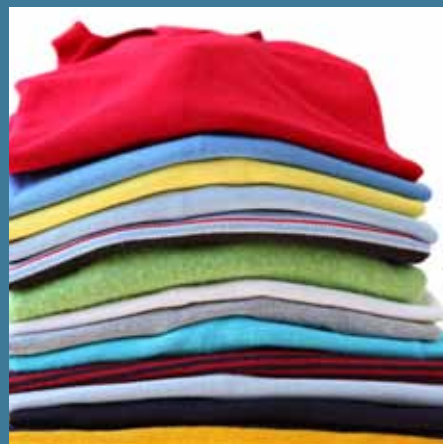


# Exploring the Concept of a Harmonized Chemical Scorecard

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## MAPPING THE CURRENT LANDSCAPE



**Report for The John Merck Fund**

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## EXECUTIVE SUMMARY

In July 2012, The John Merck Fund hosted a meeting of non-governmental organizations (NGOs) and corporate leaders to assess progress on their work over the last decade to promote safer chemicals/products and to outline a roadmap for accelerating change over the next decade. One of the strategic areas identified at the meeting as needing further exploration was the idea of developing a harmonized chemical scorecard for companies and/or products that could be used globally.

The purpose of this research is to explore the concept of a harmonized global scorecard by mapping current activities and programs that evaluate and rate products and companies in regard to toxic chemical content, use and reduction. This mapping exercise provides a means to determine strategic opportunities for increasing the effectiveness of existing tools or developing a new tool for shifting markets, raising awareness, and promoting policy change.

This research includes an evaluation of three types of programs, including: product ranking systems such as **Healthystuff.org** and **GoodGuide.com**; company rating systems such as the **Guide to Greener Electronics** and the **Newsweek Green Rankings**; and sign-on programs such as the **Compact for Safe Cosmetics** and the **Green Chemistry Commitment**. In addition, some newly emerging programs such as the **Health Product Declaration** and the **BizNGO Principles/Guide to Safer Chemicals** are also discussed.

As a framework for discussion, the programs are reviewed in the context of four elements that could comprise a harmonized chemical scorecard. This analysis provides a way to consider the need and opportunity for developing such a tool. Some key elements of a harmonized chemical scorecard that would be useful to downstream users such as retailers, institutional purchasers and individual consumers include the following: 1) full **disclosure** of ingredient information; 2) **analysis** of ingredient information that identifies potential health hazards associated with each chemical; 3) a system that **interprets** the hazard information in a format that is easy to understand, such as a traffic light system of red, yellow, green that indicates high, medium or low concern; and 4) a system to **compare** products/companies.

This analysis found that while many of these programs are helpful in identifying and characterizing problem chemicals in products, they are generally weak on promoting solutions to chemicals of concern. To scale up and accelerate the pace of efforts to eliminate toxic chemicals in production processes and consumer products, there needs to be increased focus on “solution systems.”<sup>1</sup>

The programs described in this report have served to create awareness about the problem of toxic chemicals in products and have begun to design solutions by increasing information flow about products and companies. But they have also been limited in their effectiveness. For example, ecolabels, while designed to identify environmental leaders, over time often set a floor for environmental standards that does not push manufacturers toward significant design change unless the criteria for the ecolabel are reviewed and strengthened once many companies achieve the standard. Ranking systems help to identify products and companies with lesser impacts, but

do not necessarily drive innovation toward sustainability. It is critical that efforts to scale up and accelerate change move beyond the “problem” space toward designing solutions. These solutions lie in green chemistry, sustainable materials, process changes, and systems changes that may point to non-chemical options.

All of the programs described in this report are limited by lack of disclosure of information, data gaps about the health and environmental impact of chemicals, and the lack of a centralized system to hold data on chemical hazards and safer alternatives. Rather than creating a new scorecard that is also plagued by these deficits this analysis suggests it is more strategic to determine how to address these common issues, because by improving information flow and quality all of these systems will benefit. The recommendations below therefore are focused at this broader level. Some promising areas for engagement are as follows:

### **Work to achieve full disclosure via the Right to Know**

Transparency requirements are a proven driver for innovation. When companies feel pressure to disclose information about toxic chemicals through regulation, product testing or pressure from customers, there is a strong incentive for product redesign. Emerging tools designed to increase disclosure of information about toxic chemicals in production and products include the Health Product Declaration (HPD) and the BizNGO Guide to Safer Chemicals.

The HPD provides a model for a standard format for disclosure about product content in the building materials sector. As the HPD is rolled out and adapted for other sectors, it could be framed as providing the information to meet the requirements of a citizen’s Right to Know as well as a right for institutional purchasers. Firms need information about chemicals flowing through their supply chain and in their products to develop comprehensive chemicals management systems and make informed decisions about toxics chemical reduction.

Policies are emerging in Europe that acknowledge that citizens have a right to know about the environmental footprint of consumer products. A deeper analysis of this activity in Europe is needed to promote similar policy approaches in the US, especially at the state level. In the US, the legal principle of the Right to Know about chemical exposure is found in occupational health regulations (OSHA) and community-based regulation (EPCRA) but it has not been used in the context of the rights of individuals. A citizens Right to Know framing could be useful for NGO campaigns particularly if it is tied to a message that promotes innovation toward safer products. Firms could be rated on their disclosure of product ingredients and process chemicals.

### **Build out the chemical data commons**

All of the product and company ranking systems described above are limited by data gaps. A first step in addressing these data gaps is to centrally locate all of the data that are available and design a system that can keep it up to date (such as using open source technology). To move from problem identification to a solutions orientation, there must be increased dialogue on a common set of criteria for safer alternatives and the building of a library of information on safer chemicals, materials, products and processes. The chemical “Data Commons” project spearheaded by the Healthy Building Network is tackling this issue by working to design a harmonized system for data collection and management. This initiative needs to be better resourced if it is to reach necessary scale. It will also require significant policy changes at the state and federal levels that require chemical manufacturers to provide adequate test data to determine safety of chemicals.

**Develop a metric to rate companies on their use of safer chemicals**

The BizNGO Guide to Safer Chemicals delineates a process for companies to implement principles for safer chemical use, but it does not rank companies on their progress. Company rating systems such as the Newsweek Green Rankings do not evaluate companies for toxic chemical reduction as there is no common metric to compare companies. A Safer Chemical Use Indicator should be developed that could be inserted into existing sustainability ranking systems. The challenge in inserting this metric into existing systems is that if the points are optional or the points awarded for improved chemicals selection and management are not significant, companies may not be motivated to engage in this arena. This analysis found that sector-based rankings are likely to be the most useful for assessing progress and motivating change. This metric will need to be designed carefully so that it can differentiate company leaders within an industry sector. The Electronics Take Back Coalition is working with BizNGO to develop a method to rank electronic firms on their implementation of the Guide to Safer Chemicals. This project will provide valuable information for the creation of a Safer Chemical Use Indicator.

In summary, rather than investing in creating a new scorecard that will face the same transparency issues and data limitations of existing programs, it is recommended that new efforts focus on resolving these issues to help move from a focus on the problem toward a focus on solutions. The three activities described above in combination with scaling up research and development on safer chemicals, materials and processes can play an important role in accelerating change towards safer and more sustainable products and business practices.

## INTRODUCTION

In July 2012, the John Merck Fund hosted a meeting of NGO and corporate leaders to assess progress on their work over the last decade to promote safer chemicals/products and to outline a roadmap for accelerating change over the next decade. One of the strategic areas identified at the meeting as needing further exploration was the idea of developing a harmonized chemical scorecard for companies and/or products that could be used globally.

The purpose of this research is to explore the concept of a harmonized global scorecard by mapping current activities and programs that evaluate and rate products and companies in regard to toxic chemical content, use and reduction. This mapping exercise provides a means to determine strategic opportunities for increasing the effectiveness of existing tools or developing a new tool for shifting markets, raising awareness, and promoting policy change.

Although a goal of this research is to assess the value of developing a harmonized global scorecard, there is no single vision for what such a scorecard should include. Therefore, it is useful to disaggregate its elements to better understand needs and consider effective strategies. The analysis that follows will consider these various elements. At the close of this analysis we will return to considering the opportunities and issues that might arise from developing such a scorecard.

### **What is meant by the terms harmonized, global, and scorecard?**

There is considerable discussion within the environmental health NGO community regarding the need for harmonization in regard to generating a list of chemicals of high concern, developing criteria for identifying chemicals of high concern and for determining safer alternatives, and creating reporting formats. There is consensus that a chemical “data commons” that centrally compiles and updates information about chemical hazards and safer alternatives is critically needed. This concept is currently being developed by the Healthy Building Network, UC Berkeley Center for Green Chemistry and others in the alternatives assessment community of practice. The term global has not been well defined in this realm and needs further discussion to determine what it would mean in terms of the scope of products and companies analyzed and the expected users.

The term scorecard can refer to either a label on a product or a rating of a product or company. Labels can either be required by law, such as nutritional labels on food, or they may be voluntary ecolabels that are self-certifications or third party certified. Product ratings do not appear on packaging but are generally accessible online and via smart phone applications.

Proposals for consumer facing product labels abound. For instance, the food writer Mark Bittman has recently introduced the concept of a dream food label that would evaluate nutrition, foodness, and welfare.<sup>2</sup> He suggests translating these three concepts into a simple scoring system of red/yellow/green that could be on a food package to encourage healthier food choices. Bittman acknowledges that a program such as this would be challenging to develop and implement and would need to be required, not voluntary, and overseen by a government body such as the FDA. Many of the product ranking systems described below use a similar scoring system of red/yellow/green to help guide consumer decision making.

It is useful to begin by identifying some key elements of a harmonized chemical scorecard that would be useful to downstream users such as retailers, institutional purchasers and individual consumers. Such a scorecard may include the following: 1) full **disclosure** of ingredient information; 2) **analysis** of ingredient information that identifies potential health hazards associated with each chemical; 3) a system that **interprets** the hazard information in a format that is easy to understand, such as a traffic light system of red, yellow, green that indicates high, medium or low concern; and 4) a system to **compare** products/companies.

This research includes an evaluation of three types of programs, including: product ranking systems such as Healthystuff.org and GoodGuide.com; company rating systems such as the Guide to Greener Electronics and the Newsweek Green Rankings; and sign-on programs such as the Compact for Safe Cosmetics and the Green Chemistry Commitment. In addition, some newly emerging programs such as the Health Product Declaration and the BizNGO Principles/Guide to Safer Chemicals are also discussed. This review is not intended as a compendium of all environmental product and company ranking systems. It does not include internal company systems that have been developed to assess and reduce chemical hazards. It includes a review of efforts that focus on toxic chemicals and some other programs that do not evaluate chemical use/reduction but have design elements that may serve as useful models for future efforts. The research was conducted primarily via Internet with some follow up phone interviews to gather additional data.

The report is structured as follows. First, systems are described by the three categories: product ranking systems, company rating systems and sign-on programs. Then we return to the four elements of a scorecard outlined above to consider whether these elements have been adequately developed by existing systems and where further development is needed. Finally, recommendations are made for next steps. The programs evaluated for this research are listed in Table 1. The Appendix includes a brief description of each program and a summary of its strengths and limitations.

## PRODUCT RANKING SYSTEMS

The product ranking and evaluation systems that have been developed over the last decade were created for a variety of purposes including: raising awareness of toxic chemicals in products to encourage policy change, changing purchasing behavior of institutional and individual purchasers by certifying that products are environmentally preferable, and offering product comparisons.

### Raising awareness to promote policy change

**Healthystuff.org**, created in 2007 by the Ecology Center of Ann Arbor, has been an effective awareness raising tool about the presence of toxic chemicals in products. Researchers have tested over 5000 products for a limited set of chemicals using an X-ray fluorescence spectrometer, augmented by laboratory testing. The following categories have been tested: toys, cars, pet products, children's products, apparel and accessories such as jewelry, home improvement, garden products, holiday lights, and mobile phones. Based on the levels detected, products are classified as low concern (green), medium concern (yellow) and high concern (red). Although the testing methodology does not provide information on exposure to these chemicals through product use, the results alert manufacturers and consumers to products that contain certain chemicals of concern. Product testing has served as a consumer mobilization tool and has driven direct engagement with manufacturers on product reformulation and chemicals policies. Product testing results have been used to create comparative rankings of vehicle and mobile phone manufacturers. Healthystuff.org encourages site users to advocate for chemicals policy change at the federal level.<sup>3</sup>

### Ecolabels and certifications

**Ecolabels** have proliferated over the last decade as a voluntary means of identifying products that are more eco-friendly. The Ecolabel Index now tracks 432 ecolabels in 197 countries and 25 industry sectors.<sup>4</sup> The International Organization for Standardization (ISO) has identified three broad types of ecolabels.<sup>5</sup> Type I is a single or multi-attribute label developed by a third party; Type II is a label developed by the producer; Type III is an ecolabel that is based on a full life-cycle assessment (also called an environmental product declaration, discussed below).

Credible ecolabels generally are created by a multi-stakeholder group that develops criteria for a standard that takes into consideration the product life cycle. Type I ecolabels require third party certification and result in a recognized mark on the packaging of the product. These certifications are increasingly required in business-to-business transactions along the supply chains of many industry sectors. In addition, state and federal agencies seek products with Type I ecolabels to meet requirements for environmentally preferred purchasing programs. Some of the better known ecolabel programs in the US are Green Seal and EcoLogo (recently purchased by ULE Canada). Green Seal has developed life cycle-based standards that cover almost 200 product and service categories.<sup>6</sup> EcoLogo, founded as an environmental certification program by the government of Canada in 1988, has developed standards for over 120 product categories.<sup>7</sup>

A limitation of ecolabels, especially those developed through a consensus process with manufacturers, NGOs, government and other stakeholders, is that they generally are not visionary. They often include criteria that leading manufacturers can currently meet and therefore do not “push the envelope” or look to the radically new design solutions that are needed to accelerate change toward safer and more sustainable products. Also, many ecolabels focus on only one product attribute (such as carbon footprint) and may not consider the full product life cycle. In addition, an ecolabel certification provides only a snapshot of performance and may not accurately portray the actions of a company over time. At their best, ecolabels serve to raise the bar for product design and make health, environmental and social impacts of products visible. At worst, the ecolabels can mislead consumers and obscure the truth about environmental impacts.

The uproar around the **Electronic Product Environmental Assessment Tool (EPEAT)** in recent months provides an example of the limitation of ecolabels. EPEAT is designed to be a global standard for greening electronic products.<sup>8</sup> Stakeholders including environmental advocates, purchasers, manufacturers, government agencies, researchers, and recyclers collaborated to develop an ANSI standard for computers in 2006 and have also developed standards for other electronic products. EPEAT is a widely used ecolabel because in 2007 the US government issued an executive order requiring that federal agencies meet 95% of purchasing requirements for electronics with EPEAT-registered products. Although EPEAT sets a floor for greener electronics, the criteria are not as stringent as environmental health advocates would like, particularly in terms of requiring reduction in toxic chemical usage above and beyond compliance with the European Union’s Restriction of Hazardous Substances (RoHS) Directive. In recent months EPEAT came under criticism for certifying APPLE products that had batteries that were difficult to replace and not upgradeable, repairable or easy to disassemble for recycling. The certifiers responded that these products meet the standard as currently written, thus illustrating just how difficult it is for the criteria in the standard to keep pace with technology change.<sup>9</sup>

The US EPA Design for Environment program (DfE) created the **Safer Product Labeling Program** to identify and promote products that contain ingredients that are the safest in their chemical class.<sup>10</sup> Products are evaluated based on standards for safer chemicals, within functional classes (such as surfactant, colorant, solvent). To earn the DfE label, product manufacturers must submit a list of all product ingredients to a qualified third party. The third party develops a hazard profile for each ingredient and reviews the profiles against the DfE standards. To achieve the DfE label, a manufacturer must use ingredients that meet DfE criteria and achieve other product-level requirements, such as pH and performance. In addition, companies must sign a partnership agreement with EPA that formalizes their commitment to making safer products and improving them over time. More than 2800 products now carry the DfE label. DfE recently released a list of ingredients by functional use that meet the criteria of the Safer Product Labeling Program.<sup>11</sup> Safer ingredients are those that are not: found on authoritative lists; carcinogens, mutagens, reproductive or developmental toxicants; persistent, bioaccumulative, and toxic chemicals; systemic or internal organ toxicants; asthmagens; sensitizers; or exhibit endocrine activity associated with toxicological hazards. This list is a valuable tool for formulators who are looking for safer alternatives to ingredients that may pose a health or environmental concern.

Certification programs are another form of ecolabel. The **Cradle to Cradle** Products Innovation Institute offers one of the most comprehensive programs for evaluating materials and products.<sup>12</sup> Developed by the sustainability firm McDonough Braungart Design Chemistry (MBDC), the program includes five categories of criteria including material health, material reutilization, renewable energy and carbon management, water stewardship, and social fairness. To evaluate materials

health, certifiers work with manufacturers and suppliers to identify all chemical constituents of a product formulation. These chemicals are evaluated against 19 criteria for human and environmental health and given a toxicity rating of red, yellow, or green (or grey if no data available). The chemical hazard assessment ratings are then combined with potential exposure and materials cyclability information to determine the overall materials assessment. Because Cradle to Cradle® certifiers work directly with product manufacturers seeking a comprehensive analysis of their materials and products, they have access to data that are not publically available, and so their review can be more complete. However, this analysis still faces the same gaps in data in regard to lack of empirical data on the toxicological profile of many chemicals.

### Comparative tools

Several new tools have been developed that allow purchasers to compare products for health and environmental attributes. The Environmental Working Group created the **Skin Deep® Cosmetics Database** to provide information to consumers about hazardous chemicals in personal care products including makeup and other products for skin, hair, eyes, nails, oral care, sun protection, and baby products.<sup>13</sup> Skin Deep® relies on companies that have signed the Compact for Safe Cosmetics to provide ingredient information. Additional information is gathered from manufacturers or product labels. Ingredients are evaluated and scored based on different health endpoints and then the score is adjusted based on absorption potential. Each product is assigned an overall hazard score with information available on the hazards of specific ingredients. Products receive a color code and score of 0-10. 0-2 (green) indicates low hazard; 3-6 (orange) indicates moderate hazard, and 7-10 (red) indicates high hazard. Skin Deep® also provides a rating for data availability, which is intended to measure how much is known about an ingredient.

The Healthy Building Network (HBN) created **Pharos** to help commercial buyers evaluate product content, certifications and other relevant data about building materials against key health, environmental, and social impact benchmarks.<sup>14</sup> The Pharos database provides information about a product's toxic impacts during use and upstream in manufacture. Pharos currently evaluates products for the following impact categories: volatile organic compounds, toxic content, toxics used in manufacturing, renewable materials, renewable energy and reflectance. Products receive a color-coded score from 1-10 and can be compared side by side for each of these attributes. Over 1000 products in a range of product categories are profiled.

In addition to the Building Product library, the Pharos database contains a Chemical and Material Library (CML) that provides health hazard and other environmental information on over 22,000 chemicals, polymers, wood species and other substances. These substances are evaluated using 30 authoritative chemical hazard lists for human and environmental health concerns, five endangered wood species lists and nine restricted substance lists developed by state, national and international governmental agencies and reputable, science-based NGOs. The CML has become a valuable resource on chemical hazards for many users inside and outside of the building materials industry.

**GoodGuide.com**, founded in 2007, provides information on more than 100,000 products, including household and personal care products, children's products, pet food, apparel, cell phones, appliances, cars and foods.<sup>15</sup> GoodGuide does not conduct product testing, but collects a wide range of data to evaluate product and company performance on health, environmental and social attributes. GoodGuide provides a summary score for these attributes and individual scores for each element so that consumers can focus on a particular attribute of interest. GoodGuide uses a color-coded scale from 0-10 to rank products and companies, with the best

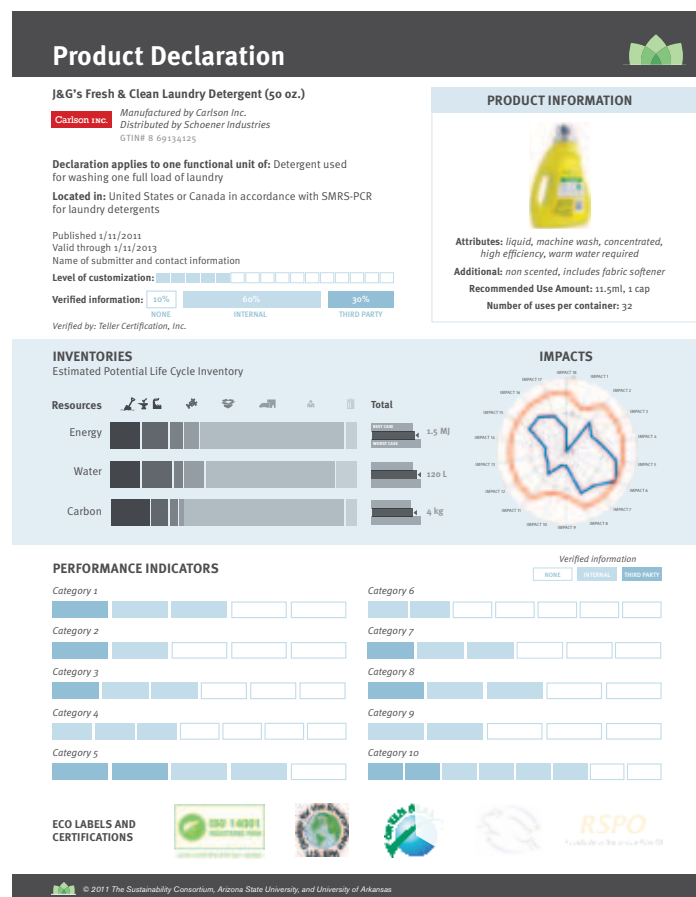
products ranking 8 or above and the worst ranking 4 or below. GoodGuide's theory of change is that "radical transparency" (full information on environmental, health and social impacts of products) can transform the marketplace because as more consumers are informed and therefore choose to buy safer, healthier and greener products, manufacturers and retailers will have an increased incentive to make these products.

### New tools for evaluating products

Several new tools are emerging for product evaluation that differ from ecolabels or comparative ratings in that they are designed to disclose information on environmental and health impacts.

**Environmental Product Declarations (EPD)** differ from the Type I ecolabels discussed above in that an EPD is generated by using the quantitative methodology of life cycle assessment (LCA) to analyze a range of environmental impacts. Rather than indicating whether a product is environmentally preferred by meeting a set of defined criteria, an EPD is designed to provide information on product impacts throughout its life cycle. There are standard methods for developing environmental product declarations that have been developed by the International Organization for Standardization.<sup>16</sup>

France has recently passed legislation stating that consumers must have access to comprehensive environmental information about products and their associated packaging. In 2011, the French government began a one-year experiment working with a number of companies to conduct LCAs and display information on carbon footprint and at least one other attribute on product packaging.<sup>17</sup> Figure 1 provides an example of a label developed in France to meet this requirement. In addition,



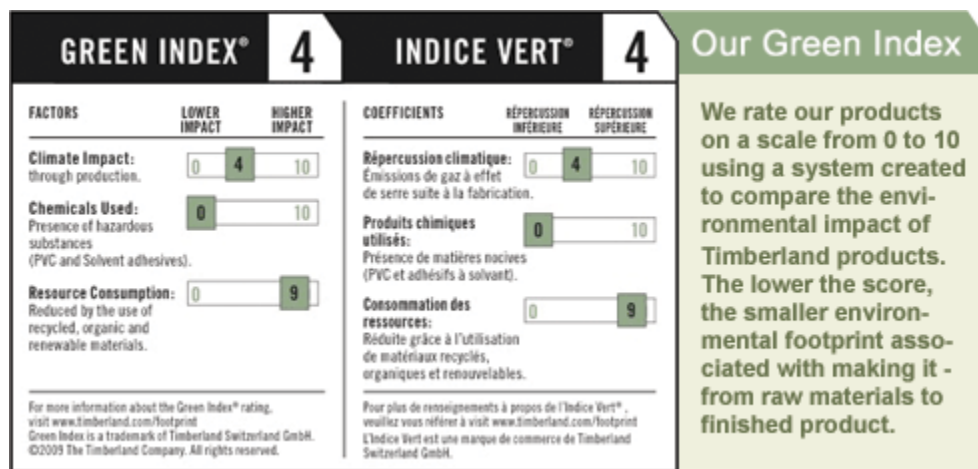
**FIGURE 1**  
 Example of Label developed to meet requirements for product labeling in France

the European Commission has developed a harmonized methodology for the calculation of the environmental footprint of products and plans to adopt a policy for implementation in 2013.<sup>18</sup>

In the US, the Sustainability Consortium (TSC) is developing standard methodologies for life cycle assessment of a wide range of products.<sup>19</sup> The results of these LCAs can be used to create EPDs (Figure 2). Some companies are creating their own form of EPD, which are informative, but because they do not follow a standardized format do not allow for product comparisons across companies.

**FIGURE 2**  
 The Sustainability Consortium—Example of a Model Environmental Product Declaration

For example, Timberland has created a type of EPD with its Green Index®, which measures climate impact, chemical use and resource consumption (Figure 3).<sup>20</sup> This label provides useful information for consumers as well as product designers, but it is not a comprehensive analysis. For example, the “chemical use” element looks only at use of solvent adhesives and PVC.



**FIGURE 3**  
Timberland's Green Index®

The movement toward increased use of EPDs may reflect the fact that the ecolabel market has become so saturated with a variety of single and multi-attribute labels that it is difficult to fully understand product impacts. Although EPDs are considered to be more comprehensive and transparent than ecolabels in that they delineate a range of product impacts, they are not transparent in terms of data and methodology. In addition, the standardized LCA methodology

used in developing EPDs does not include a chemical hazard assessment and does not analyze exposure to toxic chemicals in the use phase, so this tool is a weak driver for toxic chemical reduction in processes or products.

The **Health Product Declaration (HPD)** developed by the Healthy Building Network and a number of industry partners is a new tool that is being piloted in the building materials sector.<sup>21</sup> It is designed as a complement to an EPD and addresses the weakness of LCA in evaluating chemical hazards in products. The HPD provides a framework for standardized disclosure of product contents, VOC emissions and health impacts. It is similar to a Materials Safety Data Sheet (MSDS) but much more comprehensive. MSDS are notoriously weak in providing information about chemicals and health impacts. The HPD asks that all ingredients be listed and evaluated for acute and chronic health risks. If companies choose not to disclose some ingredients they are still asked to report the health hazards associated with those ingredients. HPD users screen ingredients against a set of authoritative lists to determine known health and environmental hazards. In addition, users must specify a GreenScreen benchmark if available, which indicates whether a chemical is known to be of high concern.

The HPD was piloted in 2012 and was released for wider use by the building materials industry in November 2012. If widely adopted, the HPD will greatly increase information about chemical hazards in building materials. The information contained in the HPD can be imported into Pharos to provide more robust information about chemical hazards in building products. The HPD as currently designed does not ask for information on process or degradation chemicals. If adopted for use in other sectors, the framework will need to be re-worked to be relevant for these industries. For example, in the textile industry, process chemicals are a significant concern and would need to be included.

## COMPANY RATING SYSTEMS

A number of systems have been created in recent years to measure the environmental, social and economic performance of companies. The consulting firm SustainAbility recently conducted a review of over 50 systems and found that more than one third had been created since 2006.<sup>22</sup> These programs have a range of goals, including: encourage competition among companies to disclose information and improve practices; educate institutional and individual consumers and influence purchasing behavior; provide information for investors; and influence policy change (e.g., TSCA reform, REACH implementation).

SustainAbility's review of company rating systems found that overall there was poor transparency in the ratings process, an inadequate focus on material issues, difficulty in comparing companies across industries, and conflicts of interest in organizations that conduct ratings as well as offer consulting services to companies. The authors note that the push to standardize sustainability information that may be inherently subjective and not easily compared across sectors presents many challenges. They note that many ratings organizations do not disclose sufficient information for the users to understand how the ratings work. In addition, many organizations do not cite the sources for their ratings or disclose the researchers conducting the ratings. They also note that disclosure of information and actual improvements in sustainability performance are often confused in the ratings. Ratings based solely on public information are inadequate, but systems that require companies to provide additional information can give unequal advantage to companies that have the resources to supply that information because generally the more information a company discloses the better it does in the rankings.<sup>23</sup>

SustainAbility's analysis found that only a few raters were able to describe the impacts of their ratings other than noting the number of visits to their Web sites. The authors note that GoodGuide has an unusual potential to demonstrate impact in a direct way because its interface is designed to track product page views, user recommendations for and against and user click-throughs to other Web sites such as Amazon.com for purchases.<sup>24</sup> In SustainAbility's survey, NGOs were found to be the most trusted entities to evaluate company performance.<sup>25</sup> SustainAbility concluded that the best ratings are those that are the simplest and the most straightforward as they are more likely to be understood, trusted and therefore used by consumers, investors and others. The authors concluded that successful rating systems in the future will be: financially viable, fewer and in greater demand, competing on analysis not data collection, value-adding and predictive, focused on core issues and impacts, consistent yet adaptive, and transparent. As an example of adaptability they note that when scientists identify new chemicals of concern, these should be reflected in the ratings.<sup>26</sup>

This section describes several company rating programs that have relevance in regard to toxic chemical use and reduction.

### Encouraging competition and educating consumers

The **Guide to Greener Electronics** ranks manufacturers of personal computers, televisions and mobile phones on their policies and practices to: reduce climate impact, green their products, and make their operations more sustainable.<sup>27</sup> Greenpeace launched its Toxic Tech Campaign in 2005 and released the first Guide to Greener Electronics in 2006. The 18th version of the Guide was released in November 2012. Criteria were revised in 2011 to motivate companies toward sustainability in their operations and supply chains. The purpose of the Guide is to encourage best practices by publically comparing companies and providing consumers with an independent assessment of company progress. The Guide does not evaluate individual products.

The criteria specify that products should not contain poly vinyl chloride (PVC) plastic, brominated flame retardants (BFRs), antimony, beryllium and phthalates. Companies are asked to make their restricted substances list (RSL) public and describe how it is enforced with suppliers. Companies are also asked to describe what systems they have in place to implement the phase-out of harmful substances (such as PVC and BFRs) in manufacturing and in their products. In addition, companies are asked whether they have a comprehensive chemicals management program that identifies new chemicals for restriction in their own operations and advocates for stronger chemicals legislation in the industry. The Guide has been useful in tracking the progress of electronics companies over time. Companies are now asked to go beyond phasing out a narrow set of harmful chemicals to developing a more wide-ranging plan for chemicals management, but this activity is difficult to assess.

**Climate Counts** has been created to score the world's largest companies on their climate impacts.<sup>28</sup> Its goal is to spur "climate responsibility and conscious consumption." Although this program does not address the use or reduction of toxic chemicals, it was included in this analysis as its sector-based design is a good model that could be used in designing a new system or adapting a current tool. Climate Counts benchmarks companies within sectors so they can be compared with their peers and can provide consumers with information for informed purchasing. Launched five years ago with the support of Stonyfield Farm, Climate Counts uses a 0-to-100 point scale and 22 criteria to determine if companies have: measured their climate "footprint" (inventoried emissions and accounted for indirect impacts); reduced their impact on global warming (set goals and achieved them, educated employees, and engaged suppliers); supported (or suggested intent to block) progressive climate legislation; and publicly disclosed their climate actions clearly and comprehensively. Climate Counts measures company actions, not the size of its footprint and does comparisons only within sectors. It uses simple icons that illustrate if a company is stuck (red), starting (yellow) or striding (green). Climate Counts has ranked companies in 16 industry sectors. Climate Counts' simple icons and sector-based approach is a useful model. However, in many sectors, all or most companies were ranked as striding and therefore the information that is being requested is not sufficiently differentiating companies. In this case, the scoring threshold will need to be tightened to identify climate leaders.

### Providing information for investors and business transactions

The **Newsweek Green Rankings** were created by Newsweek in 2009 with the goal of being the most comprehensive environmental rankings of companies.<sup>29</sup> Two environmental research firms (Trucost and Sustainalytics) assess company environmental footprint, management of that footprint, and transparency. The rankings compare the 500 largest publically traded companies in the US and globally across sectors and also evaluate companies within industry sectors. Size is determined by revenue, market capitalization, and number of employees. Companies are ranked

by their overall Green Score. This score is derived from three component scores: an environmental impact score, an environmental management score, and an environmental disclosure score, weighted at 45 percent, 45 percent, and 10 percent, respectively. All scores are out of a possible 100.

The environmental impact score considers greenhouse gas emissions, water use, solid waste disposal, and emissions that contribute to acid rain and smog. The environmental management score assesses how a company manages its environmental performance through policies, programs, targets, certifications, etc. This analysis includes three spheres of influence: company operations, contractors and suppliers, and products and services. The environmental disclosure score evaluates the proportion of environmental impacts a company is disclosing, as determined by the involvement in the Global Reporting Initiative and Carbon Disclosure Project. The Newsweek Green Rankings do not currently include a metric for evaluating toxic chemical use or reduction. Researchers at Trucost have indicated that if a metric and data were widely available to compare companies on comprehensive chemicals management, this element could be added to the current evaluation system.<sup>30</sup>

The **Benefit Corporation** (B Corporation) is a new model for sustainable business that is attracting significant interest from the socially responsible investment community. A B Corporation is certified to meet standards of environmental and social performance, accountability, and transparency.<sup>31</sup> Founded and administered by the non-profit organization B Lab, there are now more than 600 B corporations in 15 countries and 60 industries. To become a B Corporation, a company must conduct a self-assessment of its positive impacts, programs and policies and must score 80 out of 200 points to be certified. 10% of B Corporations are randomly selected for review as a means of validation. Also, companies must amend governing documents and obtain board and shareholder approval and meet legal requirements for their state of incorporation and corporate structure. Finally, companies must sign the “B Corp Declaration of Interdependence” and pay an annual fee based on annual sales. The self-assessment includes sections on governance, workers, community, environment, disclosure, and environmentally and socially focused business models. In 2013, the assessment will be amended to include questions that ask companies whether they track chemicals in their supply chain, have a program in place to identify and eliminate chemicals of concern and identify and phase in safer alternatives, and whether they publically disclose ingredients.<sup>32</sup>

The **SIN Producers List** is a listing of chemical companies that produce chemicals on the SIN List.<sup>33</sup> Developed by ChemSec, a non-profit organization founded in 2002 by four environmental organizations in Europe, the Sin Producers List contains valuable information for downstream users of chemicals and financial investors that wish to avoid high-risk investments in hazardous chemicals. SIN list chemicals include substances that have been identified as fulfilling the criteria for Substances of Very High Concern in the REACH legislation. The SIN Producers List includes 389 European chemical manufacturers that produce or import these chemicals in volumes of 10 tons or more per year. The data were gathered from the European Commission’s publically available database ESIS, the European Chemical Substances Information System. As the database has not been updated since 2008, ChemSec is pushing for more current information to be made publically available to update this list. In addition to the Sin Producers List, ChemSec has developed a Chemicals Criteria Catalogue to assist investors in evaluating chemical manufacturers.<sup>34</sup>

## SIGN-ON PROGRAMS

**S**ign-on programs provide an additional avenue for motivating change toward best practices. These programs work by providing a visible commitment to a set of goals, outlining a policy framework, and creating opportunities for partnerships. Some examples are described below:

### Compact for Safe Cosmetics<sup>35</sup>

From 2004 to 2011, the **Campaign for Safe Cosmetics** coordinated the Compact for Safe Cosmetics, a voluntary pledge of safety and transparency. The Compact was created to reward cosmetic companies that fully disclose their ingredients and do not use chemicals that are banned by health agencies in other countries. More than 1,500 companies signed the Compact. To be considered as meeting the goals of the compact, companies were required to: comply with the European Union's Cosmetics Directive; disclose all ingredients, including ingredients in fragrance; publish and regularly update product information in EWG's Skin Deep cosmetics database; comply with any additional ingredient prohibitions and restrictions under the Compact, substitute ingredients of concern with safer alternatives and participate in the Campaign for Safe Cosmetics. Companies that signed on to the Compact for Safe Cosmetics were allowed to provide ingredient information to the Skin Deep database prior to putting a new formulation on the market. The scoring results provided feedback to companies about potential health hazards and gave them an opportunity to reformulate.<sup>36</sup> 321 cosmetics companies met the goals of the Compact. An additional 111 companies made significant progress toward those goals. Because the Compact required companies to provide ingredient information to the EWG Skin Deep® database, there was a mechanism to track whether companies were actually implementing the goals of the compact.

### The UN Global Compact<sup>37</sup>

The **United Nations Global Compact** is a policy framework for the development, implementation and disclosure of sustainability principles and practices related to four core areas: human rights, labor, the environment and anti-corruption. It is designed to provide a means for business and other organizations to work together to build a sustainable global economy. Organizations that participate in the Global Compact publically commit to the implementation, disclosure, and promotion of its ten universal principles. A participant is expected to make the principles part of daily business strategy and organizational culture, incorporate the principles into decision making, contribute to the Millennium Development Goals, describe how it is implementing the principles in its annual report, and actively advance the goals of the compact through advocacy and outreach. Companies pay a fee based on annual sales revenue to participate. There are over 10,000 participants in 145 countries. In 2011, 1861 companies joined the Global Compact, a 54 percent increase over the previous year. The Global Compact does not have the mandate or resources to monitor performance. If a participant does not communicate its progress it is listed as non-communicating and can be expelled if it does not report for two years.

### CERES Principles<sup>38</sup>

The **CERES Principles** were created by a small group of investors in 1989 in response to the Exxon Valdez Oil spill in Alaska. The 10 principles provide a code of corporate environmental conduct to be publicly endorsed by companies with a mandate to report on their progress. The Global Reporting Initiative was developed by CERES to encourage the use of a standardized sustainability reporting framework. CERES is now less focused on getting companies to sign on to the principles and is more engaged in putting sustainability into practice. It has created a network of over 70 companies representing 20 industry sectors and provides networking and consulting support on a range of sustainability implementation issues.

### UN Caring for Climate<sup>39</sup>

**Caring for Climate** is the UN Global Compact and UN Environment Programme's initiative to advance the role of business in addressing climate change. CEOs who sign on to Caring for Climate are expected to set goals, develop and implement strategies and practices, and publicly disclose emissions as part of their commitment within the UN Global Compact framework. Caring for Climate has been endorsed by almost 400 companies from 65 countries. Signatories are encouraged to use the framework developed by the **Carbon Disclosure Project (CDP)** as it is considered to be a strong tool for reporting GHG emissions and climate change strategies on an annual basis.<sup>40</sup> CDP holds the largest collection of publically reported data on climate change initiatives. CDP works with both institutional investors and companies. On behalf of investors CDP requests information from companies on greenhouse gas emissions, energy use, and risks and opportunities as a result of climate change.

### Green Chemistry Commitment<sup>41</sup>

The **Green Chemistry Commitment** is a new program that aims to change the education of chemists in higher education. Colleges and universities that sign on to the Green Chemistry Commitment agree to change curriculum, laboratory exercises, course materials, methods and research practices. Beyond Benign, a nonprofit organization dedicated to education in green chemistry, worked with over 60 chemistry department members from colleges and universities in New England and throughout the United States to craft the Commitment. The Commitment is designed to be flexible so that an institution can adopt the objectives as appropriate. Institutions will be asked to prepare an annual report that describes progress in meeting the elements of the Commitment. The draft Commitment is being finalized and the first signers will formally sign it in June 2013 at the annual Green Chemistry and Engineering Conference in Washington, DC.

### BizNGO Principles/Guide to Safer Chemicals<sup>42</sup>

BizNGO, established in 2006 as a project of Clean Production Action, brings together representatives from business, environmental organizations, government and academia to promote safer chemicals and sustainable materials. One of BizNGO's first projects was to develop Four Principles for Safer Chemicals, as follows: 1. Know and disclose product chemistry; 2. Assess and avoid hazards; 3. Commit to continuous improvement; 4. Support public policies and industry standards that advance the implementation of the above three principles.

The Principles have been endorsed by 29 businesses, 6 health care organizations, 12 investors and 21 NGOs. BizNGO recently released the **Guide to Safer Chemicals** as a means of implementing the BizNGO Principles for Safer Chemicals. The guide is designed to assist downstream users of chemicals such as product manufacturers, designers, architects, retailers, and health care organizations to design and implement a process for improving chemicals management, reducing the use of toxic chemicals, and identifying and using safer alternatives. The guide

uses four benchmarks—trailhead, base camp, high camp, and summit—to indicate the journey involved in implementing the principles. For each principle, actions are identified along with examples of companies that have achieved that step. All of the activities go beyond simple compliance with laws and regulations. The Guide is designed for self-assessment and implementation, but currently has no rating system to determine progress in achieving the benchmarks.

Sign-on programs that are highly visible can create momentum for environmental improvements and social change. However, these programs are often limited in their effectiveness by the fact that companies can sign on and receive a public relations benefit without implementing significant change. For example, The UN Global Compact has over 10,000 participants but has no means of evaluating performance. The most effective sign-on programs are those such as CERES that are associated with a standardized reporting format such as the GRI and those such as the Compact for Safe Cosmetics that include a mechanism for tracking implementation of program goals.

## DISCUSSION

As a framework for discussion, the programs that have been described are now considered in the context of four elements that could comprise a harmonized chemical scorecard. This analysis provides a way to consider the need and opportunity for developing such a tool. As described above, some key elements of a harmonized chemical scorecard that would be useful to downstream users such as retailers, institutional purchasers and individual consumers include the following: 1) full **disclosure** of ingredient information; 2) **analysis** of ingredient information that identifies potential health hazards associated with each chemical; 3) a system that **interprets** the hazard information in a format that is easy to understand, such as a traffic light system of red, yellow, green that indicates high, medium or low concern; and 4) a system to **compare** products/companies.

### Disclosure of Information

Transparency is needed on many levels to build robust systems for ranking products and companies in regard to toxic chemical reduction. To evaluate products fully, a complete list of ingredients is needed. To evaluate and compare companies, similar types and quality of information is needed to benchmark them against the criteria that have been developed. To understand and evaluate rating programs, transparency is needed regarding methodologies. All of the systems reviewed are operating with incomplete information on ingredients, health and environmental impacts of chemicals, and company practices. Many of the programs rely on publically available information that is inadequate to evaluate products and companies.

Some of the systems such as Skin Deep®, Cradle to Cradle®, and the Newsweek Green Rankings work with willing companies to collect additional data and therefore have access to information that can improve the quality of the evaluations. Companies that provide information to raters generally do this to improve their scores. While this may improve the analysis of a particular company, it may give unfair advantage to one that has the resources to engage in this process. Many of the systems include a score for transparency. For example, Climate Counts gives points for publically disclosing climate actions and the Newsweek Green Ranking gives points for involvement in the Global Reporting Initiative and Carbon Disclosure Project. However, these transparency scores are not related to disclosure on toxic chemical use or reduction.

Disclosure about chemicals and their potential health and environmental impacts is increasingly being viewed as a right of citizens. For example, in France, recent legislation has given citizens the right to know about the environmental impacts of consumer products. This information is seen as a means for the public to support sustainable consumption. In the US, the Health Product Declaration is changing the practices of building material manufacturers regarding information provision as customers increasingly expect disclosure. The BizNGO Guide to Safer Chemicals also raises the bar and expectations for disclosure about use and reduction of toxic chemicals.

Sign-on systems that include a means to track implementation can help to increase disclosure. For example, the Compact for Safe Cosmetics required a commitment to full ingredient disclosure and was able to track this commitment as participants were required to submit ingredient information to the Skin Deep® database.

As a way to address concerns about confidential business information (CBI), several companies have developed third party systems for screening chemical ingredients. These systems protect CBI but allow information about chemical use flow more freely up and down the supply chain so that downstream users of chemicals can make informed decisions about products. However, these systems do not provide transparency. Increasingly, systems are being designed to encourage full disclosure and successfully overcome CBI claims. For example, Pharos will not include a product in its Building Materials Library if its composition is not fully disclosed. As a result, many companies have withdrawn their CBI claims. Although the Health Product Declaration will accept CBI claims, its format is designed to reduce these claims.<sup>43</sup>

In addition to the need for disclosure of ingredients, there is a need for more transparency in regards to the methodologies behind the product and company rating systems. Some programs such as Cradle to Cradle® and GoodGuide have responded to this criticism by posting detailed information about their methodologies on their Web sites.

### **Analysis of information and addressing data gaps**

Most of the rating systems described above primarily rely on authoritative government lists to identify chemicals of concern. This approach allows known high hazards to be screened out, but does not identify chemicals that may be of concern but have not amassed enough data to appear on government lists. In addition, most programs do not identify safer ingredients, with the exception of the US EPA DfE's Safer Product Labeling program that has created such a list.<sup>44</sup> Also lacking is information on the functional use of chemicals, which can be important in evaluating safer alternatives.

Some of the systems such as Skin Deep® and Cradle to Cradle® acknowledge these data gaps by including a rating for data availability, whereas other systems use the data that is available to conduct the evaluation without specifically noting this limitation. Ongoing campaigns to address these data gaps are aimed at updating federal and state policies to require chemical manufacturers to provide adequate test data to determine safety of chemicals.

A critical step in accelerating efforts to evaluate chemicals in products and processes is to bring together a range of information about chemical hazards and safer chemicals in a common database. Using open source technology would allow expert users to share the job of keeping the information up to date. The Healthy Building Network and researchers at the UC Berkeley Center for Green Chemistry are leading efforts to define what this chemical "data commons" would include. Some data elements that would likely be included are: up to date compilations of authoritative government lists (already compiled in the Pharos Chemicals and Materials Library); alternative assessments, restricted substances lists, chemical life cycle information, unique identifiers for chemicals, and hazard trait classifications.

In addition, new systems to predict potential toxicity of chemicals to help avoid choosing regrettable substitutes are critically needed. EPA has developed one such system called ToxCast™ that uses high-throughput screening assays to prioritize chemicals for further testing.<sup>45</sup> The results of these analyses can be fed into the open source network described above.

### **Interpreting hazard information**

There are a number of new tools that have been developed in the last decade to identify and screen out hazardous chemicals and compare alternatives. For example, many companies begin their chemicals management programs by creating a Restricted Substances List (RSL). RSLs generally include chemicals that are currently restricted by a government body anywhere in the world. Some companies maintain a separate "watch list" of chemicals under scrutiny by scientists

and environmental advocates that are not yet regulated. In addition to tools that screen out hazardous chemicals, there are tools such as GreenScreen developed by Clean Production Action and the Chemicals Alternatives Assessment method developed by the USEPA DfE program that are designed to compare alternatives to identify safer chemicals.<sup>46</sup> These tools play an important role in interpreting hazard information.

Once chemical information is disclosed and the health and environmental impacts of chemical exposure are identified, a further step is needed to interpret this information and help users in their decision making about products and companies. Many of the systems described above use a traffic light system where the data are summarized as being of low concern (green), medium concern (orange/yellow) or high concern (red). Many systems use a 10 point scale. The Pharos Building Materials Library is designed so that users can do side-by-side comparisons of products for different attributes that are evaluated as red, orange, yellow or green. The Guide to Greener Electronics and Newsweek Green Rankings also use a color-coded approach. GoodGuide uses a similar approach to make it easy for consumers to make decisions about preferred products at the point of purchase using a smart phone application.

A platform such as GoodGuide could present disaggregated health and environmental impact information rather than summarizing the data in a single score. For example, if a product contains a chemical that is known to cause cancer, a user could be alerted to this information by means of an icon that symbolizes that particular health endpoint. This tactic could be used to draw attention to known high hazard chemicals in products, similar to the approach of Healthy-stuff.org, described above.

A possible downside of using icons to identify each endpoint of concern is that a chemical may be associated with a number of potential health impacts, resulting in a number of icons for each product. This plethora of information is challenging to interpret. This disaggregation would require the user to determine how to weigh different health and environmental endpoints, as they would not be rolled up into a single score.

### Comparing products

The final step in a chemical scorecard is a means to compare products and companies. Pharos, Skin Deep® and GoodGuide all provide useful models for product comparisons. Skin Deep® evaluates ingredients only whereas GoodGuide and Pharos evaluate additional attributes such as renewable materials and company practices. These programs are limited by data availability and quality but are valuable platforms that can be improved and expanded.

In regard to company ranking systems, the Guide for Greener Electronics, Climate Counts and the Newsweek Green Rankings provide viable models for sector-based benchmarking. Of these three systems, only the Guide for Greener Electronics addresses toxic chemicals reduction by scoring companies on their avoidance of certain chemicals and whether they have a comprehensive chemicals management program. What is missing from all of the systems reviewed is a metric to evaluate companies for their efforts to assess, disclose and reduce the use of toxic chemicals in their manufacturing processes and products. The B corporation assessment shows movement in this direction as it asks companies whether they track chemicals in their supply chain, have a program in place to identify and eliminate chemicals of concern and identify and phase in safer alternatives, and whether they publically disclose ingredients. However, it does not provide a means to rank companies. The Guide to Safer Chemicals provides a framework for companies to develop a comprehensive chemicals management program. It would be valuable to build on these efforts and develop a metric that can compare companies in their progress toward safer chemical use in their manufacturing processes and products.

## RECOMMENDATIONS FOR NEXT STEPS

**T**he programs described in this report present an array of governmental and non-governmental solutions to raise awareness, impact policy and change behavior of product manufacturers and consumers in regard to toxic chemicals in products. Yet toxic chemicals continue to be used in production processes and are found in a wide range of products, presenting harm to workers, consumers and ecosystems. Efforts to promote sustainable production and consumption by reducing the use of hazardous chemicals must increase in their effectiveness and scale.

This mapping exercise was designed to determine strategic opportunities for increasing the effectiveness of existing tools or developing a new tool for shifting markets, raising awareness, and promoting policy change toward safer chemicals. Many tools exist that contain at least part of a framework for an effective chemicals scorecard. For example, GoodGuide and Pharos have developed useful platforms for comparing products and the Guide to Greener Electronics is a useful framework for a sector-based evaluation.

While many of these programs are helpful in identifying and characterizing problem chemicals in products, they are generally weak on promoting solutions to chemicals of concern. To scale up and accelerate the pace of efforts to eliminate toxic chemicals in production processes and consumer products, there needs to be increased focus on “solution systems.”<sup>47</sup> The programs described above have served to create awareness about the problem of toxic chemicals in products and have begun to design solutions by increasing information flow about products and companies. But they have also been limited in their effectiveness. For example, ecolabels, while designed to identify environmental leaders, over time often set a floor for environmental standards that does not push manufacturers toward significant design change unless the criteria for the ecolabel are reviewed and strengthened once many companies achieve the standard. Ranking systems help to identify products and companies with lesser impacts, but do not necessarily drive innovation toward sustainability. It is critical that efforts to scale up and accelerate change move beyond the “problem” space toward designing solutions. These solutions lie in green chemistry, sustainable materials, process changes, and systems changes that may point to non-chemical options.

All of the programs described in this report are limited by lack of disclosure of information, data gaps about the health and environmental impact of chemicals, and the lack of a centralized system to hold data on chemical hazards and safer alternatives. Rather than creating a new scorecard that is also plagued by these deficits this analysis suggests it is more strategic to determine how to address these common issues, because by improving information flow and quality all of these systems will benefit. The recommendations below therefore are focused at this broader level. Some promising areas for engagement are as follows:

### **Work to achieve full disclosure via the Right to Know**

Transparency requirements are a proven driver for innovation. When companies feel pressure to disclose information about toxic chemicals through regulation, product testing or pressure from customers, there is a strong incentive for product redesign. Emerging tools designed to increase disclosure of information about toxic chemicals in production and products include the Health Product Declaration (HPD) and the BizNGO Guide to Safer Chemicals.

The HPD provides a model for a standard format for disclosure about product content in the building materials sector. As the HPD is rolled out and adapted for other sectors, it could be framed as providing the information to meet the requirements of a citizen's Right to Know as well as a right for institutional purchasers. Firms need information about chemicals flowing through their supply chain and in their products to develop comprehensive chemicals management systems and make informed decisions about toxics chemical reduction.

Policies are emerging in Europe that acknowledge that citizens have a right to know about the environmental footprint of consumer products. A deeper analysis of this activity in Europe is needed to promote similar policy approaches in the US, especially at the state level. In the US, the legal principle of the Right to Know about chemical exposure is found in occupational health regulations (OSHA) and community-based regulation (EPCRA) but it has not been used in the context of the rights of individuals. A citizens Right to Know framing could be useful for NGO campaigns particularly if it is tied to a message that promotes innovation toward safer products. Firms could be rated on their disclosure of product ingredients and process chemicals.

### **Build out the chemical data commons**

All of the product and company ranking systems described above are limited by data gaps. A first step in addressing these data gaps is to centrally locate all of the data that are available and design a system that can keep it up to date (such as using open source technology). To move from problem identification to a solutions orientation, there must be increased dialogue on a common set of criteria for safer alternatives and the building of a library of information on safer chemicals, materials, products and processes. The chemical "Data Commons" project spearheaded by the Healthy Building Network is tackling this issue by working to design a harmonized system for data collection and management. This initiative needs to be better resourced if it is to reach necessary scale. It will also require significant policy changes at the state and federal levels that require chemical manufacturers to provide adequate test data to determine safety of chemicals.

### **Develop a metric to rate companies on their use of safer chemicals**

The BizNGO Guide to Safer Chemicals delineates a process for companies to implement principles for safer chemical use, but it does not rank companies on their progress. Company rating systems such as the Newsweek Green Rankings do not evaluate companies for toxic chemical reduction as there is no common metric to compare companies. A Safer Chemical Use Indicator should be developed that could be inserted into existing sustainability ranking systems. The challenge in inserting this metric into existing systems is that if the points are optional or the points awarded for improved chemicals selection and management are not significant, companies may not be motivated to engage in this arena. This analysis found that sector-based rankings are likely to be the most useful for assessing progress and motivating change. This metric will need to be designed carefully so that it can differentiate company leaders within an industry sector.

As this metric is developed, it will be important to identify industry sectors that are ready to collaborate on solutions to the problem of toxic chemicals in production and products. Forward thinking collaborations have become an increasingly important strategic lever for the development of products that are more sustainable. These collaborations are frequently set in motion by environmental advocates. For example, Greenpeace's recent Detox Campaign about water pollution in China propelled a group of companies in the footwear and apparel sector to form the Joint Road Map for Zero Discharge of Hazardous Chemicals. One of the elements that distinguishes this collaboration is that it is focused on innovation towards an outcome, rather than to a standard. This may lead to behavior that is more visionary and "outside the box." Sector-based approaches provide good opportunities for collaboration on sustainability efforts that individual companies cannot achieve. For example, the textile industry shares a common supply chain and solutions to water pollution cannot be effectively accomplished by individual companies. Because of the collaboration that is already ongoing in this sector, it may be open to beta testing a Safer Chemical Use Indicator.

It would be valuable to consider what other industry sectors are ripe for collaboration in regard to toxic chemicals reduction. One sector with significant activity is the electronic sector. In the past year there has been a Wingspread conference on sustainable electronics, a Sustainable Mobile Phone Design Charrette, product testing of mobile phones, and several initiatives in Europe such as Fair Phone that is working to create a phone made without the use of conflict minerals. The Electronics Take Back Coalition is working with BizNGO to develop a method to rank electronic firms on their implementation of the Guide to Safer Chemicals. This project will provide valuable information for the creation of a Safer Chemical Use Indicator.

In summary, rather than investing in creating a new scorecard that will face the same transparency issues and data limitations of existing programs, it is recommended that new efforts focus on resolving these issues to help move from a focus on the problem toward a focus on solutions. The three activities described above in combination with scaling up research and development on safer chemicals, materials and processes can play an important role in accelerating change towards safer and more sustainable products and business practices.

**TABLE 1**  
**Rating and Ranking Systems Evaluated**

	PROGRAM NAME	PROGRAM TYPE	FOCUS	AUDIENCE
Product Ranking Systems	Healthystuff.org	Product testing and online database	Toxics in products	Individual consumers and manufacturers
	Various ecolabels—GreenSeal, EcoLogo, etc.	Product certification	Multi-attribute—environmental impacts	Individual and institutional purchasers
	EPEAT	Certification	Environmental impacts of electronic products	Individual and institutional purchasers
	EPA DfE Safer product labeling	Label	Chemicals in formulated products	Individual and institutional purchasers
	Cradle to cradle®	Certification	Health and environmental impacts of materials and products	Business to business transactions, investors
	Skin Deep®	Online database	Toxic chemicals in personal care products	Individual consumers
	Pharos building materials library	Online database	Health and environmental impacts of building materials	Commercial builders, architects, etc.
	Goodguide.com	Online database and smartphone app	Health, environmental, and social impacts of products	Individual consumers
	Environmental Product Declaration	Label	Environmental impacts of products	Business to business transactions, individual consumers
	Health Product Declaration	Standard for information sharing	Product contents and emissions	Building materials sector
Company Rating Systems	Guide to Greener Electronics	Company scorecard	Electronics products—Multi-attribute	Individual and institutional purchasers
	Climate Counts	Company scorecard	Climate specific, multiple sectors, companies ranked within sectors	Individual and institutional purchasers
	Newsweek Green rankings	Company scorecard	Multiple sectors and multi-attribute	Investors, business to business transactions
	B Corporation	Company certification	Environmental and social performance	Investors, business to business transactions
	Sin Producers List	List of European chemical producers	Toxic chemical producers	Investors, downstream users
Sign-on Programs	Compact for Safe Cosmetics	Sign-on program	Cosmetic products	Cosmetics industry
	UN Global Compact	Sign-on program	Sustainable development	All industries
	CERES Principles	Sign-on program	Sustainability	All industries
	UN Caring for Climate	Sign-on program	Climate change	All industries
	Carbon Disclosure Project	Sign-on program	Climate change	All industries
	Green Chemistry Commitment	Sign-on program	Green chemistry	Colleges and universities
	BizNGO Principles/ Guide to Safer Chemicals	Sign-on to principles and implementation	Safer chemicals and products	Downstream chemical users

## APPENDIX — PROGRAM SUMMARIES

### PRODUCT RANKING SYSTEMS

#### Healthystuff.org

<http://www.healthystuff.org>

Healthystuff.org was created in 2007 by the Ecology Center of Ann Arbor. Researchers test products for toxic chemical content using an X-ray fluorescence spectrometer (XRF). X-ray fluorescence spectrometry can detect chemical elements, including cadmium, mercury, lead, chlorine, bromine, arsenic, tin, and antimony. If chlorine or bromine is found, researchers can infer that materials such as brominated flame retardants (BFRs), polyvinyl chloride (PVC) and possibly phthalate plasticizers may be present. In some case, laboratory testing is done to provide additional information. Researchers have tested over 5000 products in the following categories: toys, cars, pet products, children's products, apparel and accessories such as jewelry, home improvement, garden products, holiday lights, and mobile phones. Based on the levels detected, products are classified as low concern (green), medium concern (yellow) and high concern (red). Although primarily a product ranking site, company rankings are provided for some categories, such as automotive interiors, where data are sufficient.

**Strengths:** Healthystuff.org is an important force in raising consumer and manufacturer awareness about the presence of toxic chemicals in products. Product testing distinguishes healthystuff.org from other programs. This approach is useful as a campaign tool and has been effective as an incentive for product reformulation. Manufacturers can benchmark their performance over time and in comparison to their competitors. Visitors to the site are encouraged to take action by writing letters to support passage of the Safe Chemicals Act.

**Limitations:** The XRF technology tests for only a limited number of chemicals. The test results do not provide information on chemical exposure or risk to consumers; rather, the results indicate only that the chemical is present. This effort is valuable in identifying the problem of toxic chemicals in products but is not focused on identifying safer alternatives and therefore has limited use for purchasers, except for identifying what not to buy.

#### Ecolabels

For example, <http://www.greenseal.org> and <http://www.ecologo.org/en>

The purpose of eco-labels and certifications is to provide institutional and individual consumers with information on environmental performance of products at the point of purchase. Eco-labeling programs are voluntary. The International Organization for Standardization (ISO) has identified three broad types of eco-labels as follows:

*Type I:* Voluntary, multiple-criteria based, third party program that awards a license that authorizes the use of environmental labels on products indicating overall environmental preferability of a product within a particular product category based on life cycle.

*Type II:* Informative environmental self-declaration claims by producers.

*Type III:* Voluntary programs that provide quantified environmental data on a product, under pre-set categories of parameters set by a qualified third party and based on life cycle assessment, and verified by that or another qualified third party.

Credible ecolabels are verified by independent, qualified third parties to meet the standards associated with that label. Some ecolabels are single-attribute, for example, those that note recycled content or compostability. Ecolabels that are multi-attribute are most valid when they consider health, environmental, and social impacts throughout the life cycle of a product. There are hundreds of eco-label programs worldwide. An index of 432 ecolabels is available at: <http://www.ecolabelindex.com>.

**Strengths:** Credible, third-party certified ecolabels provide valuable information to institutional purchasers and individual consumers at the point of purchase. Ecolabels that are multi-attribute and consider environmental and social impacts throughout a product life cycle are more informative than those that focus on a single attribute.

**Limitations:** Ecolabel programs are voluntary and may not be widely used by businesses or consumers. Single attribute eco-labels provide useful information, but do not provide a complete story of product life cycle impacts. Ecolabels developed through a stakeholder consensus process generally include criteria that leading manufacturers can meet and may not raise the bar enough to encourage further design change. Criteria for ecolabels need to be revisited to keep up with technology change.

### **Electronic Product Environmental Assessment Tool (EPEAT)**

<http://www.epeat.net>

The Electronic Product Environmental Assessment Tool (EPEAT) is designed to be a global standard to identify greener electronic products. Stakeholders including environmental advocates, purchasers, manufacturers, government agencies, researchers, and recyclers collaborated to develop an ANSI standard for computers in 2006. This standard covers desktops, laptops, displays, workstations and thin client devices. Standards are under development for printers, copiers, fax machines, and televisions. These product types will be added to the EPEAT registry.

EPEAT includes criteria in eight areas: reduction/elimination of environmentally sensitive materials; material selection; design for end of life; product longevity/life extension; energy conservation; end-of-life management; corporate performance; and packaging. Criteria in regard to toxic chemicals include compliance with the European RoHS Directive, elimination of intentionally added cadmium, mercury, hexavalent chromium, SCCP flame retardants and plasticizers in certain applications, batteries free of mercury, cadmium and lead, and large plastic parts free of PVC. Products can be certified at 3 levels—bronze, silver, gold. For the bronze level, products need to meet 23 required criteria. For the silver level, products must meet 50% of additional 28 criteria; for the gold level, products must meet 75% of additional 28 criteria. EPEAT is used in 42 countries. Over 3000 products are EPEAT certified.

**Strengths:** EPEAT provides a global standard for comparing electronic products and provides an easy way for institutional and individual purchasers to identify products that are energy efficient, less toxic, longer lasting, easy to recycle and less wasteful. Many institutional purchasing programs require EPEAT certified products. In 2007 the US government issued an executive order requiring

that all federal agencies meet 95% of purchasing requirements for electronics with EPEAT-registered products.

**Limitations:** The ANSI consensus based stakeholder process often results in a standard that is a compromise of diverse interests. Criteria do not push manufacturers toward more visionary design change. Although the standards are designed to be continually updated the computer standard was only slightly revised in 2009. Chemical criteria do not go much beyond what is required in RoHS.

### **US EPA Safer Product Labeling Program**

<http://www.epa.gov/dfe/pubs/projects/formulat/saferproductlabeling.htm>

The US EPA Design for Environment program (DfE) has developed the Safer Product Labeling Program to identify and promote products that contain ingredients that are the safest in their chemical class. Products are evaluated based on standards for safer chemicals, within the functional classes (such as surfactant, colorant, solvent). The standards, developed with stakeholder input, consider the human health, ecological toxicity and environmental fate characteristics of chemicals in the class, and establish thresholds that must be met for an ingredient to be allowed in a DfE-labeled product. To earn the DfE label, product manufacturers must submit a list of all product ingredients to a qualified third party. The third party develops a hazard profile for each ingredient and reviews the profiles against the DfE standards. Product manufacturers are provided with an assessment of their ingredients and whether they meet DfE's safer chemical criteria. To achieve the DfE label, a manufacturer must use ingredients that meet DfE criteria and meet other product-level requirements, such as pH and performance. In addition, companies must sign a partnership agreement with EPA that formalizes their commitment to making safer products and improving them over time. To support this effort, the EPA DfE program has developed criteria for safer chemical ingredients and a list of safer chemical ingredients. This information can be found at: <http://www.epa.gov/dfe/pubs/projects/gfcp/index.htm#GeneralScreen> and <http://www.epa.gov/dfe/saferingredients.htm#about>

**Strengths:** The DfE Safer Product Label program is a thorough process for evaluating chemical ingredients for human health and ecological impacts. Criteria for safer chemical ingredients and list of safer chemical ingredients are valuable information for product manufacturers. The DfE label is valuable for consumers at point of purchase.

**Limitations:** Many chemicals are not well studied and therefore there are little data available about potential health and environmental impacts from exposure. When empirical data are not available, evaluations are made using screening level methods that evaluate structure-activity relationships and experimental data.

### **Cradle to Cradle® Certification**

<http://www.c2ccertified.org>

McDonough Braungart Design Chemistry (MBDC), a sustainability consulting firm, originally developed the Cradle to Cradle® certification for materials, products and systems. Certification is now conducted by the Cradle to Cradle Products Innovation Institute. The program includes five categories of criteria including material health, material reutilization, renewable energy and carbon management, water stewardship, and social fairness. There are five levels of certification, each with a more rigorous set of requirements. To achieve certification at a certain level, the product and manufacturing processes must meet the criteria at that level in all five categories.

The Cradle to Cradle Products Innovation Institute works with product manufacturers and suppliers to understand chemical constituents in products. To evaluate materials health, certifiers work with manufacturers and suppliers to identify all chemical constituents of a product formulation. These chemicals are evaluated against 19 criteria for human and environmental health and given a toxicity rating of red, yellow, green, or grey. Green indicates little to no risk associated with the substance and is preferred for use in intended application; yellow indicates low to moderate risk and is acceptable for use unless a green alternative is available; red indicates a high hazard chemical that should be phased out; and grey indicates incomplete data and that therefore a chemical cannot be characterized. The chemical hazard assessment ratings are then combined with potential exposure and materials cyclability information to determine the overall materials assessment.

**Strengths:** Cradle to Cradle® certification is a comprehensive program for evaluating materials and products for toxic chemicals as well as for other environmental and social impacts.

**Limitations:** Until recently, the MBCD evaluation was a “black box” proprietary system. In 2012 the Cradle to Cradle Products Innovation Institute released details on their criteria for evaluating chemicals, materials, and products. A limitation is data gaps in information on chemical hazards. Because the Institute works directly with manufacturers and suppliers, it may be able to get access to data that are not publically available.

### **Skin Deep® Cosmetics Database**

<http://www.ewg.org/skindeep>

The Environmental Working Group created the Skin Deep® cosmetic database to provide information to consumers about hazardous chemicals in personal care products including makeup and other products for skin, hair, eyes, nails, oral care, sun protection, and baby products. Skin Deep® relies on companies that have signed the Compact for Safe Cosmetics to provide ingredient information. Additional information is gathered from manufacturers or product labels. Ingredients are evaluated and scored based on different health endpoints and then the score is adjusted based on absorption potential. Each product is assigned an overall hazard score with information available on the hazards of specific ingredients. Products receive a color code and score of 0-10. 0-2 (green) indicates low hazard; 3-6 (orange) indicates moderate hazard, and 7-10 (red) indicates high hazard. Skin Deep also provides a rating for data availability (none, limited, fair, good and robust).

**Strengths:** Skin Deep® is an easy to use tool that provides a general overview of the safety of personal care products and includes detailed information on the hazard of specific ingredients or products. The tool uses absorption potential as a proxy for exposure. EWG works with manufacturers to gather additional data on ingredients that may not be publically available.

**Limitations:** The user is not able to do a side-by-side comparison of products or ingredients. Also, many ingredients have not been well studied so there is little information available on health impacts. Absorption potential is a proxy for exposure but does not measure exposure directly.

**Pharos Building Product Library**

<http://www.pharosproject.net>

The Healthy Building Network (HBN) created the Pharos Project to help commercial buyers evaluate product content, certifications and other relevant data about building materials against key health, environmental, and social impact benchmarks. The Pharos database provides information about a product's toxic impacts during use and upstream in manufacture. Pharos currently evaluates products for the following impact categories: volatile organic compounds, toxic content, toxics used in manufacturing, renewable materials, renewable energy and reflectance. Products receive a color coded score from 1-10 and can be compared side by side for each of these attributes. Over 1000 products in a range of product categories are profiled. In addition to the Building Product library, the Pharos database contains a Chemical and Material Library (CML) that provides health hazard and other environmental information on over 22,000 chemicals, polymers, wood species and other substances.

**Strengths:** The Pharos Building Product Library (BPL) is transforming the building industry by providing an easy to access database on toxic chemicals and other environmental attributes of a range of building products. Over 1000 products have been fully disclosed by major manufacturers of building products. The CML has become a valuable resource on chemical hazards for many users inside and outside of the building materials industry.

**Limitations:** A limitation is data gaps in information on chemical hazards. Resources are needed to fill out and build up the BPL so that it contains many more product categories. As the Health Product Declaration becomes more widely used, these data can be input into Pharos.

**GoodGuide.com**

<http://www.goodguide.com>

GoodGuide.com evaluates the environmental, social, and health performance of products and companies by integrating information from a wide variety of data sources. GoodGuide does not conduct product testing. Information is provided on more than 100,000 products, including household and personal care products, children's products, pet food, apparel, cell phones, appliances, cars and foods. GoodGuide provides both a summary score for health/social/environmental attributes and individual scores so that consumers can focus on a particular attribute of interest. GoodGuide is accessible online and by smart phone. GoodGuide uses a 0-10 rating scale from red to green to rate products, companies, individual criteria (such as energy use) and categories of criteria, such as health. The best products rank 8 or above and the worst rank 4 or below. The Health score gives an indication of the potential health impact of the product by considering: the health concern posed by ingredients, data adequacy, whether ingredients are banned, restricted, or targeted for phase out; and whether the product includes contaminants from the production process.

**Strengths:** GoodGuide is a comprehensive system for rating products for health, social, and environmental impacts. Because scores can be disaggregated, consumers can evaluate products based on their values and concerns. GoodGuide has pushed companies to reveal ingredient data as its scoring system considers whether this information is available. GoodGuide was recently purchased by Underwriters Laboratory Environment (ULE). Under ULE's umbrella, GoodGuide will be developing new uses of its platform for businesses, e.g., developing platforms that will assist retailers in their purchasing decisions.

**Limitations:** GoodGuide has been criticized for not being transparent about its methodologies and the algorithms behind its scoring systems. GoodGuide now provides much more information about its methodology on its Web site. The quality of the rankings is affected by data gaps in information on chemical ingredients, hazards and company practices.

### Environmental Product Declaration

<http://www.environmentalproductdeclarations.com>

Environmental Product Declarations (EPD) are Type III ecolabels, based on quantitative life cycle assessment and verified by a third party. Rather than indicating that a product is environmentally preferred by meeting a set of defined criteria, an EPD is designed to provide information on product life cycle impacts. There are standard methods for developing environmental product declarations that have been developed by the International Organization for Standardization.

**Strengths:** EPDs are somewhat more transparent than Type I ecolabels in that they delineate a product's impacts throughout its life cycle, rather than indicating whether a product meets a certain set of criteria for environmental leadership.

**Limitations:** EPDs are not transparent in terms of data and methodology. The standardized LCA methodology does not include a chemical hazard assessment, so this tool is a weak driver for toxic chemical reduction in processes or products.

### Health Product Declaration

<http://www.hpdcollaborative.org>

The Health Product Declaration (HPD) developed by the Healthy Building Network is a new tool that is being piloted in the building materials sector. It is designed as a complement to an EPD and addresses the weakness of LCA in evaluating chemical hazards in products. The HPD provides a framework for standardized disclosure of product contents, VOC emissions and health impacts. It is similar to a Materials Safety Data Sheet (MSDS) but much more comprehensive. The HPD asks that all ingredients be listed and evaluated for acute and chronic health risks. If companies choose not to disclose some ingredients they are still asked to report the health hazards associated with those ingredients. HPD users screen ingredients against a set of authoritative chemical hazard lists to determine known health and environmental hazards. In addition, users must specify a GreenScreen benchmark if available, which indicates whether a chemical is known to be of high concern. The HPD was piloted in 2012 and was released for wider use by the building materials industry in November 2012.

**Strengths:** The HPD provides a framework for standardized disclosure of information about chemical contact and health impacts. It is designed to encourage full disclosure and reduce CBI claims. If widely adopted, the HPD will greatly increase information about chemical hazards of building materials.

**Limitations:** The HPD as currently designed does not ask for information on process or degradation chemicals. If adopted for use in other sectors, the framework will need to be re-worked to be relevant for these industries.

## COMPANY RATING SYSTEMS

### Guide to Greener Electronics

<http://www.greenpeace.org/international/en/campaigns/toxics/electronics>

The Guide to Greener Electronics ranks manufacturers of PCs, TVs and mobile phones on their policies and practices to: reduce climate impact, green their products, and make their operations more sustainable. In 2005, Greenpeace launched a Toxic Tech Campaign on 2005 and released the first Guide to Greener Electronics in 2006. The 18th version of the Guide was released in November 2012. Criteria were revised in 2011 to motivate companies toward sustainability in their operations and supply chains. The purpose of the Guide is to encourage best practices by publically comparing companies and to provide consumers with an independent assessment of company progress. The Guide does not evaluate individual products.

The criteria specify that products should not contain poly vinyl chloride (PVC) plastic, brominated flame retardants (BFRs), antimony, beryllium and phthalates. Companies are asked to make their Restricted Substances Lists (RSLs) public and describe how it is enforced with suppliers. Companies are also asked to describe what systems they have in place to implement the phase-out of harmful substances (such as PVC and BFRs) in manufacturing and in their products. In addition, companies are asked whether they have a comprehensive chemicals management program that identifies new chemicals for elimination/restriction in their own operations and advocates for strong chemicals legislation across the industry.

**Strengths:** The Guide has played a role in getting commitments from most companies to phase out PVC and BFRs but this goal is not yet fully achieved. Regular publication of the Guide allows consumers and companies to compare progress over time.

**Limitations:** The Guide does not rank companies on labor practices or other social criteria of concern in the electronics sector. It specifies a small number of toxic chemicals to be eliminated. Although it asks companies if they have a chemicals management program, it is vague about this requirement. It does not ask companies to identify safer alternatives.

### ClimateCounts.org

<http://www.climatecounts.org>

Launched in 2007 with support from Stonyfield Farm, Climate Counts is a collaborative effort to score the world's largest companies on their climate impacts. Its goal is to spur "climate responsibility and conscious consumption." The program is designed to benchmark companies within sectors so they can be compared with their peers and provide consumers with easily understandable and accessible information for informed purchasing. Climate Counts uses a 0-to-100 point scale and 22 criteria to determine if companies have: measured their climate "footprint" (inventoried emissions and accounted for indirect impacts); reduced their impact on global warming (set goals and achieved them, educated employees, and engaged suppliers); supported (or suggested intent to block) progressive climate legislation; and publicly disclosed their climate actions clearly and comprehensively. Climate Counts measures company actions, not the size of its footprint and does comparisons within sectors. It uses simple icons that designate whether a company is stuck (red), starting (yellow), or striding (green) to indicate progress. Climate Counts has ranked companies in 16 industry sectors.

**Strengths:** Climate Counts uses a straightforward scoring approach and simple icons. Although chemicals use/reduction is not part of this analysis, the sector-based scoring approach is useful and could be applied to chemicals management.

**Limitations:** In many of the sectors evaluated, all or most were ranked as striding. The information that is being requested is not differentiating companies. Therefore, the scoring thresholds will need to be tightened to identify climate leaders.

### **Newsweek Green Rankings**

<http://www.thedailybeast.com/newsweek/2012/10/22/newsweek-green-rankings-2012-global-500-list.html>

The Newsweek Green Rankings were created by Newsweek in 2009, with the goal of being the most comprehensive environmental rankings of companies. Two environmental research firms (Trucost and Sustainalytics) assess company environmental footprint, management of that footprint, and transparency. The rankings compare the 500 largest publically traded companies in the US and globally across sectors and also evaluate companies within industry sectors. Size is determined by revenue, market capitalization, and number of employees. Companies are ranked by their overall Green score. This score is derived from three component scores: an environmental impact score, an environmental management score, and an environmental disclosure score, weighted at 45 percent, 45 percent, and 10 percent, respectively. All scores are out of a possible 100.

The environmental impact score considers greenhouse gas emissions, water use, solid-waste disposal, and emissions that contribute to acid rain and smog. The environmental management score assesses how a company manages its environmental performance through policies, programs, targets, certifications, etc. This analysis includes three spheres of influence: company operations, contractors and suppliers, and products and services. The environmental disclosure score evaluates the proportion of environmental impacts a company is disclosing, as determined by the company's engagement with the Global Reporting Initiative and the Carbon Disclosure Project.

**Strengths:** The Newsweek Green Rankings are very visible and are widely reviewed and discussed in the corporate world. The rankings evaluate both disclosure of information and environmental performance.

**Limitations:** Although supply chain impacts are supposed to be considered as part of the environmental impact score, it doesn't appear to impact the ranking. For example, information technology companies that outsource to locations where environmental management is a concern still ranked highly in 2012. The transparency score evaluates involvement with GRI and Carbon Disclosure Project only. Disclosure on toxic chemicals is not included nor is an evaluation of toxic chemical use/reduction.

### **Benefit Corporation**

<http://www.bcorporation.net>

Benefit Corporations (B Corporations), certified to meet standards of environmental and social performance, accountability, and transparency, are of great interest to the socially responsible investment community. Founded and administered by the non-profit organization B Lab, there

are now more than 600 B corporations in 15 countries and 60 industries. To become a B Corporation, a company must conduct a self-assessment of its positive impacts, programs and policies and must score 80 out of 200 points to be certified. 10 % of B Corps are randomly selected for review as a means of validation. Also, companies must amend governing documents and obtain board and shareholder approval and meet legal requirements for their state of incorporation and corporate structure. Finally, companies must sign the "B Corp Declaration of Interdependence" and pay an annual fee based on annual sales. The self-assessment includes sections on governance, workers, community, environment, disclosure, and environmentally and socially focused business models. In 2013, the assessment will be amended to include questions that ask companies whether they track chemicals in their supply chain, have a program in place to identify and eliminate chemicals of concern and identify and phase in safer alternatives, and whether they publically disclose ingredients.

**Strengths:** The B Corporation is a new model for sustainable business practice that is attracting considerable interest from the socially responsible investment community. The assessment will soon include elements related to chemical use and disclosure.

**Limitations:** This is a new program that is not well known. The questions about chemical use and reduction are only one element of much larger assessment, so a company could be certified without making progress on chemicals management. The process requires self-certification rather than certification by a third party.

#### **SIN Producers List**

<http://www.chemsec.org/what-we-do/investor-dialogue/tools-for-investment-analysis/the-sin-producers-list>

The SIN Producers List is a listing of chemical companies that produce chemicals on the SIN List. Developed by ChemSec, a non-profit organization founded in 2002 by four environmental organizations in Europe, the SIN list chemicals include substances that have been identified as fulfilling the criteria for Substances of Very High Concern in the REACH legislation. The SIN Producers List includes 389 European chemical manufacturers that produce or import these chemicals in volumes of 10 tons or more per year. The data were gathered from the European Commission's publically available database ESIS, the European Chemical Substances Information System. As the database has not been updated since 2008, ChemSec is pushing for more current information to be made publically available to update this list.

**Strengths:** The Sin Producers List provides valuable information for downstream users of chemicals and financial investors seeking to avoid high-risk investments in hazardous chemicals. It is also useful for NGO campaigns.

**Limitations:** The database that the SIN Producers List is drawn from is not up to date.

## SIGN-ON PROGRAMS

### Compact for Safe Cosmetics

<http://safecosmetics.org/section.php?id=51>

From 2004 to 2011, the Campaign for Safe Cosmetics coordinated the Compact for Safe Cosmetics, a voluntary pledge of safety and transparency. The Compact was created to reward cosmetic companies that fully disclose their ingredients and do not use chemicals that are banned by health agencies in other countries. More than 1,500 companies signed the Compact. To be considered as meeting the Compact goals, companies were required to: comply with the European Union's Cosmetics Directive; disclose all ingredients, including ingredients in fragrance; publish and regularly update product information in EWG's Skin Deep cosmetics database; comply with any additional ingredient prohibitions and restrictions under the Compact, substitute ingredients of concern with safer alternatives and participate in the Campaign for Safe Cosmetics. 321 cosmetics companies met the goals of the Compact. An additional 111 companies made significant progress toward those goals.

**Strengths:** The sign-on program was a highly visible commitment to safe cosmetics. Companies that signed on to the Compact for Safe Cosmetics were allowed to provide ingredient information to the Skin Deep database prior to putting a new formulation on the market. The scoring results provided feedback to the company about potential health hazards and gave them an opportunity to reformulate. Because the Compact required companies to provide ingredient information to the EWG Skin Deep® database, there was a mechanism to track whether companies were actually implementing its goals.

**Limitations:** Participation was voluntary and it was difficult to measure company progress other than ingredients disclosed on the Skin Deep® database.

### The UN Global Compact

<http://www.unglobalcompact.org>

The United Nations Global Compact is a policy framework for the development, implementation and disclosure of sustainability principles and practices related to four core areas: human rights, labor, the environment and anti-corruption. It is designed to provide a means for business and other organizations to work together to build a sustainable global economy. Organizations that participate in the Global Compact publically commit to the implementation, disclosure, and promotion of its ten universal principles. A participant is expected to make the principles part of daily business strategy and organizational culture, incorporate the principles into decision making, contribute to the Millennium Development Goals, describe how it is implementing the principles in its annual report, and actively advance the goals of the compact through advocacy and outreach. Companies pay a fee based on annual sales revenue to participate. In 2011, 1861 companies joined the Global Compact, a 54 percent increase over the previous year. If a participant does not communicate its progress it is listed as non-communicating and can be expelled if it does not report for 2 years.

**Strengths:** The Global Compact is a highly visible commitment to sustainable development with over 10,000 participants in 145 countries.

**Limitations:** The Global Compact does not have the mandate or resources to monitor performance. Many companies sign on to the Global Compact but may not be active in implementing its goals.

**CERES Principles**

<http://www.ceres.org>

The CERES Principles were created by a small group of investors in 1989 in response to the Exxon Valdez Oil spill in Alaska. The 10 principles provide a code of corporate environmental conduct to be publicly endorsed by companies with a mandate to report on their progress. The Global Reporting Initiative (GRI) was developed by CERES to encourage the use of a standardized sustainability reporting framework. CERES is now less focused on getting companies to sign on to the principles and is more engaged in putting sustainability into practice. It has created a network of over 70 companies representing 20 industry sectors and provides networking and consulting support on a range of sustainability implementation issues.

**Strengths:** Following the Exxon Valdez oil spill, the CERES Principles helped to begin an important dialogue about the need for businesses to be environmentally responsible.

**Limitations:** Companies were reluctant to sign on to the principles, though eventually a number of companies did participate. The Principles did not include a mechanism for standardized reporting. Out of this need, GRI was created.

**UN Caring for Climate/Carbon Disclosure Project**

[http://www.unglobalcompact.org/issues/environment/climate\\_change/index.html](http://www.unglobalcompact.org/issues/environment/climate_change/index.html)

<https://www.cdproject.net/en-US/Pages/HomePage.aspx>

Caring for Climate is the UN Global Compact and UN Environment Programme's initiative to advance the role of business in addressing climate change. CEOs who sign on to Caring for Climate are expected to set goals, develop and implement strategies and practices, and publicly disclose emissions as part of their commitment within the UN Global Compact framework. Signatories are encouraged to use the framework developed by the **Carbon Disclosure Project (CDP)** as it is considered to be a strong tool for reporting GHG emissions and climate change strategies on an annual basis. CDP holds the largest collection of publically reported data on climate change initiatives. CDP works with both institutional investors and companies. On behalf of investors CDP requests information from companies on greenhouse gas emissions, energy use, and risks and opportunities as a result of climate change.

**Strengths:** Caring for Climate is a highly visible initiative that has been endorsed by almost 400 companies from 65 countries.

**Limitations:** Companies may sign on to Caring for Climate without actively implementing climate change strategies. Although signatories are encouraged to use the CDP framework for reporting on their activities, there is no forcing or tracking mechanism.

**Green Chemistry Commitment**

<http://www.beyondbenign.org>

The Green Chemistry Commitment is a new program that aims to change the education of chemists in higher education. Colleges and universities that sign on to the Green Chemistry Commitment agree to change curriculum, laboratory exercises, course materials, methods and research practices. Beyond Benign, a nonprofit organization dedicated to education in green chemistry, worked with over 60 chemistry department members from colleges and universities in New England and throughout the United States, to craft the Commitment. The Commitment is designed to be flexible so that an institution can adopt the objectives as appropriate. Institutions

will be asked to prepare an annual report that describes progress in meeting the elements of the Commitment. The draft Commitment is being finalized and the first signers will formally sign it in June 2013 at the annual Green Chemistry and Engineering Conference in Washington, D.C.

**Strengths:** When finalized, the Green Chemistry Commitment will be a visible show of support for changing chemistry education in colleges and universities.

**Limitations:** Institutions are asked to report on progress, but this is a self-assessment with no outside monitoring or evaluation planned to date.

### **BizNGO Principles and Guide for Safer Chemicals**

<http://www.bizngo.org>

BizNGO, established in 2006 as a project of Clean Production Action, brings together representatives from business, environmental organizations, government and academia to promote safer chemicals and sustainable materials. One of BizNGO's first projects was to develop Four Principles for Safer Chemicals, as follows: 1. Know and disclose product chemistry; 2. Assess and avoid hazards; 3. Commit to continuous improvement; 4. Support public policies and industry standards that advance the implementation of the above three principles. The Principles have been endorsed by 29 businesses, six health care organizations, 12 investors and 21 NGOs.

BizNGO recently released the Guide to Safer Chemicals as a means of implementing the BizNGO Principles for Safer chemicals. The Guide is designed to assist downstream users of chemicals such as product manufacturers, designers, architects, retailers, and health care organizations to design and implement a process for improving chemicals management, reducing the use of toxic chemicals, and identifying and using safer alternatives. The Guide uses four benchmarks—trailhead, base camp, high camp, and summit—to indicate the journey involved in implementing the principles. For each principle, actions are identified along with examples of companies that have achieved that step. All of the activities go beyond simple compliance with laws and regulations.

**Strengths:** The Guide, designed for self-assessment and implementation, will help companies to move from signing on to the Principles to planning and implementing change in their organizations.

**Limitations:** The Guide currently has no rating system to determine progress in achieving the benchmarks.

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**Exploring the Concept of a  
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**Sally Edwards, ScD**

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