The market shift to Safer Chemicals and Materials through Public Disclosure and Informed Substitution of Hazardous Chemicals:--

Five Essential Practices for Retailers, Brand Owners and Suppliers

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November 2014

Background

Manufacturers, retailers and suppliers are increasingly being mandated or asked voluntarily to eliminate hazardous chemicals of concern in their products and manufacturing processes. This is good news. Unfortunately the alternatives they choose as replacements may not be comprehensively screened for human health and environmental impact. Also chosen alternatives are often kept confidential which diminishes the public's faith that progress to safer chemicals is actually being made.

Similarly, government chemicals policy seldom establishes a clear goal to transition our economy to well defined and inherently safer chemicals and materials. Instead, most regulatory policies tend to maintain the status quo by merely endorsing exposure reduction and risk management of hazardous chemicals rather than trying to avoid those risks in the first place. In manufacturing and recycling workplaces, the traditional practice is to control workers' exposure to hazardous chemicals even though elimination and substitution is at the top of occupational health and safety hierarchy of controls.

By embedding the principle of "Informed Substitution" and requiring more chemical information disclosure through the supply chain, we can promote the market transition to inherently safer chemicals and materials in products and in manufacturing processes. This will have positive impacts on public health and safety throughout the life-cycle of a product, including at the product's end of life phase where workers or disenfranchised communities are often at increased risk from exposure to hazardous chemicals. Informed substitution of hazardous chemicals will also prevent the replacement of a targeted chemical of concern with bad substitution choices thereby reducing business risk and costs.

The good news is that tools and strategies now exist to help companies move to comparatively safer chemical and non chemical alternatives. Policy efforts at the state level are now testing out alternatives assessment initiatives and promoting more chemical information disclosure. In Europe, REACH has now integrated substitution planning into the authorisation process for chemicals of concern. Brands, retailers and regulators are increasingly mandating chemical information disclosure from chemical suppliers for more informed choice. By making informed substitution and increased disclosure the two key elements of a comprehensive chemicals policy within government, business and the workplace we will hasten the critical shift to inherently safer chemicals and materials in our economy.

What is Informed Substitution for Hazardous Chemicals?

Informed Substitution is a solutions oriented and innovative approach to chemicals management. Replacing hazardous substances with safer alternatives can be achieved in many ways. Hazardous chemicals can simply be eliminated from use, replaced with transparently safer chemical alternatives, or replaced with non chemical alternatives through product or process redesign. Informed Substitution enables the move from chemicals and materials of concern to safer alternatives, while minimizing the likelihood of unintended consequences.

Informed Substitution requires full disclosure of chemical hazard information along the supply chain and a transparent process for selecting and choosing alternatives.

The necessity of chemical disclosure for transitioning to safer chemicals in products

> *Identifying and disclosing chemicals in products will not only help businesses meet a growing demand by downstream users, but will also help them manage risk, verify compliance, inform decision-making, discover innovative opportunities and offer more sustainable choices to customers.*
> - Roger McFadden, Staples

Chemical disclosure is a necessity if we are to reverse ongoing hazardous chemical production and use in the global economy. Business to business information exchange may exist to some degree but in general chemical information disclosure is rare. Workers in global supply chains often lack basic access to information about the chemicals they work with on a daily basis. Impacted communities in manufacturing zones often lack access to pollutant release information. Consumers generally lack information about chemicals in products. Waste handlers lack full information about the chemical hazards at end of life product recycling.

Retailers and brands have a unique role in requiring chemical ingredient information from their suppliers. Tier 1 and tier 2 suppliers may themselves not have full information but this pull from buyers can create a domino effect. As leading companies demonstrate their commitment to radical transparency and increased disclosure to their customers, these practices will build momentum throughout the supply chain.

> Radical Transparency was one of the guiding principles in creating Seventh Generation. There are several forms of transparency a company may engage in. For example, a business that isn't already required to may willingly disclose its product ingredients, or it may disclose the sources and the means of obtaining the raw materials. –Jeffrey Hollander, Seventh Generation

Governments have a responsibility to promote and disseminate public information about pollutant emissions and hazardous chemical ingredient disclosure in consumer products. Experience from the US government's 30 years of toxic release inventory data confirms that community right to know legislation incentivizes reductions. More regulations on hazardous chemicals disclosure in consumer products is now essential.

In 2014 US based market campaigners came together and agreed a common set of necessary practices for moving the economy to safer chemicals. This background briefing explains the rationale for the:

Five Essential Practices for Retailers, Brands and Suppliers

1. Retailers, brand owners and suppliers will establish a goal of reducing and eliminating the use of chemicals and materials of concern* in products and manufacturing processes with alternatives that are transparently safer. Their publicly available chemicals management plan will include metrics and clear timeframes to measure continual progress towards this goal. As a priority, retailers and brands will identify all relevant chemicals of high concern in products and supply chains, volume of those chemicals, and set goals for reducing both the number and volume of these chemicals.

***this could include Nanomaterials with properties of chemicals of concern**

2. Retailers and brand owners will know and publicly disclose the chemical ingredients in their products, product packaging and manufacturing processes. They will do this by requiring their suppliers to give full chemical disclosure including of fragrances, additives, contaminants, raw materials, colorants, flavorings and chemical by-products and they will make this information publicly available on line and/or on product packaging. A good first step is to disclose all chemicals of high concern in products including those under proprietary agreements.

Retailers and brands in the personal care sector are responding to NGO and public demands for more transparency in product ingredients. WalMart will require suppliers to provide online public ingredient disclosure for consumables sold at Walmart beginning in January 2015.[1] Target's Sustainable Product Standard[2] will initiate with the personal care, beauty, household cleaning, and baby care product categories. A product receives a maximum point in the transparency category of the standard if ingredients are listed on packaging and website.

Extending full chemical ingredient disclosure to other products is more complex. Regulatory requirements such as Washington State's Children's Safe Products Act[3] mandates retailers, brands and importers to public report their use of 66 chemicals of high concern in any product category.
The US Green Building Council's LEED certification now gives building product disclosure optimization credits[4] for suppliers who issue Health Product Declarations. The apparel and footwear sector, under pressure from the Greenpeace DeTox campaign, has formed a coalition of brands under the Zero Discharge Hazardous Chemicals initiative to screen chemicals in the global supply chain to prioritize action on chemicals of concern.[5] The electronics sector is another highly complex materials sector. Seagate, the largest disk maker, requires and collects full chemical ingredient information for products from their supply chain. Revelations of worker health impacts from the electronic sector underscores the lack of right to know for workers in the global supply chain of this and other sectors. [6] A range of company case studies and level of disclosure is available from the BizNGO Guide to Safer Chemicals.[7]

Confidential business information will be the exception rather than the norm and will not apply to chemicals of high concern. Where chemical identity is protected or held by third parties, hazard profiles of these chemicals will remain public and a substantiation of trade secret claims will be made to the

responsible regulatory body. Any claim that is granted will be time limited and the manufacturer will disclose the number of trade secrets claimed per product.

3. **Retailers, brand owners and suppliers will identify chemicals in their products and/or supply chains for chemicals of high concern and substitute them with safer alternatives that have undergone comprehensive hazard screening. The hazard profile of a chemical will be determined using comprehensive human health and environmental endpoints and all data gaps for chemical information will be clearly stated.**

Chemicals of high concern could include substances that have the following properties: 1) persistent, bioaccumulative and toxic (PBT); 2) very persistent and very bioaccumulative (vPvB); 3) very persistent and toxic (vPT); 4) very bioaccumulative and toxic (vBT); 5) carcinogenic; 6) mutagenic; 7) reproductive or developmental toxicant; 8) endocrine disruptor; or 9) neuro- toxicant. "Toxic" (T) includes both human toxicity and ecotoxicity. This could include nanomaterials with these properties.

Chemicals with these characteristics are listed on a variety of international authoritative and screening lists. Lists of chemicals of concern for specific industrial sectors are sometimes available and in other cases priority chemicals or chemical groupings are defined by regulators[8]. The Hazardous One Hundred list[9] created by the Mind the Store Retailers campaign and the SIN list[10] created by Chemsec, are priority lists for retailers and companies to begin engagement with their vendors.

The absence of a chemical on a list does not automatically infer it is safer, it may simply not have been investigated since most of the chemicals in commerce lack full environmental and human health information. But establishing a Restricted Substances List (RSL) and/or screening all chemicals used in a sector with chemical hazard tools, will prioritize chemicals for elimination or substitution.[11] Software tools such as the GreenScreen List Translator incorporated within the Pharos database[12] and GreenWercs[13] are used by some companies for this purpose. The GreenScreen® for Safer Chemicals[14] goes beyond a list based approach by providing a complete profile of a chemical against 18 human health and environmental endpoints, identifies data gaps and breakdown products of a chemical and then categorizes a chemical into one of four benchmarks ranging from highly hazardous to preferred. In this way the GreenScreen is a good comparative hazard assessment tool for informed substitution.

Research continues to discover new chemicals of concern and their synergistic impacts in the environment and in our bodies. Chemicals are continually released into the market with insufficient environmental and human health data and little or no controls That is why retailers, brands and suppliers ultimately need a full inventory of chemical ingredients in their supply chain.

Materials of concern can be defined as composites which have high chemical hazards throughout their life cycle. Cradle to Cradle certification[15] and GreenBlue's Material IQ℠[16] provides in-depth sustainability information about materials used in a variety of products and industrial sectors. Business leaders use these tools and third party certification systems to frame their chemicals and materials policy. Materials of concern can also include Nanomaterials with properties of chemicals of concern.

All these tools measure the inherent hazards of chemicals in line with the principles of green chemistry[17] whereby chemicals are designed to be inherently safer with reduced toxicity and designed to degrade into innocuous degradation products that do not persist in the environment. The most effective way to reduce risk is to reduce hazard. A hazard based approach to chemicals management is recognized by many company leaders as a more effective strategy than exposure control.

4. Retailers, brand owners and suppliers will conduct or require alternatives assessment for chemicals of concern as set out in the Principles of Alternatives Assessment.[18] Alternatives will include a wide range of options ranging from simple elimination to informed substitution for safer chemical, material and non chemical alternatives.

> *Efforts to consider a substitution is mandatory for all applicants for authorisation. Applicants need to analyse alternatives, report on ongoing and planned R&D. Authorisations will be periodically reviewed and monitored.* - European REACH chemicals regulation

The Principles for Alternatives Assessment, the BizNGO Alternatives Assessment Protocol[19] and the Interstate Chemicals Clearing House (IC2) Alternatives Assessment Guide[20] now give companies, retailers and suppliers a roadmap for searching and implementing safer chemicals and materials. In Europe, companies who wish to apply for an authorisation to continue to use a substance of high concern must submit a request and substitution plan for open third party input. NGOs in Europe have established the Substitution Portal for companies to get training and search a database of substitution case studies.[21]The state of California is now implementing their Safer Consumer Products regulation[22] which will require alternatives assessment for designated priority products and the OECD is releasing their substitution toolkit in 2014. Hewlett-Packard has published information about how they use GreenScreen to select safer alternatives to materials of concern.[23]

5. Retailers, brand owners and suppliers will commit to continuous improvement in eliminating all chemicals and materials of concern in their supply chain and will support innovation and public policies that promote green chemistry, sustainable product design and manufacturing processes that protect human health and the environment. Retailers, brands and suppliers will publicly report on their progress in transitioning to safer chemicals and materials on their websites and in their shareholder reports.

The BizNGO Working Group for Safer Chemicals[24] and the Green Chemistry and Commerce Council[25] are two examples of support for retailers, brands and suppliers. However the pace of change to safer chemicals must drastically increase if we are to prevent chemical contamination of future generations and reverse current chemical pollution of our air, water and soil. Where alternatives still present hazards along the product life cycle, brands and suppliers must minimize exposure to workers, communities and the environment through clear and detailed instructions and training while researching safer alternatives and reporting on progress towards this goal.

ENDNOTES

[1] http://www.walmartsustainabilityhub.com/app/answers/detail/a_id/316
[2] https://corporate.target.com/_media/TargetCorp/csr/pdf/Target-Sustainable-Product-Standard-1.pdf
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[17] Principles of Green Chemistry. http://www.acs.org/content/acs/en/greenchemistry/what-is-green-chemistry/principles/12-principles-of-green-chemistry.html accessed April 22, 2014
[18] http://www.bizngo.org/alternatives-assessment/commons-principles-alt-assessment
[19] http://www.bizngo.org/alternatives-assessment/chemical-alternatives-assessment-protocol
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