



DEFINING GREEN PRODUCTS

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GREEN PRODUCTS: WHAT ARE THEY REALLY?

As with most marketing and advertising jargon, the term “green” can be defined in many ways—its definition tweaked to support a particular message or point of view. In recent years, “green” has even made its way into the scientific lexicon (e.g., “green chemistry”). Yet, while the general consensus is that “green” refers, in some way, to environmentally-preferable attributes of a product, service, and/or technology, there is no single, universal definition of the term.

This white paper examines what constitutes a green product, how the term “green” has been used and misused, and how green products can affect indoor environmental quality (IEQ) and human health. Additionally, this paper will explore federal and state government “green chemistry” initiatives, regulations, guidelines and how they are advancing product technology.

GREEN PRODUCTS, IEQ, AND HUMAN HEALTH: SOME PERSPECTIVE

Prior to 1980, very few products in the U.S. were marketed with an environmentally friendly message. The sole exception was organic, natural products in the food industry, which flourished.

By the late 1980s and 1990s, the notion of “green” products became somewhat trendier, and the practice of marketing products as such became more commonplace in niche markets. But it wasn’t until the start of the 21st century—when concerns over global warming and natural resource depletion began gaining momentum—that “green” went mainstream and began influencing the practices of product manufacturers.

Around the same time, researchers focusing on building-related illnesses began to understand the health benefits of good IEQ. Subsequently, building rating systems, certification programs, and certain eco-labels started to make IEQ a priority. Third-party product certification programs focusing specifically on “green” products also began surfacing in the marketplace, largely in response to concerns about product toxicity and children’s health.

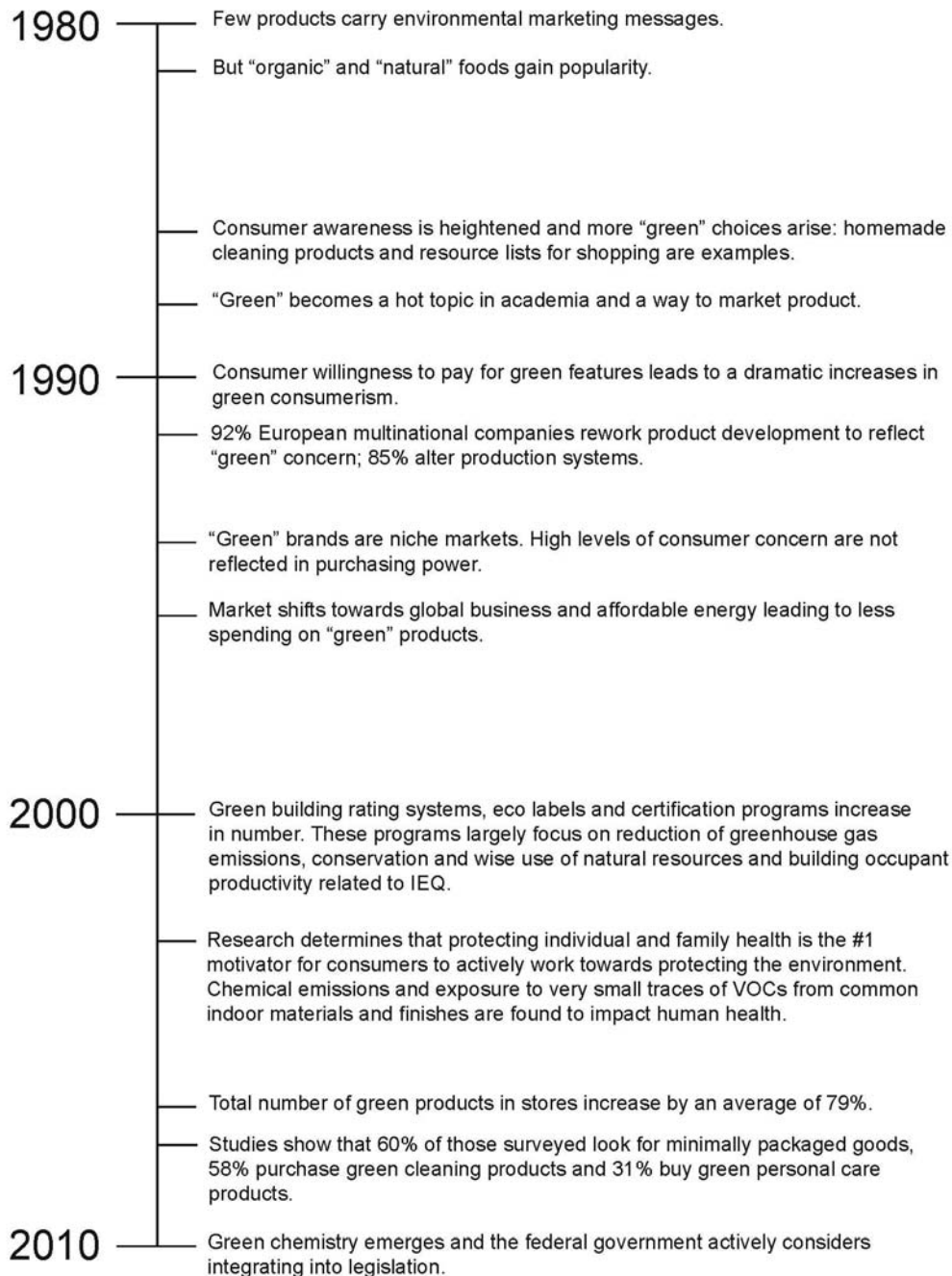
A growing body of research suggests that exposure to chemical emissions—in particular, volatile organic compounds (VOCs) from common indoor materials and finishes—can have numerous adverse health effects, including an increased risk of asthma, pulmonary infections, and allergies. One of the most striking findings of this research is that such health complications can occur as a result of exposure to VOCs at extremely low levels. Disruption of the endocrine system (hormones), gene activation, and brain development have also been linked to chemical exposure in homes and schools.

It is critical to note the distinction between chemical emissions from products (which are a major source of indoor air pollution) and chemical content of products. Many products claim to be ‘low-VOC’ or ‘no-VOC’ because they comply with various state and federal VOC content regulations. (For example, the U.S. Environmental Protection Agency’s (EPA) VOC content limit is 250 g/L for flat interior paints and 380 g/L for non-flat interior paints. In California, the South Coast Air Quality Management District (SCAQMD) content limit is 50 g/L for all paints.) Other products may make similar claims even if they lack data to corroborate them. The problem is that these content-based VOC regulations were developed to help reduce outdoor VOC emissions that contribute to the formation of ground ozone and smog—not to reduce indoor VOC emissions and chemical exposure to building occupants. Since not all VOCs contribute to ozone and smog formation, ‘low-VOC’ or ‘no-VOC’ products can still off-gas potentially toxic chemicals into the indoor environment. The only way

to be sure that a product does not emit high levels of VOCs is to measure its VOC emissions (usually in micrograms per square meter per hour) through emissions test methods.

Figure 1 highlights key events in the growth of the green products market. For more information about green products, IEQ and human health, please see [Addendum 1](#).

Figure 1. Timeline of key events in green product consumerism from 1980 to 2010



GREEN PRODUCTS: KEY ATTRIBUTES

Beyond the assumption that the term “green” indicates environmentally preferable attributes, the term is quite vague and subject to multiple interpretations depending on any number of factors, including local, national, and international business practices; market structures; societal norms; politics; and government regulations. In fact, due to the ambiguity surrounding the term, some government guidelines even discourage use of it altogether. Please see Baumann et al 2002 and Reinhardt 1998 for an excellent review of the engineering, policy, and business perspectives of green product development and differentiation.

In a 2010 report on environmental claims made in the North American market, researchers concluded that “green” is “a difficult word. It’s evocative and powerful. Consumers and companies alike are attracted to it. But it’s vague, and can mean something different to everyone that uses or hears it... We mean simply products that claim to offer an environmental benefit.” (TerraChoice 2010).

Another interpretation of the term comes from the National Institute of Building Sciences Whole Building Design Guide, which states that the majority of green products on the market today must:

- Promote good IEQ, typically through reduced or eliminated VOC emissions
- Not contain highly toxic compounds and not contribute to highly toxic by-products during the manufacturing process
- Be durable and have low maintenance requirements
- Incorporate recycled content (post-consumer and/or post-industrial)
- Have been salvaged from existing or demolished buildings for reuse
- Be made using natural and/or renewable resources
- Have low embodied energy (the total energy required to produce a finished product, including the energy used to grow, extract, manufacture, and transport to the point of use)
- Not contain chlorofluorocarbons (CFCs), halogenated chlorofluorocarbons (HCFCs), or other ozone depleting substances
- Be obtained from local resources and manufacturers
- Employ “sustainable harvesting” practices if wood or bio-based
- Be easily reused, either whole or through disassembly
- Be able to be readily recycled, preferably in a closed-loop recycling system, which allows a manufactured product to be recycled into the same (or similar) product without significant deterioration of quality
- Be biodegradable (Amatruda 2010).

Of course, genuine third-party eco-labels and green product certification programs can also be very helpful in evaluating the attributes of green products because they validate that the product meets certain industry-independent standards. They can also offer greater assurance to consumers, specifiers, and other purchasers that a product’s marketing claims truly reflect its green attributes. In fact, the results of a 2008 survey by McGraw-Hill Construction showed that more than one-half of the architects, engineers, building owners, and contractors surveyed consider green product certifications and eco-labels very valuable when selecting green products. Eighty-five percent of respondents said energy efficiency is a principal factor in deciding if a product is green; 72 percent favored health and

well-being; 71 percent evaluated a product’s “greenness” based on water efficiency; and 70 percent preferred recycled content or recyclability (MHC 2008a).

Legitimate third-party certifying bodies conduct data reviews, auditing, and/or laboratory testing of products in accordance with industry-independent standards or criteria, which may or may not be consensus-based. Such standards or criteria meet government regulations and may be recognized as nationally or internationally accredited test standards, such as those governed by ASTM International, the American National Standards Institute (ANSI), American Association for Laboratory Accreditation (A2LA) or the International Standards Organization (ISO). To ensure impartiality, neither the certifier nor the testing laboratory can be affiliated with the company requesting the certification. For more information, see the AQS white paper, *Primary Green Product Standards and Certification Programs: A Comparison*.

Many eco-labels and certification programs certify products based on life-cycle parameters, such as energy use, recycled content, and air and water emissions from manufacturing, disposal, and use. Others focus on a single attribute, such as chemical emissions from products that directly impact IEQ.

Table 1 categorizes 20 eco-labels and product certification programs from around the world according to their various “green” IEQ criteria.

Table 1. Criteria of 20 International Eco-labels Based Only on VOC, Formaldehyde Emissions / Content or With Other Life Cycle Parameters

Emissions / Content Only	With Other LC Parameters	Emissions / Content Only	With Other LC Parameters
EcoMark (Japan)	Green Label Scheme (Singapore)	M1 Emission Classification of Building Materials (Finland)	Good Environmental Choice (Australia)
AFSETT (France)	Hong Kong Green Label	NF Environnement (France)	Nordic Ecolabel (Denmark, Finland, Iceland, Sweden, Norway)
AgBB (Germany)	Korea Ecolabelling Program	California 01350 Specification (USA)	EcoLogo (Canada)
CE Marking (European Union)	Thai Green Label	GREENGUARD Certification Program (USA)	Blue Angel (Germany)
Indoor Climate Label (Denmark)	Environmental Choice (New Zealand)	Green Label Plus (USA)	Green Seal (USA)

While credible eco-labels and product certifications certainly help prevent the use of misleading environmental claims (known as greenwashing), they do not eliminate it. In fact, according to the 2010 TerraChoice report, more than 32 percent of green products carry a fake green label—up from 26.8 percent in 2009. Product manufacturers and consumers therefore still need to be cautious and vigilant (TerraChoice 2010).

USE / MISUSE: SUSTAINABLE, ENVIRONMENTALLY FRIENDLY, GREEN

Today, terms like “green” and “greener” have become buzzwords of choice to describe all things sustainable and environmentally friendly. While they are often used interchangeably, each term actually means something different.

In their critical essay, *Green Versus Sustainability: From Semantics to Enlightenment*, Yanarella, Levine and Lancaster explain that “green” refers to individual products and processes, whereas “sustainable” relates to whole systems of which individual consumer products and other commercial materials are a part. “Green” also tends to focus on a single attribute of a product, rather than addressing the overall system in which a product is designed, constructed, purchased, used, or discarded.

“Sustainable” encompasses the entire system from design through disposal. According to the authors, “Green evokes small incremental improvements in social practices, modern technology, and human habitats, while sustainability implies a revolution in organizing our personal and collective lives and inhabiting the planet” (Yaranella et al 2009).

One of the earliest and most comprehensive definitions of “sustainable” comes from the 1994 Oslo Roundtable on Sustainable Production. Sustainable consumption was defined as “an umbrella term that brings together a number of key issues, such as meeting needs, enhancing quality of life, improving resource efficiency, minimizing waste, taking a life-cycle perspective, and taking into account the equity dimension” and providing “the same or better services to meet the basic requirements of life and the aspiration for improvement, for both current and future generations, while continually reducing environmental damage and risks to human health” (Hepting 2007).

Finally, “environmentally friendly” refers to products or services that are not harmful to the outdoor environment or its inhabitants. However, for more than a decade, the U.S. Federal Trade Commission (FTC) has issued warnings about products or services marketed as environmentally friendly, environmentally safe, environmentally preferable or eco-safe, noting that products, packaging, and services have some environmental impact and that such marketing terms do not help consumers make informed choices (FTC 1999). A general lack of education about environmental issues and the media’s indiscriminate use of the terms have contributed to the confusion surrounding their definitions. The 2004 findings of research on environmental literacy in America concluded the following:

- Only 32 percent of Americans have basic awareness of environmental topics
- All but 20 percent are heavily influenced by incorrect or outdated environmental myths
- There is little difference in environmental knowledge levels between the average American and those who sit on governing bodies, town councils and in corporate boardrooms
- Children (83 percent) get environmental information from the media than from any other source
- For most adults, the media is their only source of environmental information (Coyle 2004)

Coyle also noted: “The popular news and entertainment media are particularly well-suited to provide impressive, but largely superficial, information on environmental subjects. In current practice, the media is poorly positioned to provide in-depth education. This means they provide a steady flow of awareness-building information that sometimes confuses the public and seldom ever truly educates. Sometimes the misapprehensions it fosters can grow into persistent and incorrect myths” (Coyle 2004).

The results of a recent survey of consumer attitudes and actions underscore this observation. About one in three respondents said they do not know how to tell if green product claims are true, with one in 10 blindly trusting green product claims. One-quarter of those surveyed verify green claims by reading the package labeling (24 percent), and nearly one-fifth research green product claims online by reading articles and studies (17 percent) (Weismann et al 2009).

Poorly conceived approaches to marketing are another reason why terms like “green,” “sustainable,” and “environmentally friendly” are misused, leading to greenwashing and confused, skeptical consumers. Peattie and Crane describe four critical issues that have “dogged the development of green marketing”:

- Green marketing firms have “frequently only used the environment as an additional promotional dimension without any attempt to analyze or modify the underlying product itself and its environmental impacts.”
- “Many firms have sought to address consumers’ needs, but their interest in the environment has been limited to the marketing department, or the production department, or some other individual function. This has prevented firms from developing a broad, holistic approach to green marketing.”
- “Many companies have been enthusiastic about green marketing when it has involved short-term cost savings... but lukewarm when it has come to investing money in order to develop more sustainable products and processes.”
- “Much green marketing activity also has focused on avoiding any significant change, and focusing instead on marginal, incremental improvements to existing products and processes” (Peattie and Crane 2005).

Complicating matters is the widespread use of terms like “natural,” “organic,” “planet-friendly,” “earth-friendly,” “ecological,” “non-toxic,” “biodegradable,” “plant-based,” “chlorine-free,” and “100 percent compostable,” which consumers erroneously assume are synonymous with “green” (TerraChoice 2009).

Table 2 provides noteworthy examples of the ways product manufacturers in four product categories have engaged the green market between 2009 and 2010.

To raise awareness and to educate consumers about the misuse of these terms in green product marketing and to encourage “truth in advertising and labeling,” TerraChoice published *The Six Sins of Greenwashing* in 2007. In a follow-up to this study, TerraChoice visited big box retailers in the U.S., Canada, Australia, and the U.K. in 2008 and 2009. In the U.S. and Canada, a total of 2,219 products that made 4,996 green claims were recorded. These claims were tested against best practices, notably against guidelines provided by the FTC, Competition Bureau of Canada, Australian Competition & Consumer Commission, and the ISO 14021 standard for environmental labeling (TerraChoice 2009).

The Sins of Greenwashing: Home and Family Edition, the third TerraChoice study since 2007, surveyed 5,296 products in the U.S. and Canada that made an environmental claim. The survey took place between March and May 2010, when TerraChoice researchers visited 19 retail stores in Canada and 15 in the U.S. Among the product categories that were studied were baby care products, toys, office products, building and construction products, cleaning products, housewares, health and beauty products, and consumer electronics (Terra Choice 2010).

The following are some of the key findings, which demonstrate the prolific misuse of these terms in the marketplace:

- Ninety-five (95) percent of consumer products that claim to be green have committed at least one “sin” of greenwashing. Of particular concern is that 100 percent of toys and 99.2 percent of baby products surveyed also committed some form of greenwashing.

- Green claims and incidences of greenwashing were found most frequently on the packages of children's toys, baby products, cosmetics, and cleaning products, such as diapers, toothpaste, and window cleaners.
 - Claims that products are free of bisphenol A (BPA) increased nearly 600 percent (577 percent) since the 2009 study, appearing more frequently among toys and baby products than any other category studied.
 - Phthalate-free claims rose 2,550 percent since 2009.
 - Even though greenwashing continues to be rampant, it has declined slightly since 2009, with 4.5 percent of products now sin-free, compared with only two percent in 2009 and one percent in 2007.
 - Marketers and product manufacturers, especially those who have more experience with green product marketing, are engaging in less greenwashing. The number of "sin-free" products in mature product categories, such as building, construction and office products, is five times greater than in immature categories, such as toys and baby products.
 - Big box stores offer a much higher percentage (22.8 percent) of home and family products with legitimate green product certifications than specialty retailers (11.5 percent) or green boutiques (12.8 percent). Big box stores also have more products that are free of greenwashing (5.6 percent) than specialty retailers (1.7 percent) or green boutiques (0.5 percent). Furthermore, big box stores offer a broader selection of green products (293 per store) than green boutiques (109) or specialty retailers (85).
 - Good eco-labeling helps prevent, but does not eliminate, greenwashing of products certified by a third-party certification program. More than 30 percent of these products are "sin-free."
 - Products bearing legitimate eco-labels or product certifications almost doubled in number, comprising 23 percent of products instead of 14 percent in 2009.
 - Greenwashing is an international challenge, with very similar patterns in the U.S., Canada, the U.K., and Australia (TerraChoice 2009, 2010).
- See *Green Products: Key Attributes* above for more information on eco labels and product certifications programs, as well as the important role they play in creating consumer confidence in green, sustainable products.

Seven Sins of Greenwashing*

1. **Sin of the Hidden Trade-off** – Committed by suggesting a product is "green" based on an unreasonably narrow set of attributes without attention to other important environmental issues.
2. **Sin of No Proof** – Committed by an environmental claim that cannot be substantiated by easily accessible supporting information or by a reliable third-party certification.
3. **Sin of Vagueness** – Committed by every claim that is so poorly defined or broad that its real meaning is likely to be misunderstood.
4. **Sin of Irrelevance** – Committed by making an environmental claim that may be truthful but is unimportant or unhelpful for consumers seeking environmentally preferable products.
5. **Sin of Lesser of Two Evils** – Committed by claims that may be true within the product category, but that risk distracts consumers from focusing on the greater environmental impacts of the category as a whole.
6. **Sin of Fibbing**, the least frequent sin – Committed by making false environmental claims.
7. **Sin of Worshiping False Labels** – Committed by a product that, through either words or images, gives the impression of third-party endorsement where no such endorsement actually exists; fake labels in other words.

* Adapted from TerraChoice 2009.

BENEFITS OF USING THE TERMS CORRECTLY

Research has shown that when marketing terms are used correctly and responsibly, product manufacturers can realize significant benefits.

The results of a study that explored the effects of green branding on consumer attitudes suggest that a well-implemented green positioning strategy can lead to a more favorable perception of the brand. The study found that, since consumers use both cognitive and emotional processes to select brands, it is best to give detailed information about a product's green or sustainable attributes while simultaneously appealing to the emotional benefits of purchasing and using the product. The authors also emphasized the following: "There should be no doubt that a green brand positioning strategy not supported by relevant environmentally sound product attributes will fall short of success" (Hartmann et al 2005).

Table 2. Comparison of Changes in Product Manufacturers Engagement of Green Market in Four Product Categories*

Product Category	Increased in Number of Green Products Offered	Free of Greenwashing	Primary Sin of Greenwashing	Products Displaying Legitimate Product Certification (Eco labels)
Toys and Baby Products	General Stores: 150% for toys; 194% for baby products Specialty Stores: Average 289%	Toys: None Baby products: 0.8%	Sin of No Proof – Lack of Evidence: 89% of toys and baby products as compared with 64% for other product categories	No information
Household and cleaning products	Overall: 101% Green cleaning chemicals: 105% Tissue products: 77%	Overall: 3.73% Green cleaning chemicals: 4.3% Tissue products: 0.8%	Sin of Vagueness: 77.4% as compared with 67.3% for other product categories	32% as compared with 19.8% for other product categories
Building and Construction Products	Overall: 108% Specialty Stores: 138% Three stores followed for 3 years: 400%	Overall: 6%	Sin of Hidden Trade-offs: 40% as compared with 27.4% for other product categories	31.7% as compared with a decline to 19.8% in 2010 from 23.4% in 2009 for other product categories Only category to show an increase in the use of product certification labels Most credible labels found: Energy Star, GREENGUARD , UL Environment and EcoLogo
Consumer Electronics	Overall: 13%	Overall: None	Sin of Worshipping False Labels: 51.8% as compared with 31% for other product categories	

* Adapted from TerraChoice 2010.

Peattie and Crane also caution green marketers: "The marketing philosophy and process is built around the customer and the relationship between the company and the customer. If this is characterised [sic] by cynicism and distrust, then companies are unlikely to be able to bring customers along with them through the changes needed to move towards sustainability. Green marketing will not work in the face of consumer distrust, but then that distrust may be partly a product of the types of 'green marketings' that companies have relied upon so far" (Peattie and Crane 2005).

TerraChoice advises green marketing professionals to develop long-lasting customer relationships by being honest about all of the environmental impacts of their products and addressing each impact one at a time. Since there is no such thing as a 100 percent “green” product, the term “greener” is a better alternative (TerraChoice 2010).

Despite the findings (see the discussion on *Use / Misuse: Sustainable, Environmentally Friendly, Green* above) of Coyle (2004) and Weismann et al. (2009), consumer scrutiny helps reduce greenwashing by motivating manufacturers to be more honest about their products’ environmental attributes—especially among more mature product categories, such as building materials. According to the 2010 TerraChoice report, green product offerings in these categories increased by an average of more than 104 percent over 12 consecutive months. Study-wide, the green product offerings grew 73 percent.

Manufacturers of products in more mature categories are also more likely to have their products third-party certified than manufacturers of products in immature categories (TerraChoice 2010). For more about eco labels and green product certification programs, please see the discussion on *Green Products: Key Attributes* below.

REIGNING IN MISLEADING GREEN MARKETING CLAIMS

To protect consumers from false green product claims and assist companies with establishing consistent and uniform ways to promote their products’ green attributes, a number of countries have enacted federal laws and guidelines aimed at regulating the use of green marketing terms. The following policies and regulations from the federal governments of the U.S., Canada, and Australia serve as good examples:

Australia

The Green Marketing and Trade Practices Act of 1974 states that businesses must not mislead or deceive consumers in any way and carries serious penalties for companies that fail to meet these requirements. The two main provisions of the law include the prohibition of 1) misleading and deceptive conduct and 2) making false or misleading representations about specific aspects of goods and services. False representations are more serious than general misleading or deceptive conduct and can carry serious penalties, including fines of up to \$1.1 million (Aus).

The Australian Competition & Consumer Commission (ACCC) advises companies that wish to make environmental claims about their products and services to adhere to the following guidance:

- Be honest and truthful
- Detail the specific part of the product or process to which the claim(s) refers
- Use language that an average person can understand
- Explain the significance of the benefit(s) of the claim(s)
- Be able to substantiate the claim(s) (ACCC 2008)

The ACCC also cautions companies and advertisers not to use the terms “green,” “environmentally friendly,” or “environmentally safe,” as they are too vague and invite consumers to assign a wide range of meanings that may or may not be true (ACCC 2008).

Canada

To help harmonize how environmental labels and claims are used in Canada, the Canadian Standards Association (CSA) in 2008 adopted CAN/CSA-ISO 14021-00, *Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling)*. At the same time, it also developed a companion guidance document entitled CAN/CSA-ISO 14021 *Essentials*, which incorporates the most current, internationally accepted information and best practices on the use of environmental claims (CSA 2008). *Essentials* also explains relevant provisions in three Canadian federal laws that apply to products and companies making environmental claims:

- **Competition Act:** “A federal law governing most business conduct in Canada. It contains both criminal and civil provisions aimed at preventing anti-competitive practices in the marketplace. The act contains provisions addressing false or misleading representations and deceptive marketing practices in promoting the supply or use of a product (or service) or any business interest.”
- **Consumer Packaging and Labelling Act:** “Requires that prepackaged consumer products bear accurate and meaningful labelling information to help consumers make informed purchasing decisions. The act prohibits the making of false or misleading representations and sets out specifications for mandatory label information such as the product’s name, net quantity, and dealer identity.”
- **Textile Labelling Act:** “Requires that consumer textile articles bear accurate and meaningful labelling information to help consumers make informed purchasing decisions. The act prohibits the making of false or misleading representations and sets out specifications for mandatory label information such as the generic name of each fibre present and the dealer’s full name and postal address or a CA identification number” (CSA 2008).

CAN/CSA-ISO 14021 itself sets out 18 requirements for self-declared environmental claims and offers guidance and verification methodologies to ensure that claims adhere to these requirements. The requirements specify that claims shall be:

- Accurate and not misleading
- Substantiated and verified
- Relevant to that particular product and used only in an appropriate context or setting
- Presented in a manner that clearly indicates whether the claim applies to the complete product, a product component or packaging, or an element of a service
- Specific as to the environmental aspect or environmental improvement which is claimed
- Not restated using different terminology to imply multiple benefits for a single environmental change
- Clear and comprehensible to avoid misinterpretation;
- True to the final product and its relationship to any and all environmental trade-offs
- Presented in a manner that does not imply that the product is endorsed or certified by an independent third-party organization when it is not
- Not, either directly or by implication, suggest an environmental improvement that does not exist or exaggerate the environmental aspect of the product to which the claim relates
- Not be made if, despite the claims being literally true, they are likely to be misinterpreted by purchasers or are misleading through the omission of relevant facts;

- Relate only to an environmental aspect that either exists or is likely to be realized during the life of the product
- Presented in a manner that clearly indicates that the environmental claim and explanatory statement should be read together
- Specific and, if a comparative assertion of environmental superiority or improvement is made, make clear the basis for the comparison
- Presented in a manner that does not lead purchasers, potential purchasers, and/or users of the product to believe that the claims are based on a recent product or process modifications when, in fact, the claims are based on a pre-existing but previously undisclosed characteristic
- Not be made where they are based on the absence of ingredients or features which have never been associated with the product category
- Reassessed and updated as necessary to reflect changes in technology, competitive products, or other circumstances that could alter the accuracy of the claims
- Relevant to the area where the corresponding environmental impact occurs (CSA 2008)

CAN/CSA-ISO 14021 considers the terms “green,” “environmentally friendly,” and “ecological” or “eco” to be “examples of vague claims (that) should be reserved for products/services whose life cycles have been thoroughly examined and verified,” noting that “such far-reaching claims could be misleading or deceptive, as every product made is consumable and has an impact on the environment.” The policy also admonishes manufacturers to avoid making environmental claims that are vague, non-specific, incomplete, irrelevant, and/or cannot be supported through verifiable test methods (CSA 2008).

United States of America

In 1992, the U.S. Federal Trade Commission (FTC) issued the *Guides for the Use of Environmental Marketing Claims*, also referred to as the “Green Guides” or “Guides,” to help marketers ensure that the claims they make are true and substantiated. The Green Guides were revised in 1996 and again in 1998 and included the following:

- General principles that apply to all environmental marketing claims;
- Guidance on how consumers are likely to interpret particular claims and how marketers can substantiate those claims;
- Tips on how marketers can qualify their claims to avoid deceiving consumers.

On October 6, 2010, the FTC released a revised version of the Green Guides for a 45-day public comment period ending December 10, 2010. The proposed changes to the Guides are designed to strengthen them and make them easier to use and understand. They provide guidance on the following:

- **Qualifications and disclosures:** To prevent deceptive claims, qualifications and disclosures should be clear, prominent, and understandable.
- **Distinction between benefits of product, package, and service:** Unless it is clear from the context, an environmental marketing claim should specify whether it refers to the product, the product’s packaging, a service, or to only a portion of the product, package, or service.

- **Overstatement of environmental attribute:** An environmental marketing claim should not overstate, directly or by implication, an environmental attribute or benefit. Marketers should not state or imply environmental benefits if the benefits are negligible.
- **Comparative claims:** Comparative environmental marketing claims should be clear to avoid consumer confusion about the comparison. Marketers should have substantiation for the comparison (FTC 2010b).

The Green Guides also caution companies against making blanket, general claims that their products are “environmentally friendly” or “eco-friendly.” The FTC argues that few products, if any, have all of the attributes that consumers believe them to have, which makes it nearly impossible to substantiate the claims (FTC 2010b). However, “marketers can qualify general environmental benefit claims to prevent deception about the nature of the environmental benefit being asserted. To avoid deception, marketers should use clear and prominent qualifying language that limits the claim to a specific benefit.”

The proposed revisions to the Guides include guidance on claims emphasizing “renewable energy” and “renewable materials,” as well as buzzwords like “carbon offset,” “compostable,” “degradable,” and “free of” a particular substance (FTC 1999, 2010a,b).

With respect to eco-labels and product certification programs, the Green Guides state the following:

- A. “It is deceptive to misrepresent, directly or by implication, that a product, package, or service has been endorsed or certified by an independent third-party” when, in fact, it has not.
- B. “A marketer’s use of the name, logo, or seal of approval of a third-party certifier is an endorsement, which should meet the criteria for endorsements provided in the FTC’s Endorsement Guides “Third-party certification does not eliminate a marketer’s obligation to ensure that it has substantiation for all claims reasonably communicated by the certification.”
- C. “To avoid deception, language qualifying a certification or seal of approval should be clear and prominent and should clearly convey that the certification or seal of approval refers only to specific and limited benefits. This qualifying language may be part of the certification or seal itself” (FTC 2010b).

The Green Guides also discourage companies and marketers from using unqualified certifications or seals of approval that do not specify the basis of the certification. Thus, any qualifications that apply to certifications or seals should be clear, prominent, and specific (FTC 2010a).

It is important to note, however, that the FTC qualifies the Guides as “administrative interpretation of the law,” adding that “they do not have the force and effect of law and they are not independently enforceable. However, if a marketer makes claims that are inconsistent with the Guides, the FTC can take action under Section 5 of the FTC Act, which prohibits unfair or deceptive practices” (FTC 2010a). Moreover, the proposed revisions to the Guides do not address use of the terms “sustainable,” “natural,” and “organic,” because either the FTC lacks a sufficient basis to provide meaningful guidance or the agency wants to avoid proposing guidance that duplicates rules or guidance of other agencies (FTC 2010a,b).

The following are some helpful links for additional information:

- For a summary of the proposed revisions to the Green Guides, visit <http://www.ftc.gov/os/2010/101006/greenguidesproposal.pdf>.

- To download a copy of the proposed revisions to the Green Guides, visit <http://www.ftc.gov/os/fedreg/2010/october/101006greenguidesfrn.pdf>.
- For reporter resources on the FTC's Green Guides, visit www.ftc.gov/opa/reporter/greengds.shtm.

GREEN CHEMISTRY: THE FUTURE OF GREEN PRODUCTS

Because of the health risks associated with exposure to chemicals in everyday products, as well as the adverse impacts of these chemicals on ecosystems, a growing number of chemists have begun creating chemicals and chemical processes that have minimal environmental impact. Dubbed “green chemistry,” this relatively new branch of science demonstrates how fundamental scientific methodologies can protect human health and the environment in an economically beneficial manner. Presently, green chemistry research focuses on polymers, solvents, catalysis, biobased products, renewable products, analytical method development, synthetic methodology development, and the design of safer chemicals (Anastas and Kirchhoff 2002).

Green chemistry represents a major paradigm shift in product manufacturing, as it centers on environmental protection at the product design stage. The goal is to make chemicals and products “benign by design,” a term coined by the California Environmental Protection Agency (Cal/EPA), rather than merely managing products’ toxic waste after use and disposal (Cal/EPA 2008). According to Mark Rossi, research director of the NGO Clean Production Action (CPA), “the building and construction, cleaning product, health care, pharmaceutical, electronic, and retail industries have made the most progress (thus far) toward implementing green chemistry, although that success is ‘uneven’” (Betts 2009).

Still, green chemistry is gaining traction. After extensive study, the Cal/EPA in 2008 issued its final Green Chemistry Initiative report, which included six policy recommendations:

1. Expand pollution prevention and product stewardship programs to more business sectors to refocus resources on prevention rather than clean up.
2. Develop green chemistry workforce education and training, research and development, and technology transfer through new and existing educational programs and partnerships.
3. Create an online product ingredient network to disclose chemical ingredients for products sold in California while protecting trade secrets.
4. Create an online toxics clearinghouse, which is an online database of chemicals and their toxicity, to help prioritize chemicals of concern and needs for data.
5. Accelerate the search for safer products by creating a systematic, science-based process to evaluate chemicals of concern and alternatives. This will help ensure product safety and reduce or eliminate the need for one-off chemical bans.
6. Move toward a “cradle-to-cradle” economy and leverage market forces to produce products that are “benign-by-design” by establishing a California Green Products Registry. The Registry will develop green metrics and tools for a range of consumer products and encourage businesses to use them (Cal/EPA 2008).

Since the release of those recommendations in 2008, two have become law:

- California AB 1879 (Chapter 559, Statutes of 2008) requires the California Department of Toxic Substances Control (DTSC) to adopt regulations by January 1, 2011 to identify and prioritize chemicals of concern, evaluate alternatives, and specify regulatory responses where chemicals of concern are found in products.
- California SB 509 (Chapter 560, Statutes of 2008) requires an online, public Toxics Information Clearinghouse to be created that includes science-based information on the toxicity and hazard traits of chemicals used in daily life (Cal/EPA 2008).

On September 10, 2010, California's Department of Toxic Substances Control (DTSC) submitted its Green Chemistry Proposed Regulation for Safer Consumer Products to the state's Office of Administrative Law, triggering a 45-day public comment period and formal rulemaking process. These regulations flesh out a process for identifying and prioritizing chemicals in consumer products that may be subject to additional restrictions. They also provide a roadmap for conducting an alternatives analysis that will help determine permissible uses of those chemicals in products already on the market or in development.

The process consists of three parts: prioritization, alternatives assessments, and regulatory response. For products already on the market, the process will require examining whether safer alternatives exist and potentially reformulating the product or having it banned entirely. For new products, the regulations require manufacturers to look at potential impacts and address them before the product is brought to market (Hsaio et al 2010).

These are significant developments because, in the U.S. alone, there are more than 81,000 chemical compounds registered for use. However, due to a grandfather clause, 62,000 of those chemicals were never required to undergo testing as part of the federal Toxic Substance Control Act (TSCA). Under the TSCA, the U.S. EPA has required testing on fewer than 200 chemicals, and it has banned no more than five chemicals. According to the California Policy Research Center, about 2,000 potentially hazardous chemicals are introduced into commercial use each year. Furthermore, global chemical production is expected to double by 2024 (Wilson et al 2006, Wilson and Schwarzman 2009).

The federal government is currently evaluating the feasibility of the Safer Chemicals Act of 2010 and considering ways to incorporate green chemistry into the TSCA. This would call for green chemistry and engineering during all phases of a chemical's life cycle, from design to manufacture to use to disposal. It would also rely on principles of chemistry, engineering, environmental science, and toxicology to reduce and eliminate adverse health and environmental impacts (Matus et al 2010). For more information about green chemistry and engineering, please see Cal/EPA 2008, Wilson and Schwarzman 2009, Matus et al 2010, Wilson et al 2006.

The U.S. government also relies on the Consumer Product Safety Commission (CPSC), which has jurisdiction over more than 15,000 types of consumer products, to protect consumers from faulty products—particularly those that can injure children. While the mission of the CPSC does not explicitly target green products, it does take very seriously its responsibility to mitigate health threats from industrial chemicals used in children's products. The CPSC assumed extra duties with the passage of the Consumer Product Safety Improvement Act of 2008 (CPSIA). Once fully implemented, this landmark legislation will ensure that children's products will be tested for safety prior to sale and free of known chemical or design hazards.

Title 1 of the CPSIA requires that a children's product manufacturer have its products tested by an accredited third party. It also calls for the CPSC to appoint a Chronic Hazard Advisory Panel to study the health effects of all phthalates and phthalate alternatives used in children's toys and products (Congressional Research Service 2008, Michigan Network for Children's Environmental Health 2009).

Childcare products and toys containing the phthalates Bis-2-diethyl hexyl phthalate, Dibutyl-n-butyl phthalate and Butyl benzene phthalate (DEHP, DBP and BBP) in concentrations higher than 0.1 percent per phthalate were banned. Additional phthalates, Di-isononyl phthalate, Di-n-octyl phthalate, and Di-isodecyl phthalate (DINO, DNOP and DIDP), were banned in any children's product that can be placed in a child's mouth or in any childcare products that contain concentrations higher than 0.1 percent per phthalate (February 2009).

Unfortunately, the CPSIA does not address other chemicals found in children's products, such as bisphenol A, formaldehyde, or VOCs. It also fails to address heavy metals, such as mercury or arsenic.

The good news is that the CPSIA requires the CSPC to establish and maintain a consumer safety database that is publicly available, searchable, and accessible through the CSPC website (Congressional Research Service 2008, Michigan Network for Children's Environmental Health 2009).

For more information on this and other legislation addressing chemicals in children's products, please see the AQS white paper, *Chemicals in COMMON Products: Risky Business for Children's Health*.

PARTNERING FOR GREEN PRODUCTS

Air Quality Sciences, Inc. (AQS) has been at the forefront of assisting manufacturers of building materials, furnishings, consumer products, and electronics in meeting today's requirements for acceptable, non toxic products. With over 20 years of experience in reviewing manufacturing processes, developing product emissions testing protocols, and evaluating a product's impact on human health, AQS provides sound scientific support. With strong relationships with key product certification programs in the U.S. and around the world, AQS stands ready to help manufacturers ensure their products are low-emitting; navigate the complexities of product certification; and evaluate products to make sure marketing claims are verifiable in accordance with federal and state law and regulations.

Visit www.aqs.com to learn more about we can help you, or call us at (770) 933-0638 and ask for Product Evaluations. To learn more about VOCs and other indoor pollutants, and to access the world's most comprehensive database of certified low-emitting products, visit the GREENGUARD Environmental Institute at www.greenguard.org. Additional information about indoor air quality can be found in the AQS Aerias IEQ Resource Center at www.aerias.org.

ADDENDUM 1.

GREEN PRODUCTS, IEQ AND HUMAN HEALTH: A BROADER PERSPECTIVE

Prior to 1980, very few products in the U.S. were marketed with an environmentally friendly message. The sole exception was organic, natural products in the food industry, which flourished.

By the late 1980s and 1990s, the notion of “green” products became somewhat trendier, and the practice of marketing products as such became more commonplace in niche markets. In fact, a number of academic papers written in the late 1980s described what was then a rapid increase in green consumerism. These papers also predicted a dramatic and inevitable shift toward green products (Peattie and Crane 2005). A good example is the 1988 best-selling book, *The Green Consumer Guide*, by John Elkington and Julia Hailes, which emphasized making greener product and lifestyle choices, such as choosing greener food, cleaning and gardening products, and homemade green cleaning products (Meyer 2010).

Between 1989 and 1990, green product introductions in the U.S. more than doubled to 11.4 percent of all new household products and continued to grow to 13.4 percent in 1991 (Ottman 1993). At the same time, the volume of green print ads grew by 430 percent and green television ads by 367 percent (Ottman, 1993, Peattie and Crane 2005, Meyer 2010). Several European multinational companies claimed to have changed their products and production systems in response to green concerns (Vandermerwe and Oliff 1990).

By the mid-1990s, market researchers found only a very slight increase in the number of green consumers since the start of the decade, and identified a significant gap between concern and actual purchasing (Mintel 1995, Wong et al 1996, Peattie 1999, Crane 2000, Peattie and Crane 2005). With the booming economy and affordable energy in a seemingly endless supply, consumers were more interested in buying “bigger and better” than in spending extra money on green products (Meyer 2010).

It wasn't until the start of the 21st century—when concerns over global warming and natural resource depletion began gaining momentum—that “green” went mainstream and began influencing the practices of product manufacturers. Researchers focusing on building-related illnesses began to understand the health benefits of good IEQ. Subsequently, building rating systems, certification programs, and certain eco-labels started to make IEQ a priority. Third-party product certification programs focusing specifically on “green” products also began surfacing in the marketplace, largely in response to concerns about product toxicity and children's health. As discussed in the AQS white paper, *Primary Green Products Standards and Certification Programs: A Comparison*, architectural and building contracting firms (nonresidential sector) acknowledged that, in order to remain competitive, they must shift toward green building, including the use of green building products to achieve energy efficiency, water conservation, and good IEQ (MHC 2008a, b, c).

According to *The Seven Sins of Greenwashing™*, a report on environmental claims released by TerraChoice Group, Inc., the total number of green products on the North American market increased by an average of 79 percent (a range between 40 percent and 176 percent) between 2007 and 2008. In a related study, the rate of green advertising was found to have almost tripled since 2006 (TerraChoice 2009).

The most recent version of that report, *The Sins of Greenwashing: The Family and Home Edition*, revealed that there are 73 percent more green products on the market in 2010 than in there were in 2009—from 2,739 products to 4,744. Of the retail stores visited for the study, nine of them had

increased their green product offerings by more than 200 percent in just one year. Only four had decreased their offerings (TerraChoice 2010).

Also fueling the demand for green products were concerns about “product toxicity,” a term that, in recent years, has been used to describe the potential health impacts (particularly among children) of chemical and particulate exposure. Research has shown that health complications can occur as a result of exposure to chemicals at extremely low levels. Minute levels of phthalates, for example—which are used to make toys, building materials, drug capsules, cosmetics, and perfumes—have been linked to sperm damage in men and genital changes, asthma, and allergies in children (Waldman 2005, Bornehag et al 2004). Disruption of the endocrine system (hormones), gene activation, and brain development have also been linked to chemical exposure in homes and schools.

A growing body of research also suggests that exposure to chemical emissions—in particular, volatile organic compounds (VOCs) from common indoor materials and finishes—can have numerous adverse health effects, including an increased risk of asthma, pulmonary infections, and allergies. Exposure to formaldehyde, benzene, phthalate esters, cleaning products, personal care products, flooring, paints, and plastics have all been linked to health problems (Mendell 2007). Not surprisingly, protecting individual and family health is the top motivator among consumers for taking action to protect the environment (Coyle 2004).

A full discussion of these studies is beyond the scope of this paper. For more information, see the AQS white paper, *Chemicals in COMMON Products: Risky Business for Children’s Health*, which is available free of charge from the AQS – Aerias IEQ Resource Center at www.aerias.org, under the Premium Content tab. Also see the following AQS white papers for more information about the risk to health from poor indoor air quality (IEQ), the history of IEQ and energy conservation during the past 40 years and for a comparison of green building and green product certification programs around the world:

- *IEQ and Children’s Health*
- *Indoor Air Quality & Sensitive Population Groups*
- *Energy Conservation and Indoor Air Quality: Partnering to Protect Human Health*
- *Green Building Rating Systems (Certification Programs): A Comparison*
- *Primary Green Product Standards and Certification Programs: A Comparison*

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