



# Corporate Environmental Strategy

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# Benchmarking Corporate Management of Safer Chemicals in Consumer Products— A Tool for Investors and Senior Executives

Richard A. Liroff

Companies face growing questions about their knowledge and management of toxic chemicals in their products. These are fueled by reports of rising levels of contaminants in human blood and breast milk, scientific findings about links between chemical exposures and human health, activist campaigns against cancer-causing ingredients in cosmetics and hazardous chemicals in electronics products and shareholder resolutions urging changes in corporate management of toxic chemicals. Companies that do not understand toxic hazards in their products and who do not take steps to reduce or eliminate them face the risk of disruption to their supply chains, exclusion from markets, damage to their reputation, foregone profits, and toxic tort litigation. On the other hand, such concerns present a remarkable opportunity for innovation and entrepreneurship that can contribute to competitive advantage, reduced operating costs, increased profits, and enhanced shareholder value.

This article offers a benchmarking tool to assess progress in corporate management of product detoxification. The tool can be used internally by senior corporate management teams. Externally, investors and investment analysts can use this tool to screen investments, assess "best in class" environmental performance, manage portfolio risk, and launch shareholder actions. Vignettes of prominent companies in the electronics, retailing and consumer products sectors illustrate how corporate leaders have adopted elements of this framework.

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nent state, local, and European policy enactments. Production of this paper was supported by grants from The Hans W. Schoepflin Trust, the Panta Rhea Foundation, and the Mitchell Kapor Foundation to The Rose Foundation for Communities and The Environment. The views expressed here are solely those of the author.

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## Introduction

Sony Corporation received an unexpected lump of coal in its Christmas stocking in the Netherlands in 2001. Netherlands authorities banned the sale of Sony PlayStation consoles because the cadmium in accessory cables exceeded regulatory limits. Sony's lost sales and costs to rework their product totaled about \$150 million.<sup>1</sup> This episode prompted Sony to carry out a systematic supply chain and internal management review to prevent similar problems from occurring and to prepare for stricter regulations in the future.

The Sony episode underscores the importance of consumer products companies having full knowledge of the toxic chemicals found in their products. Companies that do not understand toxic hazards in their products and who do not take steps to reduce or eliminate them face the risk of disruption to their supply chains, exclusion from markets, damage to their reputation, foregone profits, and toxic tort litigation.

But on the other hand, rising concern about toxic chemicals in products presents a remarkable opportunity for innovation and entrepreneurship that can contribute to competitive advantage, reduced operating costs, increased profits, and enhanced shareholder value. By incorporating toxicity considerations into the front end of product design—incorporating principles of “green chemistry,” “industrial ecology” and related decision rubrics—companies can convert constraints into opportunities. Foresighted corporations can engage in systematic review of chemicals in products, work with their suppliers to reduce or eliminate product toxicity, and respond creatively to the growing demand for

environmentally preferable goods. Senior corporate managers—and boards of directors exercising due diligence in managing risks and rewards—can promote their companies’ long-term well-being by recognizing that a focused concern on product toxicity is not so much a regulatory compliance cost as it is a potentially value-adding benefit. Investors—especially pension funds and other long-term investors—will be well-served by such a positive approach.

This article provides a benchmarking tool for both investors and senior corporate executives. Senior corporate management teams—EHS (Environment, Health, and Safety) and sustainability vice-presidents and senior vice presidents, strategy and corporate planning staff, business unit heads, and even boards of directors—can use this tool to assess their progress in rising to the new challenge. Investors and investment analysts can use this tool to screen investments, assess “best in class” environmental performance, manage portfolio risk, and launch shareholder actions. Case studies at the end of this article illustrate how major companies have adopted elements of this framework.

The framework is intended to be an iterative benchmark, elaborated and refined over time. Users are invited to operationalize the framework and provide the author with “lessons learned.” As companies develop innovative approaches to safer chemicals and substitution policies, they will raise the bar for acceptable and outstanding performance.

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<sup>1</sup> Reuters News Service report, cited in Global Environmental Management Initiative, “Forging New Links: Enhancing Supply Chain Value Through Environmental Excellence,” (Washington, D.C.: Global Environmental Management Initiative, 2004), page 16. Accessible at [www.gemi.org](http://www.gemi.org). (Accessed June 22, 2004).

### Drivers of Change

Companies today face increasing pressures to remove toxic chemicals from consumer products. Scientists have been refining their ability to detect chemicals in human breast milk, blood, and urine.<sup>2</sup> Environmental health advocates have been publicizing levels of these contaminants found in ministers of environment and other politicians, media luminaries, and ordinary citizens.<sup>3</sup>

Scientists and advocates are voicing concern that even relatively low, common levels of contaminants in people may be contributing to a host of human health disorders, including cancers and neurological problems.<sup>4</sup> Scientists historically have stressed that “the dose makes the poison.” But growing scientific evidence indicates that this dogma requires modification—that it is not only the dose that makes the poison, but the timing. Fetuses, infants, and young children face hazards from low doses of toxic chemicals that may not harm healthy adults.<sup>5</sup>

The traditional “environmental” focus on contamination of outdoor air and water is shifting to an “environmental health” emphasis on exposures indoors from common household goods. Emerging scientific knowl-

edge is leading to a substantial redefinition of toxic chemicals problems—they are being viewed less as some violation of abstract air and water quality standards and more as the most intimate form of bodily trespass. This is perhaps best illustrated by a WWF-UK advertisement in 2003, portraying a young girl pressing her ear against her mother’s pregnant belly, under the heading of “Who Cares Where Toxic Chemicals End Up?” The text of the ad noted “Everyday we are exposed to dozens of man-made hazardous chemicals...babies in the womb and young children are the most vulnerable....”

Media attention—page 1 newspaper stories and lengthy television news features—has documented the growing scientific awareness.<sup>6</sup> As evidenced by a safer cosmetics and safer products campaign in the United States and Europe, environmental health advocates are highlighting exposures to cancer-causing chemicals and reproductive toxicants in a wide range of products.<sup>7</sup> Regulators and legislators have also responded, by restricting or banning suspect chemicals, establishing new test requirements, and issuing warnings to consumers about purchasing particular products and foods. For example, 2003 amendments to the European Union Cosmetics Directive outlaw known or suspected carcinogens, mutagens, or reproductive toxicants in products.<sup>8</sup> Not only will companies marketing cosmetics in Europe need to change formulations, but companies marketing cosmetics in the United States will either need to follow suit or argue to American women that they need not worry about the risks from such chemicals. These and other such choices will

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<sup>2</sup> See, for example, U.S. Centers for Disease Control and Prevention (CDC), “Second National Report on Human Exposure to Environmental Chemicals” (Atlanta, Georgia: 2003).

<sup>3</sup> See for example, the monitoring results of the Chemicals and Health Campaign of WWF-UK, available via [www.wwf.org.uk/chemicals/](http://www.wwf.org.uk/chemicals/) (Accessed December 8, 2004).

<sup>4</sup> The relevant science is gathered at [www.ourstolenfuture.org](http://www.ourstolenfuture.org) (Accessed December 8, 2004). See also R. Melnick, et al, “Summary of the National Toxicology Program’s Report of the Endocrine Disruptors Low-Dose Peer Review,” *Environmental Health Perspectives*, Vol. 110, No. 4 pages 427-431 (April 2002).

<sup>5</sup> On the vulnerability of the young, see Board on Agriculture and Board on Environmental Studies and Toxicology, “Pesticides in the Diets of Infants and Children”, (Washington, D.C.: National Academy Press, 1993).

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<sup>6</sup> See, e.g., “Flame Retardant Found in Breast Milk” USA Today, September 23, 2004, Page A-1.

<sup>7</sup> See the following campaign websites: [www.safecosmetics.org](http://www.safecosmetics.org); [www.cleanproduction.org](http://www.cleanproduction.org); and [www.foe.co.uk/campaigns/safer\\_chemicals/](http://www.foe.co.uk/campaigns/safer_chemicals/) (Accessed December 8, 2004)

<sup>8</sup> European Union Directive 2003/15/EC (February 27, 2003) amending Council Directive 76/768/EEC.

flow down the supply chain to chemical producers.

More regulatory attention looms, particularly in Europe and at the state and local level in the United States. The European Union and the states of Maine, California, and New York have enacted legislation banning certain brominated flame retardants, leading to their manufacturer's "voluntary" withdrawal of the chemicals from the national U.S. market.<sup>9</sup> The State of Washington Department of Ecology has developed a plan for phasing out the use of persistent, bioaccumulative toxic (PBT) chemicals in the state.<sup>10</sup> The European Union has begun an ambitious effort (the so-called "REACH" initiative) to systematically overhaul chemical management in member states. REACH is based on the idea of "no data-no market"—companies must make public much more data than are available now on the hazards of their products, or face the risk that they will not be able to continue selling them. Chemicals that are persistent, bioaccumulative and toxic (PBT) and those that are *very* persistent and *very* bioaccumulative (vPvB) are the "low hanging fruit" that likely will be the initial regulatory targets.<sup>11</sup>

Both public and private sector organizations are adopting environmentally preferable purchasing policies that can provide significant new business opportunities in targeted sec-

<sup>9</sup> These examples are drawn from "Taking Steps to Be Safe: Precautionary-Based Laws, Policies and Agreements", published by the Center for Health, Environment, and Justice, 2003. Accessible at <http://www.besafenet.com/policies.htm> (Accessed March 14, 2004).

<sup>10</sup> See [http://www.watoxics.org/pages/root.aspx?xsl=release&source=press/pr\\_2004\\_03\\_11](http://www.watoxics.org/pages/root.aspx?xsl=release&source=press/pr_2004_03_11) (Accessed June 7, 2004)

<sup>11</sup> For updates on the evolving REACH legislation in the European Union, see [www.chemicalspolicy.org](http://www.chemicalspolicy.org), the website of the Chemicals Policy Initiative of the Lowell Center for Sustainable production, and [www.panda.org/campaign/detox/index.cfm](http://www.panda.org/campaign/detox/index.cfm), which provides entry to the DeTox Campaign of WWF that is lobbying for enactment of a strong REACH program by the European Union. (Accessed December 8, 2004)

tors. For example, the cover story in the March 2004 issue of *Sanitary Maintenance*, "the business magazine for distributors of cleaning supplies, equipment, and paper products," focuses on "green's growing reach."<sup>12</sup> Experts cited in the story "say green will steadily gain acceptance, and that distributors who stay current on the trend will win green business; those that ignore the trend may risk losing customers."

Environmentally preferable purchasing within the health care industry has been facilitated by greater disclosure of toxic chemicals in products distributed by the four top group purchasing organizations that buy supplies for more than 70 percent of the health care facilities in the United States. In 2002, Premier, Inc., Novation, Broadlane and Consorta, Inc.—which together represent about \$30 billion in medical purchasing power—announced initiatives designed to reduce the purchasing of mercury, polyvinyl chloride plastic, and the chemical plasticizer DEHP. Their measures include eliminating mercury-containing devices from contracts and clearly labeling products containing these toxic chemicals.<sup>13</sup>

Within the health care industry, Kaiser Permanente has been a major proponent of reducing environmental hazards. Kaiser Permanente is the largest nonprofit health plan in the United States, serving 8.2 million members. It operates 30 hospitals, 431 medical buildings, and had operating revenues of \$22.5 billion in 2002.<sup>14</sup> Kaiser Permanente has set out to eliminate or reduce hazards to hu-

<sup>12</sup> The story is available on the internet via [www.cleanlink.com](http://www.cleanlink.com) (Accessed May 18, 2004).

<sup>13</sup> These measures were summarized in an October 31, 2002 news release from Health Care Without Harm, available on-line via [www.noharm.org](http://www.noharm.org) (Accessed March 29, 2004).

<sup>14</sup> These statistics can be found on the internet at [http://newsmedia.kaiserpermanente.org/kpweb/media/kit/navlinkpage.do;elementId=htmlapp/feature/164mediakit/nat\\_mediaaboutkp.html.xml&repositoryBean=/kp/repositories/ContentRepository](http://newsmedia.kaiserpermanente.org/kpweb/media/kit/navlinkpage.do;elementId=htmlapp/feature/164mediakit/nat_mediaaboutkp.html.xml&repositoryBean=/kp/repositories/ContentRepository) (Accessed June 8, 2004)

man health from chemicals that have been relied on to provide health care. Kaiser Permanente has been working to “green” its buildings, working with manufacturers to produce cleaner, less toxic materials. The company has focused on phasing out polyvinyl chloride and eliminating mercury, and removing DEHP from its neonatal units. In 2004 it launched a new chemical policy that calls for avoiding the use of carcinogens, mutagens and reproductive toxins, and persistent bioaccumulative toxic chemicals.<sup>15</sup>

### **Benchmarking Corporate Decision Making on Product Detoxification**

Corporate emphasis on reducing the toxicity of products—by substituting or eliminating chemicals—builds on and extends corporate environmental strategies that have evolved during the last several decades of modern environmental regulation. These strategies include such terms as “pollution prevention,” “eco-efficiency,” and “life cycle assessment” and also encompass “environmental management systems,” “greening supply chains” and reporting of results in “triple bottom line” reports.

“Green chemistry” provides perhaps the most appropriate framework for driving decisions about reducing toxic chemical hazards in products.<sup>16</sup> Green chemistry’s 12 “principles” incorporate toxicological, waste reduction, energy efficiency, and other interrelated concerns.<sup>17</sup> A popular mantra of the modern environmental movement as it emerged more

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<sup>15</sup> This description of Kaiser Permanente’s activities is based on remarks by Kathy Gerwig, Director, Environmental Stewardship and National Environmental, Health and Safety, at the CleanMed 2004 Conference, Philadelphia, Pennsylvania. The remarks are available on the internet via [www.noharm.org](http://www.noharm.org) (Accessed June 8, 2004).

<sup>16</sup> See, e.g., Paul T. Anastas and John C. Warner, “Green Chemistry: Theory and Practice”, (New York: Oxford University Press, 2000). (Reprint edition)

<sup>17</sup> The complete list of 12 principles can be found at [www.epa.gov/greenchemistry/principles.html](http://www.epa.gov/greenchemistry/principles.html) (Accessed June 22, 2004).

than 30 years ago was “think globally, act locally.” In view of advances since then in knowledge about both chemical toxicity and methods for constructing chemicals, green chemistry serves as a reminder to “think globally, act molecularly.” For purposes of product detoxification, the two key green chemistry principles are:

- Design chemical products to be fully effective, yet have little or no toxicity; and
- Design chemical products to break down to innocuous substances after use so that they do not accumulate in the environment.

The principles of green chemistry can be used by innovative companies to reduce time-to-market, grow market share, anticipate and avoid regulatory burdens and, more broadly, build shareholder value.

Two additional and noteworthy analytical approaches incorporating reductions in product toxicity include The Natural Step and the McDonough-Braungart concept of “cradle-to-cradle” design.<sup>18</sup> The Natural Step’s principles call for “systematically substituting certain persistent and unnatural compounds with ones that are normally abundant or break down more easily in nature.”<sup>19</sup> The first of 12 principles of Green Engineering in the “cradle-to-cradle” approach states that product designers should strive to ensure that materials “are as inherently nonhazardous as possible.”<sup>20</sup>

The framework proposed here has its roots in green chemistry/green engineering principles. Like the broader Global Reporting Initiative launched several years ago, it is intended to be

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<sup>18</sup> See [www.naturalstep.org](http://www.naturalstep.org) and [www.greenblue.org](http://www.greenblue.org) (Accessed March 12, 2004).

<sup>19</sup> [www.naturalstep.org/learn/principles.php](http://www.naturalstep.org/learn/principles.php) (Accessed March 14, 2004).

<sup>20</sup> W. McDonough, M. Braungart, et al, “Applying The Principles of Green Engineering to Cradle-to-Cradle Design”, Environmental Science and Technology, December 1, 2003, pages 435A-441A.

an iterative benchmark that should be elaborated and refined over time. All the suggested elements, some of which are so aspirational that even the most progressive, innovative, and best-managed companies may not score well on them, must be translated into measurement scales that can usefully distinguish leaders from laggards and separate meaningful green action from greenwash. Moreover, as companies develop innovative approaches to safer chemicals and substitution policies, they will raise the bar for acceptable and outstanding performance.

This framework is intended for application to companies that purchase chemicals—chemical users or choosers—rather than commodity or specialty chemical producers. The framework can drive change by encouraging consumer products companies to modify products; they can shift their choices of chemicals or chemical suppliers and even find non-chemical methods to satisfy a product function.

The framework calls for detoxification in an environment of scientific uncertainty about the toxic hazards posed by most chemicals. The process of substituting one chemical for another can be problematic, because there may be scientific uncertainty about the toxic hazards posed by substitute chemicals, but this itself could drive a quest for improved data. Despite scientific uncertainties and data gaps, certain chemicals and classes of chemicals have been identified for regulation in existing government programs or have been targeted for prospective research and regulation. Some of the official lists that can be used as starting points for corporate action are cited in the second footnote of the framework found in Appendix A (see pages 35 and 36).

**Distinguishing Leaders From Laggards.** A January 2004 report commissioned by UK-based ISIS Asset Management from the Impact consultancy illustrates how two of the framework's capacity-building and supply

chain elements can be quantified.<sup>21</sup> The report identified leaders and laggards among information and communication technology companies in management of supply chains with regard to labor standards and environmental performance. Dell, Hewlett Packard, Nokia, Sharp and Sony were identified as “race leaders” in environmental management, Siemens was labeled “on the starting grid” and five other companies in the middle were labeled as “the chasing pack.”

In ISIS’s report, a company that provides training for its staff plus assistance to its suppliers earns a top score of 3, a company training only its staff earns a 2, raising staff awareness but providing no staff skill training garners a 1, and no training yields a score of zero. With respect to audits of suppliers’ environmental performance, audits of “first tier/high risk suppliers” earn a 3, “some, predominantly desk-based audits” earn a 2, initial steps to introduce audits or monitoring yield a 1, and no monitoring scores zero. These and other scores are aggregated to distinguish outstanding companies and those lagging behind.

**Samsung.** The ISIS-commissioned report indicates there are promising governance developments in the electronics sector. Additional positive signs have surfaced since the ISIS report was published. For example, in response to Greenpeace finding brominated flame retardants, phthalates, and organotin compounds in its products, Samsung agreed in mid-2004 to conduct an inventory of chemicals and to formulate a substitute development program with targeted phase out dates.<sup>22</sup> Samsung, which had not been rated in

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<sup>21</sup> “Waste and Workers in the Tech Sector: Benchmarking the ICT Giants on Their Supply and Disposal Chains”, (London, UK: ISIS Asset Management, 2004)

<sup>22</sup> “Position Paper of Samsung Electronics With Regard to the Use and Phase Out of Certain Substances When Appropriate”, June 2004. Accessible at [http://www.Samsung.co.uk/SEUK/images/Editorials/Position%20paper\\_0604.pdf](http://www.Samsung.co.uk/SEUK/images/Editorials/Position%20paper_0604.pdf) (Accessed October 12, 2004)

the ISIS report, indicated it would act on the basis of common sense and “scrupulous scientific research.” But Samsung also stated that it would also act in a precautionary manner in some cases, taking into account suspected-but-not-definitively-proved links between chemical causes and health effects. Samsung set a phase-out target date for various substances and also set dates by which it expects its suppliers to meet its new standards. It also indicated areas where additional research on alternatives would be needed.

**Fujitsu.** The Fujitsu company also appears to be taking steps to improve its management of toxic chemicals. In contrast to many companies that are dismissive of hazards from hormone-disrupting chemicals (endocrine disruptors), Fujitsu states that it is evaluating and hopes to reduce the annual use by its facilities of approximately 70 chemicals that Japan's Ministry of Environment has designated as exerting potentially harmful endocrine effects.<sup>23</sup> For example, the Fujitsu Group's reported use of Bisphenol-A went from 83,000 kilograms in FY2001 to 63.4 kilograms in FY2003.<sup>24</sup>

**Sony.** Sony Corporation has adopted broad-ranging measures that reduce the likelihood of a rerun of its Netherlands sales loss several years ago. These actions are summarized in Sony's 2004 corporate social responsibility report, “Sony and the Global Environment.”<sup>25</sup> Sony has made available to its suppliers a list of chemicals that will be prohibited immedi-

ately, phased out by targeted dates, or reduced in concentration. Sony also has established a Green Partner Environmental Quality Approval Program that lays out for its suppliers chemical management standards; Sony follows up with audits. Sony is especially proud of the substantial progress it has made in reducing use of lead-free solder and the use of PVC in packaging. Sony scientists have been working to develop vegetable-based plastics; these already have been used in a number of Sony products. Among these plastics are compounds with flame-retardant properties comparable to standard flame-retardant plastics.

**SC Johnson and Son, Inc.** In a fully operationalized benchmarking framework, SC Johnson and Son, Inc., likely would score quite high. SC Johnson, a privately-owned multinational corporation with sales in about 100 countries, launched its trade-marked Greenlist process in 2001.<sup>26</sup> The Greenlist process reflects the long-standing social ethic of a company that brands itself as “a family company.” It builds on SC Johnson's reputation for being an early adopter of measures to reduce environmental impact, even in the face of scientific uncertainty.

SC Johnson systematically reviews the toxicity of chemicals used in its product lines and, working with its suppliers, seeks to marry excellent product performance with reduced toxicity. Chemicals are assigned a numerical rating in accordance with a judgment of “best”, “better”, “acceptable”, or “restricted use material” (RUM). These are used to challenge managers to increase their scores each year. The goal for FY02/03 was an 8 percent improvement in scores over the FY00/01 period, and the actual increase was 12.5 percent.

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<sup>23</sup> “2002 Fujitsu Group Environmental Report: Focusing on the Green” (Kawasaki, Kanagawa, Japan, 2002), page 34. See also Japan Environment Agency, “SPEED '98/JEA—Strategic Programs on Environmental Endocrine Disrupters '98”. Available at <http://www.env.go.jp/en/pol/speed98/sp98.pdf> (Accessed October 14, 2004).

<sup>24</sup> Compare “2002 Fujitsu Group Environmental Report...”, page 34, and “2004 Fujitsu Group Sustainability Report”, page 56. Available at [http://www.fujitsu.com/downloads/ECO/rep2004/2004report02\\_e.pdf](http://www.fujitsu.com/downloads/ECO/rep2004/2004report02_e.pdf) (Accessed October 14, 2004)

<sup>25</sup> Accessible via [www.sony.net](http://www.sony.net) (Accessed November 19, 2004),

<sup>26</sup> This description of Greenlist in the text derives principally from materials found at <http://www.scjohnson.com/community/greenlist.asp>. (Accessed September 23, 2003). For a more detailed and comprehensive overview of Greenlist, from which this description also draws, see SC Johnson's “Earning Your Goodwill—Public Report 2004”, accessible at [www.scjohnson.com](http://www.scjohnson.com) (Accessed November 19, 2004).

The Greenlist process moves the company beyond its previous successes in “eco-efficiency”—reducing waste and lowering packaging requirements—to the cradle-to-cradle concept of “eco-effectiveness”—using better materials to get a job done.<sup>27</sup> The company initially conducted screenings for six categories that constitute 80 percent of its purchases and sales and in 2004 added an additional four categories.<sup>28</sup>

The Greenlist process may simply encourage an existing supplier to substitute one off-the-shelf chemical for another. SC Johnson has shared Greenlist with suppliers representing most of its raw material purchases. The company indicates that many suppliers are now proactively offering lower-toxicity replacements for existing chemicals.

Greenlist can also spur development of new materials by creating a market that otherwise might not exist. As the company states in its 2004 report, “Earning Your Goodwill,” “Raw materials that may not have gotten out of trial are making it to market with sales viability to SC Johnson. This effort is truly a win for our business, our suppliers, and the environment.”<sup>29</sup>

SC Johnson has made the Greenlist process integral to its staff development process. For example, it trains new employees on Greenlist shortly after they join the company, and managers’ compensation is tied to their success in reducing product toxicity.

The company also has realized cost savings.<sup>30</sup> In reformulating floor wax emulsion, the

<sup>27</sup> The concept of “eco-effectiveness” was developed by William McDonough and Michael Braungart. See “The Next Industrial Revolution”, *The Atlantic*, October 1998. Available on-line at <http://www.theatlantic.com/issues/98oct/industry.htm> (Accessed February 23, 2004).

<sup>28</sup> Information on the four new categories from personal communication with Dave Long, Sustainable Innovation Manager, SC Johnson, August 18, 2004.

<sup>29</sup> “Earning Your Goodwill...”, page 23.

<sup>30</sup> Detailed data on the specific savings have not been disclosed publicly by SC Johnson.

company has eliminated the most hazardous chemicals—RUMs—and has cut costs without sacrificing performance. It eliminated five such ingredients from an all purpose cleaner, again reducing cost with no sacrifice in performance. It reformulated an insecticide by eliminating a RUM active ingredient and replacing it with a natural active ingredient that improved product performance. By the end of 2002, the company had eliminated PVC from bottles globally, eliminating the use of 1705 metric tons of PVC. Chlorine bleached paper for packaging also was eliminated by the end of 2002.

In assessing surfactants, SC Johnson is identifying potential replacements for RUMs, contacting suppliers and requesting data to fill data gaps on high volume surfactants, and providing additional tools for chemists and formulators to make appropriate choices.

**Nike.** During the 1990s, along with other companies, Nike began transitioning from use of petroleum-based solvents to new water-based technologies.<sup>31</sup> By 2001, it had accomplished a nearly 90 percent reduction, yielding raw material savings of \$4.5 million with accompanying improvements in workplace environments. Nike has worked with both The Natural Step and McDonough-Braungart. Nike began working with the McDonough-Braungart team in 1998, focusing primarily on footwear operations. Chemicals known or suspected to have adverse effects on human health or biological systems are targeted for replacement. Nike is creating a “positive list” of preferred substances and works with its vendors to establish replacement guidelines. The first phase of Nike’s project began in 2000, focusing on chemicals targeted by national legislation in various countries. A second phase begun in 2001 focused on chemicals used in Nike’s manufacturing process.

<sup>31</sup> This description of Nike’s work is based on Nike’s FY2001 Corporate Responsibility Report and on McDonough and Braungart, et al, “Applying The Principles of Green Engineering...”

Nike has as its 2020 goal “eliminating all substances that are known or suspected to be harmful to human health or the health of biological or ecological systems.” Nike has made a priority of phasing out polyvinyl chloride (PVC) from its products. By 2002, Nike had succeeded in eliminating PVC from both its footwear and non-screenprint apparel.

**Marks & Spencer.**<sup>32</sup> The concept of environmentally preferable purchasing that underlies changes in the institutional cleaning industry, the health care industry, and the selection of chemicals by consumer goods manufacturers can be extended as well to the retail sector. U.K. retailer Marks & Spencer is implementing a program to phase out the use of 79 potentially harmful pesticides in the production of fruit, salad, and vegetables and has established a long-term goal of selling these items free from pesticide residues. In a “chemicals strategy” document, it has examined chemicals used in manufacturing its products and has assessed them against a wide range of emerging environmental concerns. “These include substances that are toxic, carcinogenic, mutagenic, endocrine (hormone) disrupting, or non-biodegradable.” The result is a “hotlist” of 15 chemicals, including chemicals targeted under the European regional agreement (OSPAR) for protection of the Northeast Atlantic and North Sea. Marks & Spencer has phased out PVC in virtually all food packaging and targeted PVC phase out in other packaging by the end of 2003. Flame retardants, heavy metals, and phthalates are among the other chemicals on Marks & Spencer’s list.

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<sup>32</sup> This section is based on Marks & Spencer’s “Corporate Social Responsibility Review 2003,” “What is our position on chemicals?” and “Chemicals Strategy Progress Update 2002,” all available at <http://www.marksandspencer.com> (accessed March 12, 2004).

**Boots Group, PLC.**<sup>33</sup> Boots Group operates over 1,400 “Boots The Chemists” stores in the U.K. and the Irish Republic. Boots Group’s product development and manufacturing operation launches around 1,500 new products yearly. Its nearly 70,000 employees generated sales in more than 130 countries of more than 5 billion pounds sterling (approximately \$8.5 billion) in fiscal year 2003. Boots has noted the scientific uncertainty around many toxic chemicals issues—“many of the issues remain unproven”—but adds that “at Boots we take a precautionary approach.” Put another way, “Any lack of scientific certainty surrounding an issue will not in itself be used to justify inaction.” Boots has developed a publicly-available Priority Substances List, updated periodically and available on its website, which details chemicals, actions, and targets. Evidently reflecting the company’s precautionary approach, the March 2004 priority substances list indicates that Bisphenol A-based epoxy resins in permanent food contact applications, (i.e., in metal cans and metal lids on jarred food) were scheduled for elimination by mid-2004.

## Conclusion

The “business case” for promoting reduced product toxicity addresses both the tangible and intangible business concerns of investors and senior executives. It can be expected that reducing toxic chemicals in products will produce many of the same types of economic and non-economic returns documented in a host of recent publications on improving corporate environmental management.

The contribution of sound environmental management to corporate well-being was reviewed in a 2002 report for The Rose Foun-

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<sup>33</sup> The description of Boots Group, PLC in the text is based on miscellaneous materials available from Boots’ website, including the “Environment” section and “Environmental Performance, 2002/03”. See [www.boots-plc.com](http://www.boots-plc.com). (Accessed November 10, 2004).

dation, “The Environmental Fiduciary: The Case for Incorporating Environmental Factors into Investment Management Policies.”<sup>34</sup> Susannah Blake Goodman and her colleagues provide case examples from individual companies and a review of the pertinent academic literature. They show how a corporation’s ability to profit from environmental innovations and prepare for future environmental risks and exposures can have a significant impact on corporate earnings potential, cash flow, and growth opportunities. Goodman *et al.*, demonstrate how environmentally driven innovation can improve shareholder value while environmentally driven liabilities and risks can depress shareholder value.

The Global Environmental Management Initiative, a consortium of leading companies promoting excellence in corporate management of EHS (Environment, Health and Safety) issues, focuses on market valuation in its 2004 report, “Clear Advantage: Building Shareholder Value—Environment Value to the Investor.”<sup>35</sup> The report notes that there is “considerable evidence” that EHS contributes to shareholder value in a variety of ways, not only through such tangible contributions as risk reduction and profitability improvements, but also through such intangibles as brand equity, human capital, and strategy execution.<sup>36</sup>

Corporations systematically reducing the toxicity of chemicals in their products should benefit from:

- Improved worker safety;
- Reduced insurance costs;

- Cost savings from waste reductions and energy efficiencies associated with process changes;
- Reduced regulatory hurdles and speeded time to market;
- Increased market share and competitive advantage;
- Enhanced corporate reputation and avoidance of adverse publicity;
- Increased corporate productivity associated with lowered occupational risks, reduced employee turnover, and lowered recruitment costs;
- Lowered vulnerability to toxic torts litigation; and
- Easier financing/reduced cost of capital.<sup>37</sup>

The benchmarking framework proposed here can serve corporate executives, directors, and investors equally well. Senior corporate executives can implement the tool internally. Boards of directors—especially environmental and social responsibility committees and independent directors—can seek implementation of the tool by senior management. Investment organizations employing environmental screens can add a product detoxification screen to their armamentarium. Organizations devising socially responsible investment indices can add product detoxification as a criterion when evaluating corporate performance and making judgments about “best in class.” Investors concerned about enhancing corporate profits and reducing future liabilities can press corporate management to launch chemical substitution efforts and to increase disclosure about progress. The author

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<sup>34</sup> The report is available on-line at [www.rosefdn.org](http://www.rosefdn.org). (Accessed February 17, 2004).

<sup>35</sup> Global Environmental Management Initiative, “Clear Advantage: Building Shareholder Value”, (Washington, D.C.: Global Environmental Management Initiative, 2004). Available at [www.gemi.org](http://www.gemi.org).

<sup>36</sup> “Clear Advantage...” page 2.

<sup>37</sup> Chris Laszlo, “The Sustainable Company: How to Create Lasting Value Through Social and Environmental Performance” (Washington, D.C.: Island Press, 2004) and Bob Willard, “The Sustainability Advantage: Seven Business Case Benefits of a Triple Bottom Line,” (Gabriola Island, British Columbia: New Society Publishers, 2002).

invites suggestions on operationalizing and improving the framework.

The converging pressures outlined in this article present sizeable risk, but they also represent substantial opportunity. Companies whose corporate cultures still view "environment" primarily through the mental lens of compliance requirements and regulatory burdens are unlikely to appreciate this opportu-

nity fully. In contrast, nimble, innovative, entrepreneurial consumer goods companies will seize it. Through shrewd product evaluations, research, and more creative partnerships with suppliers, they can select a future path leading to enhanced profitability, a reduced ecological footprint, and a healthier future for all.



#### **Appendix A Product Toxicity\* and Safer Alternatives—Governance Benchmarking Framework**

##### **Corporate Commitment to Safer Alternatives Policy**

- Have the CEO issue a clear and proactive statement about the company's commitment to lowering product toxicity through elimination of known or suspected high priority toxicants and substitution of safer chemicals or non-chemical methods. The commitment should establish short, medium, and long-term deadlines and measurable goals for chemical substitutions, provide for routine reporting on progress, favor reductions in toxicity even in the face of scientific uncertainty, and make attainment of reductions in product toxicity an explicit factor in employee compensation.

##### **Investor and Public Accountability**

- In annual and quarterly SEC filings, discuss and analyze risks and opportunities to the company associated with hazardous and toxic chemicals, and with safer alternatives and cleaner production processes. Disclosures should include new government- or peer-reviewed studies of environmental and health hazards pertinent to toxic chemicals in company products; the range of potential liabilities and market risks associated with toxic chemicals in company products, and market trends associated with alternatives to toxic chemicals used in company products.
- Issue a sustainability report based on the Global Reporting Initiative or comparable "triple bottom line" format that includes a discussion of product toxicity and corporate milestones for and progress in reducing or eliminating hazardous or suspect chemicals.
- Engage in effective consumer disclosure practices regarding chemicals of concern (in product labeling, warning notices and catalogue listings) so as to avoid potential "duty to warn" liabilities and, where safer alternatives are offered, to publicize the benefits of these alternatives.

##### **Data Development**

- Develop procedures for systematically reviewing the chemical composition of company products and promote generation of toxicity data by chemical suppliers.
- Assess the chemical composition of company products against published lists\*\* of known or suspected high priority chemicals, with particular emphasis on such categories as persistent and bioaccumulative substances, carcinogens, mutagens, reproductive toxicants, neurotoxicants, and hormone disrupting chemicals.

(Continued on next page)

**Appendix A (continued)**

**Internal Capacity Building and “Greening” The Supply Chain**

- Create information, training, and incentive programs to help identify, research, and implement safer alternative ideas.
- Add “reduce inherent hazards” as a criterion for product formulation and chemical procurement, including a commitment to continuous improvement in use of safer materials and chemicals as effective, cost-competitive alternatives become available.
- Develop collaborative activities with vendors, including research and financial risk sharing, to procure or develop reduced toxicity chemicals or non-chemical alternatives.
- Devise supplier codes of conduct and certification programs, and associated corporate or third-party auditing methods, to identify suppliers’ progress and problems in reducing toxicity of supplied materials.

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\*Note: the word “toxicity” is used loosely throughout this checklist to denote chemicals of concern, which include persistent and bioaccumulative substances, endocrine disruptors, carcinogens, mutagens, reproductive toxicants, and neurotoxicants.

\*\*For example, official lists include: carcinogens, mutagens, and reproductive toxicants of greatest concern as referenced in the European Union’s Cosmetics Directive; six individual and classes of chemicals listed in the EU directive on hazardous substances in electrical and electronic equipment; priority substances listed under the OSPAR Convention; suspected endocrine disrupting substances listed by Japan’s Ministry of Environment; and persistent organic pollutants listed under the Stockholm Convention.

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