flammable. Many commonly-used flame retardants have known health risks and environmental risks. Over the last few decades we've shifted from more hazardous flame retardants, which have been phased out, and those have been replaced with less hazardous options, but there are green building groups and public health experts that have still expressed strong concerns with what are currently used on the market.

Spray polyurethane foam, SPF. SPF is unique because it is produced on-site, meaning that its raw materials are combined and then spray-applied directly onto the surface and that creates an airtight barrier. SPF is a high-performing insulation. There have been cases of serious issues that were reported by workers and building occupants. In these cases that were reported they were due to faulty installations or they were cases where the individuals reentered the building too soon after the installation. There have been hundreds of thousands of safely and correctly installed SPF applications in the U.S. and those without reports of respiratory issues by workers or homeowners, which demonstrates that SPF itself is not inherently hazardous.

Disposal and landfill waste. There are very few recycling programs, manufacturer take-back programs, or reprocessing programs. They do exist but they're rare. This is often because it's just not financially worth it for manufacturers to put in that time and effort to collect the materials. You can see demolition here. It can be complicated. Also it actually might not be an environmental benefit. If you can consider the emissions that are required for the trucks and possibly the reprocessing, so it's a balance there in terms of what is the best option. That ends my section of this webinar. I'm now happy to pass along the microphone to Dr. Daniel Pedersen.

**Green Seal Vice
President of
Science &
Standards,
Dr. Daniel
Pedersen:**

Hi, everyone, and thank you for attending. Today what I'm going to cover is some more of the details about what went into the requirements in our standard, which are supposed to represent the current leadership of insulation materials in terms of protection in human health and environment. As Brie said, the details of these, which we're just going to skim over the surface, are available in our technical review document and the rationale document, available as handouts and also on our website at GreenSeal.org/insulation.

We'll start with the principles of developing our standards. We want our standards to be challenging, yet practical today, and to focus on the significant impacts and on the functional performance of the products and services, and reflecting that simply meeting the existing laws and regulations, complying with those, is not enough to be leadership. Leadership is what we call beyond compliance. We want the requirements in our standard to reflect products that are currently available for purchase and to use information that currently exists in the industry based on the information that's shared, standards that are developed, and leadership programs. If there are no national leadership programs, the default is to look to see what California is doing and to use the regulations in California to often represent leadership for the nation, or looking at other ecolabels for global leadership.

Sometimes we have a need for including additional information. If there are thresholds established that are below the reporting limit for the industry then we look directly at formulations, components, and sometimes to information from suppliers of raw materials. First of all we wanted to look at which insulation products can and should be included. Insulation fills many different applications: commercial, residential, and industrial; has to meet sometimes competing requirements for the specific application; and is made of many, many different materials. For each application a different material or a different form might be appropriate so, really, all types of insulation needs to be considered in the scope of our standard, which is listed on this screen.

On the left we have a list of the product forms that the insulation can come in and materials that are used to make these products. This is a summary of the types of products and materials that are covered in the scope of our standard. The first thing we look at is to make sure that the products work the way they're intended to work and provide the performance that the purchasers need or expect from it.

The principle that we're following here is that the insulation must perform at least according to the level established as acceptable by the industry. There are a number of different parameters that are evaluated for different types of insulation materials. In our standard we say that an insulation must meet the specifications established by the ASTM for that insulation material type. If there are additional functional claims and there's a specific list they must be backed up by results from ASTM tests conducted in-house or otherwise, and there is an option that if a company would prefer to do comparative testing of their products to a benchmark product that's also acceptable.

One of the things we want to mitigate is the energy consumption that's used in manufacturing compared to the in use. As Brie said, it's much smaller. This is a very important topic for evaluating the environmental impact of insulation materials but this, in practice, gets very complicated to determine and because of the complexity we've decided not to require manufacturing energy consumption for certification based on the evidence that the energy savings are much larger than any energy used in manufacturing.

Requirements for recycled content. There are different programs that establish levels, recovered content, and this is the table that shows the requirements that we've established in our standard for the different types of insulation materials. For global warming and ozone depletion these are mostly related to the blowing agents in the plastic foam-type insulation. Ozone depletion is no longer an issue in the United States as ozone depleters have all been phased out, but we've included the requirement for ozone depletion potential to be zero for completeness and also to prevent insulation materials that may be manufactured outside the United States with ozone potential in their blowing agents.

For global warming potential there's a transition in the industry from higher global warming potential to very low global warming potential. There are some HFCs that are still in use. The EPA S.N.A.P. program has established timelines for phasing those out. The requirements in our standard are that blowing agents should be allowed with a global warming of up to 140, which makes sure to cover all of the lower global warming potential materials but not the HFCs. The only exception is for extruded polystyrene foam insulation that there is still a timeline for phasing out the HFCs that are in use. We've allowed an exemption of up to 1,500 up to 2021 in keeping with the S.N.A.P. requirements.

VOC emissions. There are no national requirements for VOCs in building materials so we turned to California for leadership. California has established section 1350 which established the methods and criteria and we've required insulation materials to meet those requirements for VOC emissions. I hope you enjoy the harmonies of the D.C. sirens behind me to add some listening pleasure. For flame retardants, they're necessary and there are some health and environmental concerns so the approach is to prohibit the hazardous ones, restrict chemicals with specific hazards, and exempt chemicals that are essential for function. In a few slides I'll talk about the GHS hazard codes that we use and the specific chemicals that are prohibited.

Brie explained about the importance of proper installation for SPF, so for these on-site installations we're requiring the manufacturer, who does not have responsibility for the installation, to provide the proper instructions for installation procedures, precautions, and equipment, and to make recommendations that SPF be installed by certified installers. This is following the EPA's guidelines.

We're going to briefly look at the way that we talk about restricted and prohibited substances. At the first level we say any substances that are present above a threshold level, a trace level, that are associated with toxicity, respiratory sensitization or asthma, mutagenicity, cancer, or reproductive toxicity should be restricted. These are the international GHS codes established in Europe and adopted by OSHA and some other registries for cancer. This is our first line of defense.

Then, here are some of the components of insulation materials that are flagged under those restrictions. MDI, which is a key component in SPF, and polyisocyanurate is listed as a respiratory sensitizer. Because of its central importance we've listed an exemption so MDI specifically is exempted from that restriction. TDI was another functional component in SPF. That is restricted by those codes so would not be allowed in our standards above a level of 0.1%. Sodium borate and boron oxide are used in insulation materials as a flame retardant and antimicrobial. Flagged as a reproductive toxin and exempted because they're widely used in some insulation materials and are less hazardous than their alternatives. Acrylamide is a binder that is sometimes used. That would also be excluded. Glass mineral fibers are sometimes listed as carcinogens but the international Agency for Research on Cancer has classified them as Group 3, or not classifiable, so they are not considered carcinogens for the purpose of our standard.

There are some specific chemicals that are prohibited and should not be intentionally introduced. Some of the more hazardous flame retardants, and these are specific types of chemicals, formaldehyde and formaldehyde containing compounds often used in binders, triclosan, which is used as pest control, heavy metals, and phthalates. Asbestos and arsenic are prohibited as

carcinogens ... or restricted under those classifications. The CFCs, the HCFCs, and HFCs are effectively restricted by the global warming potential requirements.

We'll conclude this section with a brief overview of the issues that come up for different types of materials for insulation under these restrictions. As I said, for cellulose and fabric the sodium borate and boron oxide are restricted but these are exempted because they're ubiquitous. For polyurethane foam we have MDI as a common functional ingredient, exempted. TCPP, which is a common flame retardant. That is not restricted by the health codes. HFCs as blowing agents are prohibited because lower global warming potential blowing agents are available and on the market. HFOs as blowing agents are accepted and the various hydrocarbons, CO₂, steam, and water are not restricted.

For polyisocyanurate foam, similar situation. MDI is exempted from the restriction. For polystyrene, both expanded and extruded, styrene and the flame retardant HBCD are not restricted by our codes. HFCs as blowing agents are prohibited for all except for extruded polystyrene, exempted until 2021, and then the various blowing agents that are used for those are not restricted. For the mineral wools the issues that come up are formaldehyde and acrylamide as binders. Both of those are prohibited or restricted. Boron oxide as a stabilizer that's used is exempted from the restriction and, as we said, the glass and mineral fibers used in insulation are not considered carcinogens so they are not prohibited. That concludes some of the technical details of the rationale and the requirements that have gone into our standard.

**Green Seal
Environmental
Scientist
Brie Welzer:**

Thanks very much, Daniel. All right. What are the next steps in the development of this environmental leadership standard? I know several of you who are attendees actually submitted comments in the beginning, during the scoping phase, which was October and November, when we were first developing this criteria for the proposed standard. Currently we're on the second and the last public comment period. It'll be open until March 31st. That's our deadline for comments. Then around the end of May we will be issuing the 1st edition of the standard and we will publish a document, which we call a Response to Comments.

Before we go to Q&A I'm going to repeat our call to action today and for the rest of the month. Please consider registering ... It takes one minute at most ... for our online Colloborase forum. Review the proposed standard for insulation. We have what is called a rationale document for your review, which provides the details, a description of our decision-making process, and then provides the details of the criteria in our proposed standard, and then add your comment.

Again, for right now, for our Q&A on this webinar if you have difficulty submitting questions please email your question to Ben Walsh and he will send that question my way. For now we have several questions. Thanks very much. Just give me one second. Our first question is: you indicate that flame retardants are necessary. Is that true for all types of insulation? Are there any insulation material types that do not require the use of flame retardants, similar to what is true for furniture? Daniel, I'm going to pass that one to you.

**Green Seal Vice
President of
Science &
Standards,
Dr. Daniel
Pedersen:**

Sorry. I just un-muted. There are many types of insulation materials that are inherently flammable and many types of insulation materials that are not inherently flammable, so those that are not inherently flammable, like fiberglass and mineral wool, do not require flame retardants. The real issue is that all these insulation materials are put into buildings that must meet safety codes and building codes. That's really where the requirement lies. There are ways of constructing a building with thermal breaks and fire breaks that do not require flame retardants for the insulation as well as the building to meet the fire codes but very often, in order to be safe, the insulation materials are provided with flame retardants in them.

There are options for installing insulation that does not have flame retardants in it, but that would depend on the application. For the purposes of our standard, where we're certifying the insulation

material itself, it's important to allow manufacturers who are going to put the flame retardants in, which is one of the strategies for meeting the fire codes, to be able to do that and still get certified. The environmental leadership is reflected in using the lower hazardous flame retardants as opposed to the higher ones.

**Green Seal
Environmental
Scientist
Brie Welzer:**

Absolutely. I'd like to jump back in. I know, as mentioned in our technical review of course, fiberglass and mineral wool being inherently nonflammable or inflammable, are obviously options without flame retardants. I believe that polyisocyanurate, when it was first developed it did not require flame retardants but with the switch of the blowing agent it now does; however, I believe there are a few options for polyisocyanurate, which is usually used in roof applications. They are free of halogenated flame retardants. Again, I definitely would like to reference our handouts. All right. On to the next question. Why have you chosen to exempt MDI from restrictions. I'll shoot that one over to Daniel again.

**Green Seal Vice
President of
Science &
Standards,
Dr. Daniel
Pedersen:**

Okay. We start off from the approach that there are many different applications for insulation materials and there are applications for which spray polyurethane foam is the practical choice and there are no cost-effective and performance alternatives to that. Given that spray polyurethane foam has to be part of the portfolio of choices for insulation, we're looking at what are the required elements that have to go into spray polyurethane foam and similar insulations. MDI is by far the industry most common functional ingredient of that part of the insulation and therefore in the current status of the market it's not feasible to have SPF that does not have MDI in it. MDI is a less hazardous solution than some other of the functional ingredients. Because it's functionally necessary for spray polyurethane foam it was included in the allowed compounds.

**Green Seal
Environmental
Scientist
Brie Welzer:**

Great. Thank you, Daniel. Yes, we have a repeated question but with more information. The final question is, how is the decision to exempt MDI made? I think you covered a good deal of that. The preface to that question was regarding how we consider SPF to be not inherently unsafe. The questioner asks, "Applying SPF requires full body protection and respiratory protection and residents must not reenter for 24 hours. The precautions recognize the inherent toxicity." Would you like to cover that a little bit more, Daniel?

**Green Seal Vice
President of
Science &
Standards,
Dr. Daniel
Pedersen:**

Sure. First of all I want to say that a lot of these technical discussions are covered in our technical review document and in the rationale itself. When we say that SPF is not inherently hazardous we're not saying that there are no hazards when you're dealing with SPF. The EPA and the manufacturers of SPF have put a lot of work and effort into identifying how this very efficient material can be used safely. When we look at the problems that arise from SPF, first of all there's the complaints about people going into structures where SPF was installed and having health problems. Those are almost exclusively due to improper installation.

When we go to the process of installing we say in order to install SPF safely and properly these are the precautions that need to be taken. When the installers, the people who are actually manufacturing the material, the foam, on-site ... in order for them to do this safely, here are the protective measures that they need to take. They really need to know what they're doing so certified installers and trained installers who are using the proper protective equipment and following the proper procedures is a safe way of doing this and gaining the environmental benefits. We certainly are not saying that SPF is not something to be concerned about, but if it's done appropriately and according to the instructions of the manufacturer, supported by the EPA, that is an acceptable way and will provide environmental benefits and health benefits as well.

**Green Seal
Environmental
Scientist
Brie Welzer:**

We have a few more questions that do not focus on MDI but just following that we do have a question a few questions down but I feel like this is a good time to tackle it. Did you consider lifecycle in the exemption of MDI from restrictions? What about the manufacturing?

**Green Seal Vice
President of
Science &
Standards,
Dr. Daniel
Pedersen:**

We looked at all lifecycle stages. The principle that we follow at Green Seal is that when things are manufactured there are more protective measures. We depend on the industrial hygiene and the protective measures that are conducted during manufacture in order to protect the workers. There's a difference between a factory worker in a controlled condition with safety precautions installed and someone who is buying a product off a shelf. For the manufacturing workers who are manufacturing the raw materials that go into the part A and part B that are mixed on site, they are protected by the industrial hygiene.

We could look at it and say, "Is spray polyurethane foam really something that we want to have?" Because there are specific applications for which spray polyurethane foam in the industry is the preferred application we can't just say, "Spray polyurethane foam is not an acceptable form of insulation." It turns out to be one of the more effective types of insulation so it is a very powerful tool for all of the environmental and health benefits from energy savings. That's how these lifecycle stages play into this discussion.

Finally, about the MDI specifically, if we look at how spray polyurethane foam is made, MDI is an essential functional ingredient for this. It's impractical to have that product available on the market without MDI in it. We can say spray polyurethane foam that has MDI and not TDI or other former generation functional ingredients in it ... so the MDI formulations are better than the others that are available or were available ... and its other requirements for the procedures for safe installation and proper installation which will prevent proper function of the spray foam over its lifetime as well as protecting the manufacturers, the installers, and the occupants of the building are part of the package.

**Green Seal
Environmental
Scientist
Brie Welzer:**

Thank you, Daniel. We have a question about the standard's scope. What do I do if my product is not covered by the standard. Then, in the same question, why was reflective insulation not included in this scope?

**Green Seal Vice
President of
Science &
Standards,
Dr. Daniel
Pedersen:**

We have a limited amount of resources that we can invest in developing these standards. Every product that's added in has to be reviewed for functionality, for components, and how that all plays together. We decided to focus on, first of all, thermal insulation materials. We assume that reflective insulation did not have an R-value and was not comparable to these thermal resistant materials. In the meantime the reflective insulation manufacturers and organizations have approached us and said, "We really think that reflective insulation should be part of this scope." I have right here on my desk a pile of documents that will educate me about all the intricacies of reflective insulation. We're looking at it.

The process that we're going to go through is to say, "Is there an ASTM standard or an equivalent industry standard that will define what the functional parameters are for thermal resistance for reflective insulation," and then look at the chemistry, the components, the technologies that go into it, and see if there are any significant impacts on health and environment. If those can be incorporated into the framework that we already have then that is something that could be added to the scope. This is really part of why we put our standards out for public comment in order to get these technical responses to help make sure that our standards are adequate.

If your product is not included then please contact us or submit a comment saying, "Here's why I think this product should be included." I should clarify and say that if a product is not included in our scope it's not because we claim or wish to imply that it is not sustainable. It's just we're looking at a specific group of insulation materials, so radiant barriers and insulation systems that seal the building are really not evaluated in the same way as thermal resistant insulation materials and that would be too much of a task for us to take on to have a standard that covers every possible type of insulation for every possible type of application. We certainly are open to comments so please either contact us, email us, with that question and say, "How can we best have this discussion?" We are absolutely open to having that discussion with anyone about anything. Once we've worked through it then you can submit a more focused comment on our commenting forum and then we can take that from there.

**Green Seal
Environmental
Scientist
Brie Welzer:**

Great. Thanks, Daniel. I have a question that I am going to throw the way of Mark Petruzzi. Our question is: if I apply for certification for my product how will a purchaser know that my product is certified?

**Green Seal
Senior Vice
President of
Outreach and
Strategic
Relations Mark
Petruzzi:**

Oh, you gave me a softball today. Once a product is actually certified Green Seal does have a registered certification mark, the Green Seal with the word "certified" underneath it that can appear on the product packaging, on your website, in catalogs to identify that it's a certified product along with a short basis statement that explains, "This product meets the Green Seal sustainability standard for insulation for the following reasons," and a few highlights from the full, overall requirements of the standard.

On our website, GreenSeal.org, we also have a listing of all of the products and services that have been certified and we know that that's where consumers and purchases frequently visit and they're listed either by the company name, you can search. You can search by the standard. We generally try to drive people there so they can see the most accurate, up-to-date listing of which products have been certified.

Brie Welzer:

Great. Thank you, Mark. A final question is ... I'm sorry for the background noise ... does Green Seal have other standards for building materials? Mark, I'll throw that your way.

Mark Petruzzi:

Yes, we do have a number. Chillers would be one of our more popular building-related ones; paints and coatings, which recently was revised last October I believe, reissued. That included some additional product categories for things like concrete sealers and wood floor coatings that didn't fit under some of our other standards. Sealants and adhesives is another building-related one but we didn't have anything in the thermally-resistive materials category, so this will be a new standard, not a revision.

Brie Welzer: Great, thank you.

**Green Seal Vice
President of
Science &
Standards,
Dr. Daniel
Pedersen:**

Brie, this is Daniel. I wanted to add that if you want to see what our standards are you can go to our website, GreenSeal.org. If you go to GreenSeal.org/standards you'll get a listing of all of our standards. One more plug for submitting your comments. Supportive comments are at least as helpful as negative and critical comments, so the critical comments allow us to improve our standard and supportive comments give us the feedback that what we've established does represent practical leadership in the market. If you have nothing else to say other than, "I think this is a really good standard," or, "I think this is a really good criterion," those comments are also helpful for us, and not just critical comments that help us improve the standard. We welcome all comments.

**Green Seal
Environmental
Scientist
Brie Welzer:**

Great. Thank you so much. Well, we're going to end a few minutes early. Once again, please consider registering. We're extremely interested in your opinion, as Daniel just mentioned. Thank you so much for attending. Thank you for your thoughtful questions. In case anybody did not get to answer a question, please submit questions any time via email or through Collaborase. All right. Thank you very much for today. Please reach out to us any time. Have a great rest of your Thursday.