

Partners in New Product Development: SC Johnson and the Alliance for Environmental Innovation

By Ken Alston and Jackie Prince Roberts

In the previous issue of CES (Winter 1999), SC Johnson's early efforts at integrating core business decisions with environmental concerns were explored by researchers at INFORM, Inc. By gaining upper management attention, explicitly aligning environmental concerns with key business goals, and designing consistency into the overall company management system, SC Johnson was able to "break down the green wall" in the organization.

In this follow-up article, CES explores a recent effort between the Alliance for Environmental Innovation and SC Johnson to further integrate environmental decision making throughout the organization. The project focused on: (1) creating practical tools to identify environmental considerations at the earliest stages of new product development, and, (2) addressing consumers' environmental needs in the conception and marketing of "greener" products. The Alliance and SC Johnson formed a task force that included both staff members from the Alliance, as well as members of the environmental, product development, product safety and marketing staffs at SC Johnson. This unique partnership has aided SC Johnson by more directly linking consumer and company environmental objectives to the new product development process.

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In April 1996, the Alliance for Environmental Innovation (the Alliance) and SC Johnson initiated a joint project (see sidebar: Genesis of the Alliance with SC Johnson) to identify ways to further

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integrate environmental considerations into the conceptualization, design, development and review of SC Johnson's consumer products and packaging. The project involved two major streams of work:

1. Creating practical tools to identify environmental considerations at the earliest stages of new product development, and,
2. Addressing consumers' environmental needs in the conception and marketing of "greener" products.

To carry out the project, the Alliance and SC Johnson formed a task force that included several scientists, a marketing specialist and a research analyst from the Alliance, and members of the environmental, product development, product safety and marketing staffs at SC Johnson (see Exhibit 1 for a complete list of participants).

The long-term vision was to integrate environmental strategy with new product development, business strategy and marketing. In support of this vision, we undertook four initiatives:

1. Build an environmental design framework,
2. Introduce environmental considerations at the beginning of product conceptualization,

About the Alliance for Environmental Innovation

The Alliance for Environmental Innovation (the Alliance) was established in 1994 as a joint initiative of the Environmental Defense Fund and The Pew Charitable Trusts. The Alliance works cooperatively with business to reduce waste and build environmental considerations into business decisions. By bringing the expertise and perspective of environmental scientists and economists together with the business skills of major corporations, the Alliance creates solutions that make environmental and business sense. The Alliance receives no financial support from partner companies.

3. Develop a standard and consistent approach to environmental improvement, and
4. Create specific packaging improvements.

Our work was based on an important fundamental fact: the earlier environmental objectives

SC Johnson, a 113-year-old family-owned and -managed company, is one of the world's leading providers of quality cleaning, maintenance and storage products for the home. Since 1993, the company has nearly doubled annual sales to over \$5 billion and today its products are available in 100 countries worldwide. SC Johnson is a category leader across its product lines; some of its best-known consumer brands include: Pledge® furniture polishes, Glade® air fresheners, Windex® glass and surface cleaners, Raid® insecticides, Off!® insect repellents and Edge® shaving gels. SC Johnson has received over forty awards for its environmental progress worldwide and, since 1992, has eliminated more than 420,000,000 pounds of waste from its products and processes for annual cost-savings of more than \$125,000,000.

Genesis of the Alliance-SC Johnson Partnership

The idea to form a joint task force arose during a visit by Environmental Defense Fund's executive director, Fred Krupp, to SC Johnson in 1995. The purpose of his visit was to participate in a forum on environmental issues. The Alliance saw SC Johnson as a promising partner because its leadership in product formulation and marketing offered opportunities to further integrate environmental considerations at each stage of product development. SC Johnson also had a strong record of concern for the environment and had demonstrated its desire to further improve its product development process. For SC Johnson, the partnership was a way to join forces with a respected environmental organization with a track record of achieving innovative solutions to environmental challenges.

Having established a senior-level commitment to work together, the two organizations proceeded to define the parameters for the project and write a project agreement. The agreement included provisions protecting SC Johnson's proprietary information and preserving the Alliance's objectivity (the Alliance receives no funding from any of its partners and bars them from using its name in any advertising or promotional material). The agreement also committed both organizations to make publicly available the general nature of tools and methods developed to support environmentally preferable product design. This article constitutes the Public Report on this project.

are introduced in the overall product development process, the greater the resulting environmental and business benefits. Our challenge was to create both the conceptual framework and the procedural mechanisms for this to occur within SC Johnson's stage-gate product design and commercialization process.

Task Force Participants

Alliance for Environmental Innovation
Participants

Project Leader:

- Jackie Prince Roberts, Associate
Director/Senior Scientist

Additional Participants:

- Lauren Blum, Senior Scientist
- Richard Denison, Senior Scientist
- Tracy Dyke, Research Associate
- Victoria Mills, Environmental
Marketing Analyst

SC Johnson Participants

Project Leader:

- Ken Alston, Director of Sustainable
Product Innovation, Worldwide
Research Development & Engineering

** Additional Participants:*

- Manager, Environmental/Technology
Development, Package & Process
Engineering Division
- Section Manager, Product Safety
- Director, Worldwide Consumer
Products, Business Development—Air
Care
- Manager, Air Care Division

* [Ed. Note: Due to company confidentiality concerns, the names of the team participants from SC Johnson are not included.]

Exhibit 1

Initiative One: Build an Environmental Design Framework

The first step was to establish a scientifically sound conceptual framework for systematically driving “added-value” environmental improvement into the company’s products. The task force agreed on a set of strategies for further reducing the environmental impact of products. These strategies capture the essence of many other manufacturers’ efforts to define pathways toward more sustainable production. They serve to guide design decisions at every stage of the product development process so as to reduce the environmental impacts of a given product across its life cycle. The examples, shown in Exhibit 2, illustrate the relationship between the strategies and design principles for achieving desired product attributes.

We used these strategies as the basis for more detailed guidance in both marketing, and research and development (R&D), the two key branches of new product development.

Initiative Two: Introduce Environmental Considerations at the Outset of Product Conceptualization

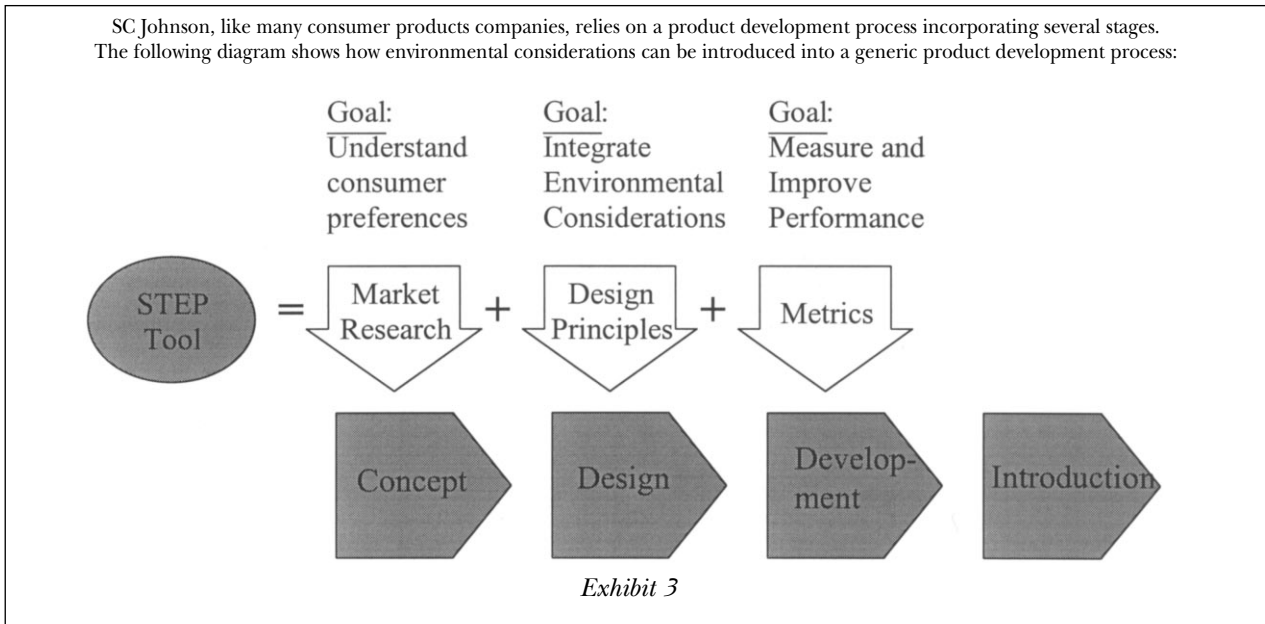
Building on these strategies and design principles just described, the task force sought to demonstrate how environmental considerations could be introduced into the earliest stages of product design (see Exhibit 3). These efforts were carried out in the context of one of SC Johnson’s new product development teams, and they had two thrusts: (1) amplified market research, and (2) the development of new product concepts.

Market Research: Understanding Consumer Preferences

The team’s early market research, included designing and analyzing consumer surveys, and running focus groups on new product concepts. Several of the questions addressed in the market study specifically addressed consumers’ attitudes toward the environment and the environmental impact of cleaning products.¹

Environmental Strategies and Relevant Design Principles	
Environmental Strategies	Design Principles
Dematerialize	<ul style="list-style-type: none"> • Reduce the weight of products and packaging • Enable controlled or controllable product usage • Develop concentrated, refillable and reusable products • Minimize virgin materials use
Conserve Materials	<ul style="list-style-type: none"> • Ensure that products are recoverable and recyclable after use • Reduce the amount of materials dispersed or otherwise “lost” to the environment during product use or disposal, and increase the proportion of materials that can be recovered and used again
Reduce Chemical Intensity	<ul style="list-style-type: none"> • Wherever possible use least potentially toxic or physical means to meet consumer needs • Use better-characterized raw materials (those having undergone more complete human and ecological safety testing) in product formulations
Reduce Energy Intensity	<ul style="list-style-type: none"> • Minimize energy required during product use • Use packaging materials that require less energy for extraction, processing and manufacturing
Extend Product Life	<ul style="list-style-type: none"> • Design durable, long-lasting products
Focus on Function	<ul style="list-style-type: none"> • Design multi-purpose products • Develop preventative products • Sell service or information

Exhibit 2



Applying Environmental Design Principles to a New Product Line

At the time the Alliance-SC Johnson partnership began, SC Johnson was developing a new line of products specifically for allergy sufferers. (Note: These products—currently in the test market phase—are designed to reduce the level of certain allergens in the home, specifically mold, mildew and dust mites. This line represented an important new initiative for SC Johnson, that had been planned for several years. A scientist from the Alliance for Environmental Innovation, joined the new product team, bringing an environmental perspective to decisions made early in the development process.

By applying a “green lens” to the definition phase of the new product line, we were able to identify more refined and useful information about consumers’ environmental preferences. Such preferences are not always articulated in explicitly “green” language. For example, if a consumer indicated she disliked a product’s odor, the traditional marketing response might be to add a masking fragrance. However, by viewing the same response with an added environmental perspective, a product development team could consider whether the consumer’s concern arose from worries about possible adverse impacts arising from exposure to the product. If so, the team could reformulate the product by eliminating the need for the odorous ingredient rather than simply masking it.

New Product Concepts Integrating Environmental Consideration

In addition to analyzing consumer preferences, we identified ways to introduce environmental features into the team’s product concepts. Product developers were encouraged to go beyond tradi-

tional criteria such as consumer appeal, performance and technical feasibility, and consider the degree to which the product embodied certain environmental design principles in line with the strategies above. For example, was the product:

- A passive or mechanical device?
- Delivered in a non-dispersed form?
- Made with fewer chemical ingredients or at lower concentrations?
- Made with chemical ingredients that are naturally derived, biodegradable, non-irritating, low in toxicity and volatility?
- Durable/long-lasting/refillable?
- Packaged minimally and in environmentally preferable materials?

The new product development team saw consistency with the design principles and their overall vision for the new line. For example, the sensitivity of allergy sufferers led the team to develop products that eliminate allergens through physical methods, as well as chemical treatments. Of the five planned products two are nonchemical, four contain reduced levels of volatile organic compounds (VOCs), and three are designed for extended product life through reusability, durability, or long-lasting formulation. Such products embody our strategies for environmental improvement (see Exhibit 4) and are responsive to consumer preferences identified in the early consumer research. SC Johnson’s market testing of the new product line began in August 1998.

The Alliance’s involvement in early discussions about the anti-allergen line encouraged creative thinking by both parties. According to SC Johnson’s team leader for the line, the Alliance provided new perspectives during critical meetings, making realistic suggestions on how to listen to consumers and applying these insights toward the development of new products. To continue this

Mapping Environmental Strategies to Product Attributes:

Objective	Product Attribute
Conserve materials	Reduction or elimination of volatile organic compounds
Reduce chemical intensity	Physical products: vacuum cleaner bags and bedding encasements
Extend product life	Durability of physical products, concentration of chemical formulations
Focus on function treatments	Reducing allergens through physical barriers as well as chemical

Exhibit 4

practice of early integration of environmental considerations into product development, SC Johnson has determined that all of its major new product ideation teams in North America will include a representative from SC Johnson's environmental group, called the Sustainable Product Innovation Group.

Initiative Three: Develop a Consistent Approach to Improvement

Early in the project, SC Johnson's senior management communicated the need to measure—in a systematic and consistent manner—the environmental performance of products across the company. Our third initiative was to develop a tool that provided both real-time measurement of a product's environmental performance, and meaningful guidance on how to improve that performance. In undertaking this work, we built on SC Johnson's initial efforts to develop such a tool for the company's internal use and the Alliance's experience and expertise with such tools.

The first step, similar to understanding consumer expectations of our products, was to conduct

interviews with SC Johnson's product development staff to enhance understanding of their needs. A tool that would benefit the product developer without requiring that person to become an environmental expert was a key objective. For example, we learned that consolidating the company's environmental information in one location and enabling a quick environmental screening of a proposed product for possible regulatory or market constraints would improve the environmental performance of a product, while also making the product developer's job easier. Our intent was to empower product developers with information and guidance, rather than burden them with added requirements and hurdles. The goal was to put relevant information where we needed it, when we needed it, and in easily accessible, electronic form, according to comments by the SC Johnson product safety section manager. "The partnership assisted us in the design of a user-friendly, decision-support tool that mapped to our product development process."

After determining the user's requirements for the tool, we developed a set of ten metrics that are specific indicators of a product's environmental

performance. The metrics, shown in Exhibit 5, create an actionable framework for the strategies described in our first initiative.²

While these metrics reflect the comprehensive nature of life-cycle thinking in that they measure aspects of a product's environmental impact across each of the stages of the product's life cycle, they are not intended to constitute a full life-cycle assessment (LCA).³ In contrast to LCA, the metrics can be calculated in real time using readily available information, and do not require the user to be an environmental expert. "In most companies, many people are involved in the product development process, yet relatively few are environmental specialists," said Dr. Richard Denison, senior scientist for the Alliance and one of the tool's chief architects. "It was critical that everyone in the organization involved in product development—whether in marketing, R&D, product formulation or safety, or packaging engineering—be able to use the tool regardless of the extent of their environmental knowledge."

All of the metric scores are relative rather than absolute; that is, the scores are meaningful only when compared to a benchmark product or set of products. In addition, the metrics are normalized to a common unit of product usage, expressed in

terms of the amount of time a product lasts in actual practice (i.e., weeks of use). In this way, the scores for products used at a different frequency or designed to last for different lengths of time can be directly compared. These features reflect our objective to encourage systematic continuous improvement in the environmental profile of SC Johnson's products, to assess the rate of improvement over time, and to compare different products and product designs that serve the same function on an equitable basis.

An education and guidance component was included in the tool to provide interactive, user-friendly feedback about options for a product developer to consider and to educate users as to the importance of environmental considerations in product design.

STEP—A Computer-based Environmental Product Design System

The resulting computer-based environmental product design system, which SC Johnson named STEP (Success Through Environmental Progress), has been integrated into the company's Intranet, providing desktop access to all staff involved in the product development process. Its hallmark is the combination and full integration of real-time,

Environmental Metrics

- Environmental Health
- Volatile organic chemical content
- "Bad actor" chemicals
- Packaging energy utilization
- Nonrecyclable materials content
- Dispersivity
- Missing data
- Resource utilization
- Virgin materials content
- Pallet under-utilization

Exhibit 5

quantitative environmental analysis using meaningful indicators of a product's environmental performance, together with immediate access to resources and actionable guidance on how to improve that performance. Most importantly, the tool is operational and actionable within the time and resource constraints of a real-world business context.

SC Johnson has begun using STEP to integrate environmental considerations in new product development decisions, alongside consumer acceptance, product performance, technical/ manufacturing feasibility and financial viability.⁴ Specifically:

- Environmental performance of products in its core air care, insect control and home cleaning businesses in North America will be assessed and reported using STEP beginning in January 1999. This procedure will be rolled out sequentially to other regions of the world in subsequent years.
- For all new and re-staged products, project teams will be actively encouraged to make environmental performance improvements against current SC Johnson benchmarks, with the improvements to be measured by STEP. Teams will report the extent and nature of environmental improvement they have achieved when presenting projects to management for approval.
- All project teams worldwide will undergo training in the STEP tool.

Initiative Four: Create Specific Packaging Improvements

The task force's final initiative was to conduct a comprehensive review of the company's overall use of packaging materials and recommend improvements that could be implemented through senior management commitments. In particular, it addressed SC Johnson's current use of virgin bleached paper and polyvinyl chloride (PVC) plas-

tic in packaging. The Alliance provided SC Johnson with their insights on these concerns, including: (1) PVC bottle interference with the established recycling of PET containers, (2) the lack of an effective PVC recycling infrastructure, (3) the serious impacts associated with the use of chlorine compounds both in the manufacture of PVC and the bleaching of wood pulp, (4) the toxic emissions arising from incineration of PVC, and, (5) the major environmental benefits associated with the use of recycled paper.

Since 1990, SC Johnson has been replacing PVC packaging wherever economic alternatives exist. In a number of cases, such as Windex® window cleaner bottles in the United States and Solid Glade® air freshener packaging in Europe, the replacements have been commercialized cost-effectively and with satisfactory technical performance. Now, SC Johnson is moving toward global elimination of PVC packaging, virgin bleached paperboard and corrugated packaging. Specifically, within four years the company hopes to cut worldwide PVC use in half and eliminate all virgin bleached paperboard and corrugated packaging worldwide. The company's operations in North America, Europe and Brazil, which represent about forty-two percent of current PVC packaging use worldwide, are working to completely phase out PVC packaging by the end of calendar year 2000.

Key Project Lessons

A number of key lessons emerged from our work together, that are relevant to any company wishing to enhance its business through environmental innovation. SC Johnson, like many companies, had come to believe that designing environmentally improved products and marketing them on that basis is rarely a driver of consumers' purchasing decisions. A marketing-driven company, SC Johnson is by necessity highly responsive to its customers. Any efforts to change products must be consistent with consumer demands. By shifting the environmental strategy from a costlier late-stage design modification to a less-costly initial-stage

priority consideration, we found two benefits: meeting environmental goals could become less cumbersome, and the resulting products would be more responsive to consumer needs.

The Limits of Green Marketing

The traditional approach to marketing environmentally preferable products has been to position them as being beneficial to the “environment” on a global scale. For example, the labels of some “green” household cleaning products highlight that the product does not contain ingredients derived from fossil fuels, thereby linking the product to the preservation of the world’s oil reserves, a nonrenewable resource. While many may agree on its importance, relatively few consumers would consider this a compelling reason to purchase one product over another. What’s more, in many cases the key benefit emphasized on the product label is not the function the product will perform (e.g., cleaning the bathroom), but rather the product’s environmental benefit. There is no escaping the fact that the reason a person buys a bathroom cleaner is to clean the bathroom, not to help the environment. By touting a product’s environmental benefits over performance and value, traditional “green marketing” limits both the product’s appeal to consumers, and the company’s potential for success in the marketplace.

Findings on Consumer Preferences

By participating in the design and interpretation of a major market study conducted by the anti-allergen product development team, we discovered consumers’ green touchpoints (see Endnote 1 for complete findings):

(1) Despite expectations to the contrary, most consumers are willing to *act* on their environmental concerns. A great majority (more than seventy-five percent of survey respondents have taken some action on environmental issues that affect them *personally*.

(2) When asked to rank product attributes that were worth paying more for, respondents ranked environmental attributes as a close second to product performance.

(3) Consumers were more responsive to the absence of a specific negative attribute than to general positive statements. For example, fifty-nine percent of consumers said they would pay more for a cleaning product with “no strong fumes,” as compared to forty-one percent of consumers who said they would pay a premium for a “pleasant fragrance.”

(4) No brand currently in the marketplace achieved high recognition for being environmentally responsible, suggesting a broad opportunity to introduce new products positioned to meet consumers’ environmental needs.

(5) There was not a strong preconception among consumers that product performance and environmental responsibility were at odds with one another. Nearly seven out of ten consumers disagreed that, or had no opinion as to whether, cleaning products that are “good for the environment” don’t work as well as other products.

This research suggests that, despite the poor market performance of many “green” products, there is latent but real consumer desire for products with environmental features. Based on our joint interpretation of the consumer research, which drew on both the Alliance’s environmental expertise and SC Johnson’s marketing experience, we developed a new environmental marketing approach that provides a path forward to more successful and innovative environmental product concepts (see Exhibit 6).

The main premise of this new marketing approach is that the environmental benefits communicated on a product label must relate to the consumer on a personal level. Environmental product concepts are most successful when the “environment” is articulated in terms of the consumer’s

Key Marketing Insights		
	Traditional Approach	New Approach
Definition of Environment	Global: For example, natural resource conservation, climate change, biodiversity	Local: Personal environment in home and community
Definition of Market	Small Niche: Targeted to the “green consumer” only	Big: Mainstream consumers respond to new definition of environment
Primary Product Differentiator	<p>Environmental benefit</p> <p>Result: Disappointing business performance and negative and consumer reactions</p>	<p>Performance: Environment is a secondary feature.</p> <p>Opportunity: Enhanced brand equity and superior business performance</p>

Exhibit 6

personal, home or community environment. Of course, local environmental impacts are often directly linked to more global issues. For example, a product with fewer VOCs in its formulation and, therefore, reduced fumes, will not only be more comfortable for the consumer to use due to reduced odor but will also reduce the product’s contribution to the air pollution caused by VOCs. Redefining the environment in this way broadens the appeal of such products beyond the small market niche previously targeted by environmental marketers to encompass mainstream consumers—the vast majority of whom care deeply about their and their families’ and communities’ health and safety.

Our findings also reinforce the premise that product performance, not environmental benefit, remains the primary product differentiator. Once again, environmental product concepts are most successful when no tradeoff is stated or implied between the environmental benefit and primary purchasing criteria such as efficacy, value and convenience. Instead, the environmental benefit offers

a powerful secondary differentiator that impels a consumer to buy that product over another, other attributes being equal.

Says Alliance analyst and task force member Victoria Mills:

“What we learned really turns on its head the traditional notion of environmental marketing, which might be called ‘green products for green people.’ First, it suggests a much bigger opportunity to address the environmental concerns of the mainstream consumer, and second, it offers new insights on how to translate those concerns into purchasing behavior.”

Thus, approaching consumers with a meaningful choice on environmental improvements offers a significant, and as yet virtually untapped, opportunity for consumer products companies to achieve enhanced brand equity and superior business performance through environmental innovation.

A New R&D Approach for Delivering Environmentally Improved Products

In many consumer products companies, environmental requirements—whether set by regulation, company policy or market demand—have traditionally been difficult and costly to fulfill. Information and guidance to help product designers achieve environmental objectives are often widely scattered, whether stored on paper, in databases or in the minds of environmental specialists. Product designers under tight deadlines are sometimes forced to proceed without the benefit of or easy access to this information, because measurement and comparison of a product's environmental performance typically takes too much time and costs too much money. Consequently, environmental considerations are often taken into account late in the design process, after much effort and time has already been expended on the product design—and after most of the decisions determining a product's environmental impacts have already been made. In cases where an environmental screen does turn up a problem, the necessary fix is often expensive and may slow time-to-market or even lead to product cancellation or relaunch after the product has already been introduced into the market. Finally, both know-how and accountability for the environmental performance of a product is often narrowly confined to corporate environmental staff and not to business teams' product developers themselves. Taken together, such factors lead businesses to marginalize environmental considerations, treating them as an expensive and burdensome afterthought, rather than a potentially profitable business opportunity.

We realized that this disconnect between product design and development on the one hand and environmental concerns on the other could be eradicated by implementing an environmental knowledge management system. This management system would force and facilitate linkage by providing consistent scoring and tracking of environmental performance coupled with meaning-

ful design guidance—starting early and extending throughout the product design process (see Exhibit 7). The STEP tool meets this need by examining a product's environmental impact early in the design process, when changes can be made most efficiently and economically. STEP centralizes and automates both the environmental analysis of products and access to environmental information, highlighting environmental improvement opportunities for those who have the greatest ability to effect such changes early on.

Perhaps one of the most important insights SC Johnson gleaned from looking at its product development process through an environmental lens was a broader understanding of the unnecessary, and often-hidden, extra step: the *redesign* of products, after they are launched. This “final” step requires that products be redesigned to address environmental factors (e.g., international market restrictions on certain packaging materials) overlooked or passed over in the original design process. Such redesigns are usually expensive, time-consuming, and—above all—avoidable through the early consideration of environmental criteria in product development. “We asked ourselves—why are we investing resources in product redesign?,” said task force member and SC Johnson's director of Worldwide Consumer Products Business Development for Air Care. “Rather than redesigning green, we should be designing green from the outset. This is a real strategy shift, and the STEP tool can make it happen.”

In March 1998, the Alliance-SC Johnson task force concluded its work and presented recommendations to SC Johnson's senior management, including the definition of new approaches that integrate the environment into two key business functions: marketing and R&D. The new marketing approach uses an environmental “lens” to identify previously unrecognized consumer needs. The new R&D approach facilitates the development of products that meet those needs

Key R&D Insights		
	Traditional Approach	New Approach
Real-time measurement and comparison of products' environmental performances	Impossible	Easy, systematic
Introduction of environmental considerations	Late, expensive	Early, inexpensive
Location of environmental information, mode of retrieval	Scattered, cumbersome	Centralized, automated
Accountability for environmental performance	Limited, narrow	Pervasive
	Result: Environment is marginal to core business priorities	Opportunity: Environment is a path to profitable new products

Exhibit 7

by providing a systematic means to measure and improve environmental performance (i.e., the STEP tool).

Our recommendations included specific guidance on how to institute these lessons to guide decisions at each stage of the company's product development process. These key lessons learned offer the company a long-range environmental vision and the tools to generate continuing environmental and business benefits well into the future. With their development, SC Johnson is well positioned to build on its past significant progress by setting new targets for environmental improvement of its products and packaging. We recognized that for environmental improvement to be sustained within SC Johnson (or any company), it is important to both measure environmental improvement and

introduce accountability for it at the appropriate decision points. By establishing clear goals coupled with measurement and reporting, accountability for environmental improvement will be enhanced at the brand, business and corporate-wide levels. 🦋

Endnotes

1. In order for mainstream, market-driven companies like SC Johnson to introduce environmental improvements to their products, there must be some indication that such a step will be rewarded by the marketplace. The following study, undertaken during our project, provided us with new insights into consumer demand for products with environmental features, and ways to communicate environmental benefits to consumers in terms that resonate with them.

Marketing Insights from SC Johnson Consumer Research Study—

General Facts about the Study:

- Conducted by Market Facts for SC Johnson
- Fielded in December 1996
- Subject: Consumer attitudes and habits with regard to household cleaning, including environmental issues
- Total respondents: 1595
- Gender distribution: 88% female, 12% male
- Geographic distribution: 21% Northeast, 18% Southeast, 24% Midwest, 15% South Central, 22% Western

- Annual household income distribution: 23% less than \$15,000; 18% \$15,000-24,000; 20% \$25,000-40,000; 19% \$40,000-60,000; 20% over \$60K
- Age distribution: 24% 18-34 years old, 41% 35-54 years old, 35% over 55 years old
- Education level of respondents: 5% less than high school, 29% high school graduate, 28% some college, 22% college graduate, 9% post-graduate degree, 6% not specified

Alliance’s Insights and Supporting Data

A. “Green” is not a segment, it is pervasive: a majority of respondents are concerned about environmental issues.

Statement	Agree Strongly /Somewhat	Neither Agree Strongly	Disagree nor Disagree /Somewhat
People are exposed to more dangerous chemicals every day.	75%	20%	5%
I am concerned about the quality of air in my home.	75%	19%	5%
One person can do a lot in his/her daily life to improve the environment in his/her own neighborhood/community.	71%	23%	5%
More and more people are developing allergies these days.	69%	26%	4%

Statement	Agree Strongly /Somewhat	Neither Agree Strongly	Disagree nor Disagree /Somewhat
I am bothered by the smell of many cleaning products.	51%	21%	28%
One person can't really do much about environmental problems like air and water pollution.	28%	21%	51%
Too much time and money is spent trying to preserve endangered species and other wildlife.	26%	25%	48%
I just can't worry about environmental problems I can't see.	20%	32%	47%

B. Consumers will ACT on their environmental concerns. Action is most common on issues affecting con-

sumers personally, and decreases as the issue moves away from their personal sphere of influence.

Action Taken	Ever	Never
Purchase items made from recycled materials	95%	4%
Minimize use of water, such as using low-flow showerheads	80%	19%
Visit nature preserves, forests, wilderness	80%	19%
Avoid purchasing products that cannot be recycled, or have excess packaging	79%	20%
Purchase "green" or environmentally conscious cleaning products	79%	20%
Minimize use of energy, such as using compact fluorescent light bulbs instead of regular	77%	23%
Do things in your yard or neighborhood to attract/support wildlife, such as put up birdfeeders	75%	25%
Contribute money to environmental groups	55%	45%
Volunteer time to environmental causes	40%	60%

C. More than half of respondents indicated a willingness to pay extra for environmental improvement, whereas

only a third were willing to sacrifice product performance to achieve it.

“I don’t mind paying a little more for cleaning products that won’t harm the environment.”		“I am willing to settle for somewhat lower performance in order to use a product that is better for the environment.”	
Net agree	59%	Net agree	37%
Agree strongly	21%	Agree strongly	9%
Agree somewhat	38%	Agree somewhat	28%
Neither agree/disagree	27%	Neither agree/disagree	30%
Disagree somewhat	10%	Disagree somewhat	22%
Disagree strongly	3%	Disagree strongly	10%

D. There is no strong preconception among consumers that products cannot be good for cleaning AND good

for the environment.

Statement	Agree Strongly /Somewhat	Neither Agree Strongly	Disagree nor Disagree /Somewhat
Cleaning products that are ‘good for the environment’ don’t seem to work as well as regular products.	31%	48%	20%

E. Product performance is still the top purchasing criterion, but environmental features are a close second

(shaded areas represent greater than 50% response rate).

Rank (Of 23)	“I would pay extra for the following features in household cleaning products.”	Total
1	Disinfecting	73%
2	Long-lasting germ control	72%
3	Anti-bacterial	72%
4	Safe to use around children	69%
5	Most effective formula	64%
6	No strong fumes	59%
7	No toxic ingredients	58%
8	Mild to hands	58%

9	No chemical residues	57%
10	Biodegradable	52%
11	No known carcinogens	51%
12	All natural ingredients	46%
13	Contains ingredients from plants	44%
14	Recommended by allergists	43%
15	Non-aerosol	42%
16	Pleasant fragrance	41%
17	Not tested on animals	41%
18	Concentrated	40%
19	Packaging can be recycled	40%
20	Packaging made from recycled materials	36%
21	Unscented	27%
22	No lingering scent/fragrance	26%
23	Endorsed by an environmental group	22%

F. In product claims, the absence of a negative attribute is more appealing than the presence of a positive attribute.

- Response: 59% of consumers would pay more for a cleaning product with “no toxic ingredients” (vs. 46% for “all natural ingredients”)
- Response: 59% of consumers would pay more for a cleaning product with “no strong fumes” (vs. 41% for “pleasant fragrance”)

G. There is significant opportunity to differentiate products through environmental improvement.

- Of the 42 major brand and company names listed, including several “green” labels, none received more than 35% recognition as “environmentally friendly.”

2. Design-For-Environment Metrics were developed by the Alliance for Environmental Innovation/SC Johnson task force. [Note: All metrics described below are expressed in the appropriate units *per unit of use*. By normalizing each measure to a common unit of use

expressed in time (e.g., per week of use), the scores for products that provide different numbers or types of uses can still be directly compared.]

GROUP I METRICS: Product formulation and delivery system

Environmental Health: A quantitative measure of potential hazard to ecological and mammalian health, summed across the ingredients of the formulation using the weight percent of each, and taking into account the ingredients’ inherent toxicities, environmental persistence and exposure potentials.

Dispersivity: A quantitative measure of the weight of nonwater components in the product formulation dispersed into the environment during use (and, where applicable, post-use management).

VOC Content: A quantitative measure of the weight of volatile organic compounds in the product formulation.

Missing Data: A measure of the degree to which data for a minimum set of hazard indicators are available for

the ingredients in a formulation, summed across the ingredients in the formulation using the weight percent of each.

“Bad Actor” Chemicals: A measure of the extent to which ingredients in a formulation appear on a designated set of company-specific as well as external, widely-used lists of chemicals known or suspected to pose risks to human health or the environment, summed across the ingredients in the formulation using the weight percent of each.

GROUP II METRICS: Materials used in the delivery system and for packaging

Resource Utilization: A measure of the quantity (weight) of material inputs required to produce the product and its packaging and delivery system. Material quantity includes materials used in the *product* itself (i.e., the formulation) as well as those consumed in the acquisition and processing of raw materials used in the packaging and delivery system and in their manufacture.

Packaging Energy Utilization: A measure of the quantity of energy consumed to produce the packaging and delivery system of the product. Energy includes that used in the acquisition and processing of raw materials used in the packaging (primary and secondary) and delivery system and in their manufacture.

Virgin Materials Content: A measure of the weight of the components of the product’s delivery system, and primary and secondary packaging comprised of materials that are not derived from post-consumer recycled materials.

Nonrecyclable Materials Content: A measure of the weight of the components of the product’s delivery system, and primary and secondary packaging *not* comprised of *readily recyclable materials*, based on actual current U.S. recycling rates for each material.

Pallet Under-utilization: A measure of the fraction of the total usable volume of a pallet *not* occupied by corrugated cases containing a product.

	Strategies					
	Dematerialize	Conserve Materials	Reduce Chemical Intensity	Reduce Energy Intensity	Extended Product Life	Focus on Function
Design Objectives	<ul style="list-style-type: none"> • Lightweight • Controlled/controllable usage • Concentrated/refillable/reusable • Minimize virgin materials 	Recoverable and recyclable after use Passive product delivery	Physical or less chemical Less-toxic Use better characterized chemicals	Minimize energy in use Minimize life-cycle energy of materials	Durable Long lasting	Multi-Purpose Products Preventative Service or Information

Metrics	Resource utilization	VOC content	Environmental health	Packaging energy utilization	Partially incorporated into Resource Utilization	<i>partially incorporated into Resource Utilization</i>
	Pallet utilization efficiency	Virgin materials content	Missing data “Bad actor” chemicals			
		Nonrecyclable materials content				
		Dispersivity				

3. Life-Cycle Assessment (LCA) is a formalized technique for assessing the potential environmental impacts of a product in each of its life-cycle stages (e.g., raw materials extraction, raw materials processing, manufacture, distribution, use, reuse, recycling and disposal). The primary components of an LCA are:

- An inventory of relevant material and energy inputs, and pollution and waste outputs,

- An evaluation of the potential environmental impacts associated with those inputs and outputs, and;
- An assessment of opportunities to reduce environmental impacts across the life cycle.

4. The Alliance for Environmental Innovation is developing its own generic software version of the jointly-developed STEP tool, which it plans to make available to other companies later this year.