

Cross Cutting Effects of Chemical Liability from Products

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Report prepared by:

Heather Langsner, *Senior Analyst*, Email: hlangsner@innovestgroup.com;
Noran Eid, *Analyst*, Email: neid@innovestgroup.com.

For more information on this report or other Innovest reports, please contact: Peter Wilkes, *Managing Director*, Phone: (646) 237 0216, Email: pwilkes@innovestgroup.com.

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KEY ISSUES FOR STRATEGIC INVESTORS

Chemicals/Hazardous Substances Issues are Gaining Ground in Public Discourse

Articles in *USA Today* and the *Wall Street Journal* have recently brought chemicals issues to the forefront. An NGO campaign highlighting the presence of harmful chemicals in blood, food and in babies' umbilical cords has prompted an aggressive backlash by industry.

Recent Events Demonstrate the Potential for Volatility

Innovest has been tracking what appear to be chemical liability related stock events. Recently there have been two notable examples: the fuel additive methyl tertiary butyl ether (MTBE) and DuPont's family of per-fluorinated compounds. In both cases a regulatory mandate precipitated a fall in share price significant enough to make headlines.

Wal-Mart is About to Create a Sea Change

Wal-Mart will fundamentally alter the marketplace this year by announcing a chemicals screening policy for all its suppliers. The policy emphasizes persistent bioaccumulative toxicants (PBTs), carcinogens, mutagens and reproductive toxicants, identifies a top

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New York

Mr. Peter Wilkes
Managing Director
+1 212 421 2000 ext. 216
pwilkes@innovestgroup.com

Paris

Perrine Dutronc
Managing Director
+33 (0)1 44 54 04 89
pdutronc@innovestgroup.com

Toronto

Ms. Susan McGeachie
Director
+1 905 707 0876 ext. 217
smcgeachie@innovestgroup.com

London

Mr. Andy White
Managing Director
+44 (0) 20 7073 0469
awhite@innovestgroup.com

San Francisco

Mr. Pierre Trevet
Managing Director
+1 415 332 3506
ptrevet@innovestgroup.com

Sydney

Mr. Bill Hartnett
Managing Director
+61 2 9940 2688
bhartnett@innovestgroup.com

Tokyo

Mr. Hiromichi Soma
Director
+81 3 5976 8337
hsoma@innovestgroup.com

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www.innovestgroup.com

KEY ISSUES FOR STRATEGIC INVESTORS (CONTINUED)

3 list of chemicals for action and promises an additional 17 to be listed over the next two years. In many ways, this initiative could have a greater impact than any government driven regulation. Because Wal-Mart is doing this, we expect that economies of scale will be created causing a reduction in the price of alternative products. This may have particular implications for the Food and Beverage, Durable Goods and Personal Care sectors.

Investment Dollars

This has been a record-breaking year for shareholder resolutions pertaining to toxics in products. The trend was reinforced this May via a joint statement by seventeen investing organizations collectively representing more than \$22 billion in assets under management. The initiative calls for other investors to join with them in supporting shareholder resolutions seeking better disclosure regarding capital at risk pertaining to toxics in products. A similar initiative called the Carbon Disclosure Project also started three years ago at a correspondingly low level and now represents \$31 trillion in assets under management representing 225 of the world's largest and most influential institutional investors.

California – Driver of Chemical Regulation

Investors may be aware that the national ban on MTBE was initiated in California. California's latest mandate reinforces our thesis that chemical liability may become a driver of volatility in the chemicals sector. The legislation is intended to help track economic and geographical trends of exposure to toxic chemicals. Consequently, policymakers will be able to establish chemical priority lists and shape legislation accordingly. Since the program will focus on chemicals suspected of adversely impacting human health, we expect plasticizers, flame-retardants, benzene, bisphenol A, and pesticides to be among the substances targeted. The legislation requires manufacturers to submit relevant information on the fate and transport of each chemical in the environment within one year of the state's request for the information.

Latest REACH Developments

Industry is primarily concerned with the potential that the Authorization phase of Europe's chemicals regulation scheme known as REACH (Registration, Evaluation Authorization of Chemicals), has for creating a de facto "blacklist" of chemicals that could have extensive effects across multiple sectors. The legislation, adopted by the European Union in December 2006, signals that as many as 1400 chemicals of very high environmental concern may be subjected to a tough authorization process. The substances of very highest concern can only be authorized if no suitable substitute is available and if it is demonstrated that the socio-economic benefits from the substances outweigh their health and environmental risks.

Chemicals Issues Relative to the Evaluation of Beta and Systemic Risk

This issue may have implications for the evaluation of both beta and systemic risk. Some sectors will experience uniform market risk where compliance is mandatory. In other sectors the issue will create opportunities to capitalize. Product differentiation and new

marketing platforms will emerge. In both instances relative readiness and sophistication in dealing with the issue will determine winners and losers. Our review of four sectors reveals that companies continue to struggle with this issue and now face ever increasing risk.

Many Chemicals, Multiple Regulations

While climate change regulation is focused on carbon, there are thousands of chemicals in circulation today. Only limited information is available for a tiny portion of them. This requires investors to remain abreast of multiple regulatory mandates in multiple markets around the world.

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1 Executive Summary

Chemical liability may be an increasingly important two-sided investment driver with cross cutting effects for many sectors.

In July 2005, the Wall Street Journal began a four part series of front page articles, "Toxic Traces: New Questions About Old Chemicals", highlighting potential hazards to human health from relatively small amounts of chemicals in every day products. USA Today published a related story, "Are Our Products Our Enemy?" These reflect growing scientific and public concern that has led to a series of chemical phase-outs in various sectors from electronics and semiconductors to household durables and personal care products.

Over time producers will be forced to innovate. However the economics and logistics of re-design, reformulation and mobilization for compliance may be costly and, in some cases, the failure to adapt leaves room for liability or, in some instances, loss of market share.

There is no avoiding the fact that most modern conveniences are attributable in some way to the use of chemicals in production. That stated, investor groups have become interested in how this matter will create winners and losers in various sectors. The Investor Environmental Health Network currently represents \$22 billion in assets under management but may grow over time. Its older cousin, the Carbon Disclosure Project CDP (now in its fourth year) has reached \$31 trillion.

Loss of access to major markets could pose material risks for companies that face "toxic lockouts."

Pesticides

A weakening of the conventional pesticide market may impact sales for several companies in the chemicals sector. Markets are shifting from synthetic to bio-

pesticides, driven by biotech advancements that reduce the need for extensive spraying. Citigroup cites a \$2 billion reduction in pesticide demand since 1995, a reduction mainly attributed to bioscience. The bio-pesticide industry is projected to increase by 20% per year in the US. Conversely, the synthetic pesticide market is expected to decrease by 3.14%, with bio-pesticides replacing 4.25% of that. Companies potentially affected may include: **Potash, Agrium, Chemtura, Syngenta**. Additionally we project that the **agrosciences division of Dow** will also face growing pressure amidst this trend.

Electronics

Apple Computer works diligently to comply with European chemical phaseout directives. However apparently even some Apple products did not meet the standard in 2006. **There was a brief interruption in export for various products** including the iSight, AirPort Base Station With Modem, AirPort Base Station Power Over Ethernet & Antenna, iPod shuffle External Battery Pack and all versions of the eMac all-in-one desktop computer. The issue was short-lived but demonstrates the potential risks even for proactive firms.

In 2001, Dutch officials blocked a shipment of 1.3 million Sony PlayStation game consoles because their cables contained levels of cadmium higher than those permitted by local law. Sony estimated that the blockage cost the company **\$100 million in sales**.¹

Intel states that the cost to move from lead to no-lead solder cost **\$100 million** last year.

A surge of interest in brominated flame retardants used in a wide range of consumer products such as computers, mattresses, foam or textiles has forced companies to **reformulate or exit the 457 million person marketplace of the European Union as well as lose access to the world's 6th largest economy in California**.

Personal Care Products/Multi-Line Retail

Chemicals screening policies are the latest challenge for suppliers to the multi-line retail sector. Large UK retailers such as Marks & Spencer have already begun this process and now Wal-Mart is joining them with an aggressive new policy. The company will begin implementing its "Preferred Chemical Principles" to establish a clear set of preferred chemical characteristics for product ingredients. The purpose is to drive the development of more sustainable products for mother, child and the environment. Sales related to health and beauty aids and soft goods/domestics reached approximately 23% of WMT's sales in 2006 or approximately \$18.3 billion.

¹ (The Economist, 12 March 2005)

Healthcare

More than **90% of the hospital and healthcare market** has committed to phase out phthalates from items such as blood bags. The size of the US sterile medical packaging industry: **\$1.6 billion**.

Household Durables

The green building movement has extended to the household durables sector. Three major manufacturers in the space--**Herman Miller**, **Steelcase**, and **Interface**--are implementing chemicals screening policies for their suppliers. The sum of 2005 sales for this small group of firms reached \$5.6 billion. In 2004, the non-residential green building market was estimated at about \$3.3 billion (which is 2% of the \$165 billion spent on non-residential construction). The United States Green Building Council estimates the current market for green building products and services at \$7 billion. By 2010, the market is projected to grow to between \$10.2 billion and \$20.5 billion. (Based on both overall non-residential construction starts of \$204.5 billion in 2010 and the increasing growth of green building as a percentage of total construction to between 5% and 10%).

Alternative products are a driver of growth in some markets.

The chemicals phase-out issue connects with the wider trend in consumer facing sectors toward the use of labels such as "natural", "sustainable", "organic" and so called "green" products. As such, investors may note that the use of these labels may temporarily afford producers the ability to place a premium on these goods from lumber to shampoo. Moreover there appears to be a growth trend for certain product segments. However investors may note the evolution of economies of scale. Over time, differentiated products will not bring a premium.

Premiums

Commercial eco-cleaners generally cost about 5-10% more². Despite the extra cost, the Nutrition Business Journal estimated the sale of eco-cleaning products jumped from \$140 million in 2000 to \$290 million in 2004.

According to Innovest's market research, the premium for green household and personal care products ranged from **9-25%**.

² Innovest Research: Innovest compared prices of several personal care and household cleaning products.

Sales in Some Product Categories are Increasing

Sales of US organic personal care products grew 28% to \$282 million in 2005, according to the Organic Trade Association. Personal care accounted for 38% of the total organic-non-foods category. Total sales for the category, which includes supplements, household products/cleaners, pet food, flowers, and fibers, grew 32% to \$744 million last year.³

Regulation

European regulation is highly focused on chemicals and hazardous substances issues. New legislation may result in higher costs for suppliers and may over time fundamentally alter how chemical intensive products are produced.

REACH (Registration, Evaluation and Authorization of Chemicals) mandates the registration of chemicals manufactured in or imported into the European Union. While there are tangible and imminent implications for chemicals manufacturers, this may also have far reaching secondary effects throughout the consumer and durable goods value chain.

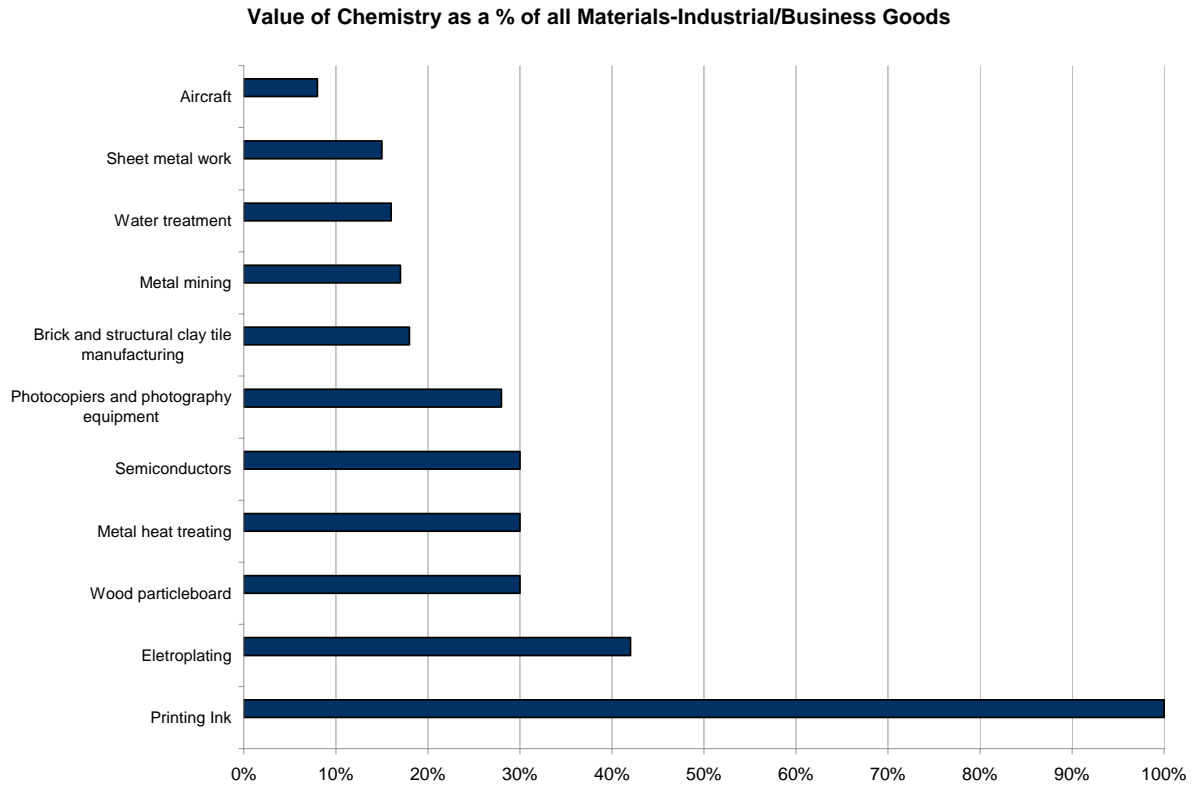
One aspect of the new legislation enacted in December 2006 may be of particular relevance for downstream producers of consumer goods. About 1400 chemicals may become subject to the legislation's Authorization provisions. The substances of very greatest concern—those those are very persistent and bioaccumulative (vPvB), and those that are persistent, bioaccumulative and toxic (PBT)—can only be authorized if no suitable substitute is available and if it is demonstrated that the socioeconomic benefits from the particular use of the substance outweigh the risks to human health and the environment. As for substances that are carcinogenic, mutagenic or toxic to the reproductive system (CMR substances), authorization will be granted if the producer or importer can show that risks from the particular use can be adequately controlled. Where adequate control is not possible, authorization will only be granted if no safer alternative exists and if the socioeconomic benefits of the use outweigh the risks.

Substitution of the most toxic substances may only narrowly affect production of most consumer facing product segments, as those products are not likely to contain first priority substances as per REACH. However, we anticipate more direct implications for **packaging, automotive, agriculture, furniture, electronics and durables**. The following charts provide a reference for how relevant chemicals are to a range of

³ Chemical Market Reporter. October 2006.

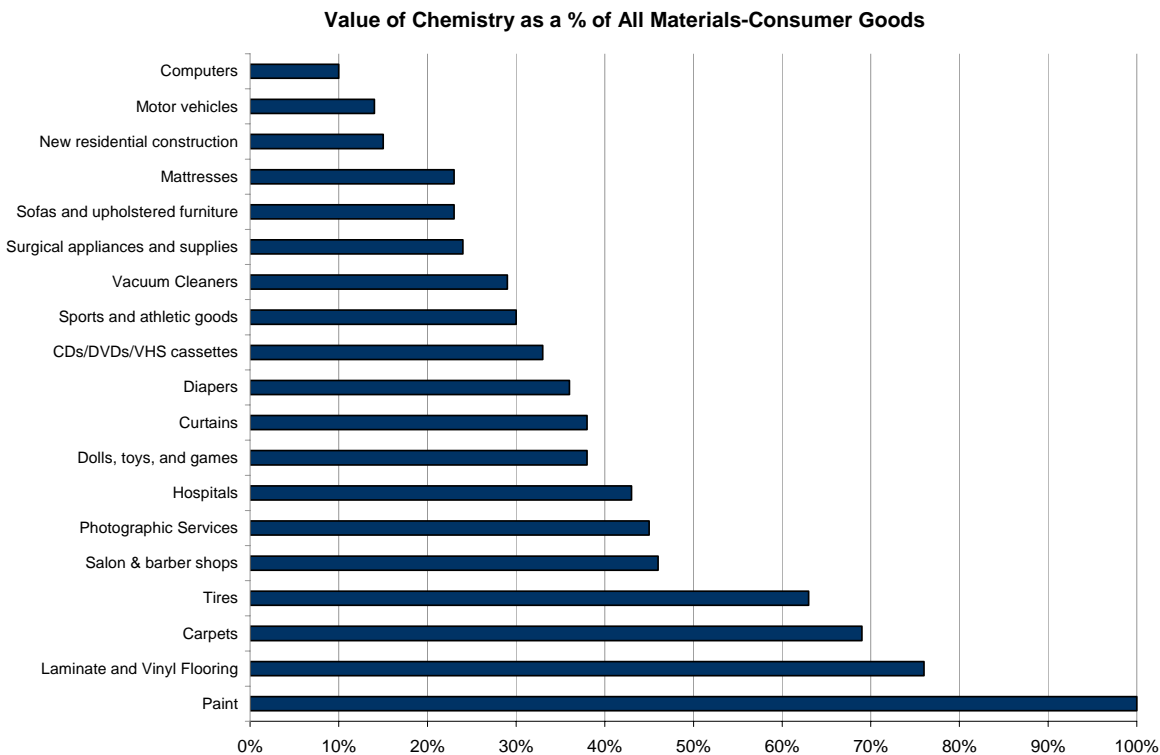
product segments. Theoretically, REACH would then be pertinent to each of these industries to varying degrees.

FIGURE 1 Value of Chemistry as a % of All Materials –Industrial/Business Goods



Source: Bureau of the Census and Moore Economics analysis

FIGURE 2 Value of Chemistry as a % of All Materials – Consumer Goods



Source: Bureau of the Census and Moore Economics analysis

Our Conclusions Are as Follows

Substances most likely to be targets for substitution include many inputs relevant to the above mentioned product categories such as: plasticizers, pesticides, flame retardants, and solvents.

Producers may not want to rely too heavily on cost estimates based on current formulations. They may begin to build out new models based on the eventuality that certain key intermediates will be taken out of the supply chain.

Theoretically downstream companies that already have the appropriate precautionary measures in place are likely to be more equipped than producers who do not. Our review of this issue across several sectors reveals that waiting until the last minute to adjust to change was not cost effective in some cases. For example waiting in the electronics sector made sense in that customers were not ready to accept new lead-

Precautionary principle: states that when an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically.

free products. However abrupt reformulations have proven costly in the production of solvents and flame retardants used in multiple industrial applications.

Re-design solely for the European market also may be short-sighted as chemicals regulation is manifesting at the state level in the U.S and several countries are attempting to mimic REACH in various forms.

Sector-Specific Regulatory Drivers

PERSONAL CARE SECTOR

The European Cosmetics Directive, adopted in 2003, outlaws carcinogens, mutagens, and reproductive toxicants in cosmetics and personal care products (approximately 1,000 chemicals). The U.S. does not currently have a counterpart. There is increasing pressure from the NGO community on U.S. companies to make those reformulated products readily available in every market they serve. Many U.S. companies sell their cosmetic products in the EU, and consequently have been required to reformulate based on the EU's stringent guidelines. Leading firms are now establishing a global standard in order to prevent costly market specific modification.

Despite its much-debated effectiveness, labeling is an issue affecting all personal care companies, as it remains the most practical way to educate consumers. Globally we find an increase in labeling initiatives. For example, Canada is now requiring full ingredient disclosure on all of its cosmetic products through amendments to cosmetic regulations that came into force in November 2006.

HOUSEHOLD DURABLES

The Innovest Household Durables rating universe is largely dominated by electronics and consumer appliance manufacturers such as **Black and Decker, Matsushita, Maytag and Bang and Olufson**. A variety of non-regulated industry initiatives pertinent to other product categories such as carpets and furniture are discussed later in this report. However electronics is clearly affected by European legislation. Restriction of Hazardous Substances (RoHS) Directive (effective as of July 2006) constrains the use of certain hazardous substances in new equipment. Manufacturers are required to remove lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE) from electronic equipment available in this market.

The trend is extending beyond Europe. Effective July 1, 2006, Japanese manufacturers have begun phasing out lead and other harmful materials in accordance with RoHS guidelines. Additionally, Japan has implemented a labeling requirement called "J-MOSS", effective July 1, 2006, on some electronic products. South Korea is planning RoHS legislation effective March 1, 2007.

Litigation

Holes in the US regulatory structure provide an incentive for those harmed by chemicals to pursue judicial remedies. Examples of such litigation leading to sizeable consequences, include:

Lead paint litigation: In October 2006, the city of Akron, Ohio filed a lawsuit against eight U.S. paint makers, seeking funds to address lead paint problems, e.g., to remove lead paint from public and private buildings. The city demanded unspecified damages in compensation for the millions spent on its lead-abatement program and funds for a public education campaign and further preventive screenings. Although subsequently dropped, this filing is demonstrative of a potential trend in the making. **Similar suits are pending in six states: Wisconsin, New Jersey, California, New York, Texas and Missouri. These cases come in wake of the February 2002 guilty verdict in the Sherwin-Williams lead paint case. On February 22, 2006, shares of Sherwin-Williams fell as much as 22% on reports that a Rhode Island jury had found the company guilty of public nuisance that impacts the health of children.⁴ We anticipate that similar cases will continue to evolve in other states demanding abatement programs, lead testing, and potential remediation for buildings affected.**

PFOA (perfluorooctanoic acid): DuPont was buffeted by a series of legal setbacks during 2004 and 2005, beginning with settlement of a class action lawsuit over PFOA discharges from one of its manufacturing facilities. In June 2005 DuPont's stock dropped precipitously on news of a \$5 billion class action consumer protection suit. A series of subsequent press releases from the EPA's Science Advisory Board seemed to exacerbate the fall in share price over the following weeks⁵. This **\$5 billion products claim** is not a tort case and will not require proof of physical harm. This class action suit is based on the claim that DuPont, knowing the potential affects of PFOA in non-stick cookware and other products, should have properly labeled Teflon and other branded products. According to 2006 accounting, an award of this amount would take up a large amount of the company's free cash flow. Hearings in this case will resume in 2007.

MTBE: The clean up of MTBE in water systems has been estimated to be in the range of **\$25-\$85 billion** according to the American Water Works Association (AWWA). The additive, found to be leaking from underground storage tanks and contaminating groundwater in communities across the country, has prompted numerous lawsuits and cleanup bills that threaten approximately 10 refiners and

⁴ Liroff, Richard and Little, Tim. "Risks to Shareholder Value from Corporate Toxic Chemicals Policies". A Fiduciary Guide to Toxic Chemical Risk. Investor Environmental Health Network and The Rose Foundation for Communities and the Environment, January 2007.

⁵ DuPont claims that the drop in shareprice that summer was attributable to raw material prices. No other company in the set reflected such a dramatic change during that time period. Moreover, most companies had since passed on such costs to customers as was reflected in subsequent earnings statements.

chemical companies with billions of dollars in penalties. Large oil companies and other producers of the additive have sought protection from Congress. The Energy Policy Act of 2005, passed in the House on April 21, 2005, **did not include a provision for shielding MTBE manufacturers from water contamination lawsuits.** The lack of MTBE liability protection in the 2005 energy bill has contributed to a shift to the use of ethanol as a substitute-blending agent. Companies producing MTBE are thus facing loss of profits in addition to facing risks of litigation due to widespread contamination of underground water supplies in the US.

Headline Risk

Over the last few years, consumer products companies have been the target of highly publicized “toxicity campaigns” brought by the NGO community. The campaigns typically demand that a product be reformulated to exclude chemicals considered toxic. In addition to the negative newsflow associated with the lawsuits, companies have been forced to offer “safer” alternatives in response to consumer demand. The number of such campaigns has spiked in recent years. Groups such as the Environmental Working Group are conducting sizeable campaigns. Collective action on the part of multiple NGOs is on the rise. One notable example is the Campaign for Safe Cosmetics, which is a coalition of public health, educational, religious, labor, women’s, environmental and consumer groups. The coalition’s goal is to require the health and beauty industry to phase out the use of chemicals linked to cancer, birth defects and other health problems and replace them with safer alternatives.

Shareholder Advocacy

Shareholder groups have been working to bring chemicals issues directly to companies. 2006 was a record-breaking year for substance related resolutions. The following chart lists such resolutions.⁶ Even more such resolutions have been filed for 2007.

⁶ Liroff, Richard and Little, Tim. “Risks to Shareholder Value from Corporate Toxic Chemicals Policies”. A Fiduciary Guide to Toxic Chemical Risk. Investor Environmental Health Network and The Rose Foundation for Communities and the Environment, January 2007.

2007 Shareholder Chemicals Resolutions

Shareholders are requesting that **Apple** publish a report within six months of the 2007 annual meeting, at reasonable cost and omitting confidential information, on the feasibility of adopting a policy of becoming a leader in the use of safe materials, by eliminating persistent and bioaccumulative toxic chemicals, and all types of brominated flame retardants (BFRs) and polyvinyl chloride (PVC) plastics, in all Apple products, including an expeditious timetable to end the use of all BFRs and PVC.

Shareholders of **Bed, Bath and Beyond** are requesting that the company publish a report on Bed Bath & Beyond policies on product safety, at reasonable expense and omitting proprietary information, by December 2007. This report should summarize which, if any, product lines or categories sold in Bed Bath & Beyond stores may be affected by product safety concerns related to PVC, PFOA, and cosmetics, and options for new initiatives that management can or will take to respond to this public policy challenge (beyond those initiatives or actions already required by law).

Shareholders are requesting that **CVS** publish a report to shareholders on CVS policy on cosmetics safety, at reasonable expense and omitting proprietary information, by December 2007. This report should summarize which, if any, product lines or categories sold in CVS stores may be affected by the new cosmetics safety legislation and consumer trends described above, and any new initiatives or actions the management is taking to respond to this public policy challenge.

Shareholders are requesting that **Dow Chemical Company** establish an independent panel, controlling for conflict of interest, to publish by May 2008, at reasonable cost and excluding proprietary information, a report analyzing the extent to which Dow products may cause or exacerbate asthma, and describing public policy initiatives, and Dow policies and activities, to phase out or restrict materials linked with such effects.

Shareholders of **E.I. du Pont de Nemours and Company ("DuPont")** are urging the company to issue a report on PFOA compounds used in DuPont products by the 2008 annual meeting, at reasonable cost and excluding confidential information, evaluating the feasibility of an expeditious phaseout of the use of PFOA in the production of all DuPont products, including materials that may degrade to PFOA in use or in the environment, and the development and adoption of safer substitutes.

Shareholders are requesting that **DuPont** report by the 2008 shareholder meeting, at reasonable cost and excluding confidential information, its annual expenditures for each year from 1996 through 2006, on attorney's fees, expert fees, lobbying, and public relations/media expenses, relating to DuPont's environmental pollution with PFOA and related fluorocarbon compounds or by dioxins, as well as expenditures on actual remediation of contaminated sites.

Shareholders are requesting that the independent directors of the Board of **DuPont** prepare a report, at reasonable cost and omitting proprietary information, on the implications of a policy for reducing potential harm and the number of people in danger from potential catastrophic chemical releases by increasing the inherent security of DuPont facilities through such steps as reducing the use and storage of extremely hazardous substances, reengineering processes, and locating facilities outside high-population areas. The report should be available to investors by the 2008 annual meeting.

2007 Shareholder Chemicals Resolutions (cont'd)

The shareholders of **Hasbro Inc.** are requesting that the company publish a sustainability report, at reasonable expense and omitting proprietary information, by December 2007. (Note: The whereas clauses of the resolution reference PVC issues.)

The shareholders of **Mohawk Industries** are urging the company to issue a report on PFOA and PVC in Mohawk Industries products by the 2008 annual meeting, at reasonable cost and excluding confidential information, discussing the feasibility of an expeditious phaseout of the use of PFOA and PVC in the production of all Mohawk products, including materials that may degrade to PFOA in use or in the environment, and the deployment of safer substitutes.

The shareholders of **Scotts Miracle-Gro** are requesting that the company report by October 1, 2007, at reasonable cost and excluding confidential information, the company's annual expenditures by category for each year from 1993 to 2005, for attorneys' fees, expert fees, lobbying, and public relations/media expenses, relating to efforts to oppose local policies to limit lawn care product use.

The shareholders of **Sears Holdings** are requesting the company to publish at reasonable expense and omitting proprietary information, a Sustainability Report. A summary of the report should be provided to shareholders by December 2007. (Note: The filing letter for the resolution references PVC issues.)

Shareholders are requesting that **ServiceMaster** prepare a report, at reasonable expense and omitting proprietary information, on the feasibility and implications of a policy to discontinue the use of synthetic pesticides at TruGreen Chemlawn, instead substituting natural and non-toxic lawncare services. The report shall discuss the impact of such a policy on our customers and our employees, and shall be available by November 1, 2007.

2006 Shareholder Chemicals Resolutions

Shareholders requested that **Dow Chemical Company** establish an independent panel to assess the implications of a policy for reducing potential harm and the number of people in danger from potential catastrophic chemical releases by increasing the inherent security of Dow Chemical facilities through such steps as reducing the use and storage of extremely hazardous substances, reengineering processes, and locating facilities outside high population areas. A similar resolution was filed at **DuPont**.

Shareholders requested that **E.I. du Pont de Nemours and Company ("DuPont")** issue a report on PFOA compounds used in DuPont products by the 2007 annual meeting. The report is to evaluate the feasibility of an expeditious phaseout of the use of PFOA in the production of all DuPont products including materials that may degrade to PFOA in use or in the environment, and the development and adoption of safer substitutes.

Shareholders requested that **Johnson & Johnson** prepare a report on the company's use of chemicals banned by EU Directive 2003/15/EC in the company's products sold to non-EU markets. Also, the report is to explore the feasibility of implementing a global reformulation plan and the costs and timeframe for global reformulation.

Shareholders requested that **Avon** prepare a report analyzing the company's policy on using safer substitutes for chemicals that are known or suspected carcinogens, mutagens, and reproductive toxicants, as well as chemicals that affect the endocrine system, accumulate in the body, or persist in the environment.

Shareholders requested that by February 2007, **Whole Foods Market** publish a report evaluating company policies and procedures for systematically monitoring and reducing consumer and environmental exposure to endocrine disrupting chemicals, including BPA, and persistent bioaccumulative toxics.

Shareholders requested that **ServiceMaster** prepare a report on the feasibility and implications of a policy to discontinue the use of synthetic pesticides at TruGreen Chemlawn, instead substituting natural and non-toxic lawn care services.

Shareholders requested that **ConAgra** publish a report within six months of the 2006 Annual meeting setting forth policy options for ConAgra to reduce or eliminate the use of PFOA-related chemicals in product packaging.

Shareholders requested that **CVS** publish a report evaluating the feasibility of reformulating all private label cosmetics products to be free of chemicals linked to cancer, mutation or birth defects, thereby globally meeting the standards set by the EU Cosmetics Directive 2003/15/EC which amended EU Directive 76/768/EEC/.

Shareholders requested that **Dow Chemical Company** prepare a report analyzing the extent to which the company's products may cause or exacerbate asthma, and describing public policy initiatives, and Dow policies and activities, to phase out or restrict materials linked with such effects.

Shareholders requested that **Becton, Dickinson** publish a report evaluating the company's policies on BFRs and other internationally recognized toxic chemicals of concern, including the status of the chemicals in company products, and a plan to revise policies and practices and to phase out the uses of target chemicals.

R&D as a Competitive Advantage – Green Chemistry

Green Chemistry:

Green chemistry is the utilization of a set of principles that reduce or eliminate the use or generation of hazardous substances in the design, manufacture and application of chemical products

Green chemistry is the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances. It is considered an overarching philosophy of chemistry, rather than a sub discipline of it. The principles of green chemistry as it relates to products encompass the following ideas:

- » **Atom economy, structural simplicity;**
- » **Chemical products should be designed to affect their desired function while minimizing their toxicity;**
- » **Chemical products should be designed so that at the end of their function they break down into innocuous degradation products and do not persist in the environment**

Market drivers for green chemistry include:

- 1 Lack of consumer trust of the chemical industry. Food and medical scares have instilled skepticism in consumers.**
- 2 Companies being held accountable for their operations, irrespective of the geographic location or the existence of a legal framework.**
- 3 An increasingly educated public is more aware of what poses a risk to them and their families. Research shows that consumers are opting for natural, organic alternatives.**

A number of companies have opted to invest in green chemistry, seeing it as a strategic profit opportunity. **Marks and Spencer**, for example, is involved in several projects aimed at delivering knowledge and understanding of Green Chemistry to consumers and retailers.

2 Sector Impacts and Management of Chemicals Issues

Given what appears to be a build up of interest by consumers, NGOs, regulators and investors, the following review is designed to illuminate the disparate impacts of chemicals issues for four key product segments: Personal Care, Multi-Line Retail, Healthcare Equipment and Supplies and Household Durables. This is followed by the results of our survey of top companies in each segment. How companies deal with chemicals phase-out issues can indicate how well they are strategizing for more general competitive challenges.

PERSONAL CARE PRODUCTS

The personal care sector is a sub-sector of nondurable consumer goods, which includes manufactured products that last a relatively short time, usually three years or less. The S&P Personal Products Index rose 7.7% through the year ending July 21, 2006 versus a 0.8% decline in the S&P 1500. Earnings in 2006 are expected below 2005 due to high raw material and energy costs⁷.

Leading Household Products and Personal Care Companies Ranked by Market Capitalization⁸

Company	Market Capitalization (Billion USD)
Procter & Gamble	201
L'Oreal	64
Reckitt Benckiser PLC	34
Colgate-Palmolive Company	33
Kimberly-Clark Corp.	31
Henkel AG	21
Avon Products Inc	15
Beiersdorf AG	15
Kao Corp.	15

⁷ "Industry Trends". Choe, Howard. Standard and Poors Industry Survey. June 22, 2006.

⁸ "Household Non-durables Industry Survey". Choe, Howard. Standard & Poors Industry Surveys. June 22, 2006.

Conventional Industry Driving Forces

Emerging Markets

Increased foreign direct investment in Eastern Europe, China, and India has caused rapid growth in gross domestic product (GDP), disposable income, and population in many of these countries. Appetites for consumer goods have correspondingly risen. Producers are scrambling to meet demand.

Demographics

Demographic changes including an aging population, a rise in dual-income households and increased number of females in the labor market mean that consumers are looking for more varied and application-specific products. For example, we note an increasing number of new products targeting the “baby boomer” demographic. According to marketers, individuals above the age of 55 are very attentive to their looks. Consequently, companies have recorded strong skin care and hair coloring sales increases in recent years. Products which promise to reduce wrinkles and give eternal youth are becoming more and more widespread in the market as product formulation and marketing is targeting, and is expected to continue to target, this growing population.

New Product/Innovation Capabilities

Given the maturity of the personal care sector, competitiveness in the sector is largely dependent on new product development. Companies that establish rigorous R&D strategies may be better positioned to steadily launch new products, deliver consumer demands, and establish niche markets. According to S&P, niche markets which are getting increasing attention include male personal care products, organic and ‘wellbeing’ products, and products that complement fast-paced lifestyles.

Product Stewardship Trends

INTELLECTUAL CAPITAL: GREEN CHEMISTRY⁹

The recent introduction of cellulosic polymers and safer, more effective plant based solvents indicates that green chemistry is likely to take on a central role in product development for the personal care sector over the next 3-5 years. Companies such as Body Shop, Avalon Organics, and Unilever have committed to the use of green chemistry techniques in product innovation. Regulatory (the EU Cosmetics Directive) and changing consumer preferences fuel demand for more environmentally efficient products. Business benefits of green chemistry include:

- » **Consumer brand trust**
- » **Differentiated, higher value added products**

Barriers to Implementing Green Chemistry Principles:

Absence of level ‘playing field’ i.e. lack of global harmonization on regulations & environmental policy

A consumer culture geared to looking at product itself rather than overall process & life cycle

⁹ Anastas, Paul and Warner, John. Green Chemistry: Theory and Practice. Oxford University Press, USA; May 2000.

- » **Innovations that often turn out to be more effective than conventional predecessors**
- » **Preparedness for legislative changes**
- » **Sustainable product portfolio**
- » **Reduction of raw materials, energy, and waste**

MARKETS: CONSUMER CONCERNS DRIVE GROWTH OF ORGANIC/NATURAL PERSONAL CARE PRODUCTS

Increasing consumer awareness regarding chemical safety of products has already prompted growth in demand for “greener” products. In 2005 the French natural/organic personal care market marked a 40% increase, becoming the fastest growing market in Europe. Similarly, the UK market for natural/organic personal care products is growing at a rapid rate, with sales almost doubling between 2002 and 2005. The US natural/organic personal care market noted a growth rate of 22% in 2005.

Market growth is attributed to rising consumer awareness concerning chemicals in personal care products and the rapidly widening availability of organic/natural alternatives. In response to this trend, multinational beauty giants are adapting by making major acquisitions. Examples this year include Colgate's purchase of Tom's of Maine and L'Oréal's purchase of The Body Shop International.

Additionally a number of **shareholder resolutions** have surfaced regarding corporate chemicals screening. Investors' growing interest in chemicals screening is reflected in the eleven resolutions that were filed for the 2006 proxy season regarding product toxicity and environmental health.

Model for Product Stewardship and Innovation

- » **Definition of chemical assessment criteria using a science-based approach**
- » **Application of life cycle management concepts to product development processes**
- » **Constant monitoring of scientific findings and fairly frequent revision of chemical screening criteria**
- » **Alignment of supply chain with corporate chemicals policy**

Brand Equity Issues, Personal Care and Household Products

A multitude of markets studies refer to women and specifically mothers as key household purchasing decision makers and depict branding and brand loyalty as being particularly critical to the industry.

Environmental and health related consumerism is trendy. Countless magazines now include articles and layouts pertaining to the “greening” of cleaning supplies, household items and personal care products.

Moreover there appears to be a groundswell of NGO activity surrounding the issue of chemicals in personal care and household products. Shareholder resolutions, extensive letter writing campaigns to manufacturers, and informative websites are the impetus for the marked shift toward alternative products. NGO activity is becoming more robust specifically due to the efforts of the Environmental Working Group (<http://www.ewg.org>), which has launched a searchable database of products that have been tested and identified for endocrine disrupting, carcinogenic and other deleterious properties. The database is searchable by brand name and identifies companies that are allegedly omitting key information from their labels.

Increasingly busy consumers gather information via websites before purchasing. This represents an opportunity and a challenge for companies like P&G and Body Shop. On one hand there is more of an opportunity for consumer education and product differentiation through green/natural messaging. Conversely, the increased use of the internet as an information source prior to purchase means companies are subject to increased scrutiny. Consumers have access to everything from ingredients lists to corporate responsibility information, which is a boon for leaders but may be detrimental to laggards as branding is intrinsically linked to these issues and as consumers increasingly make purchasing decisions based on such factors.

Information based primarily on personal communication with Rikke Netterstrom, Ethical Policy Manager, The Body Shop International, 17th May, 2006

Corporate Case Study: The Body Shop

A pioneer of naturally-inspired personal care products, the Body Shop currently operates 2,045 stores in 53 countries. The Group's principal activities are the development and sale of skin and hair care products and related items. As of mid-2006, The Body Shop was sold to French giant L'Oréal.

Body Shop has outlined a detailed chemicals policy. In addition to the adoption of the precautionary principle, the company has defined a specific action plan for each class of chemicals of concern. The policy includes specific actions that are to be taken and outlines the company's commitments. Body Shop has committed to eliminate phthalates, PVC, brominated flame retardants, and Bisphenol-A from products and packaging. This is the leading practice among publicly traded, large cap companies in the Innovest ratings universe.

Additionally, Body Shop explicitly states that in its 54 countries of operation, all products and packaging are held to the same standards. Hence a single “safe” formulation is the most cost effective solution as opposed to multiple market specific formulations. This is still a practice for some firms.

Basic Aspects of The Body Shop Chemical Policy

- 1 Adoption of the precautionary principle**
- 2 Explicit and unconditional consistency of the policy across all global operations**
- 3 Cooperation with numerous third-parties to ensure that the list of chemicals of concern is comprehensive and up-to-date**

Analysis

The Body Shop excels across the majority of criteria in our analytical model for assessing quality of chemicals policy (knowledgeable retail staff, good enforcement, acknowledgement of the business case, etc.). The only weakness brought out in the analysis was the fact that the Body Shop simply does not provide enough information on its website as to why its products are better or differentiated from the numerous “natural” product lines that are emerging from competitors.

Although The Body Shop was the original leader in natural personal care products in the 1980s, the market seems to be becoming more sophisticated and specific. It is difficult not to connect this to the increasing inclination of educated consumers to read labels and research products online before making a purchase. Financial analysts say that The Body Shop is losing market share to competition from mainstream manufacturers who are now developing their own natural product strategies.

A simple remedy for this could be to highlight the key differences between The Body Shop products and the many so-called “natural” products being offered even by generic brand discount retailers. Moreover for those not inclined to read labels, companies like Marks and Spencer, Unilever and Boots are, for all intents and purposes, certifying the environmental and safety aspects of products under their umbrella. This removes the research burden from the consumer.

The need to communicate with consumers is further underscored with L’Oreal’s recent takeover of Body Shop. Unlike Body Shop, L’Oreal does not subscribe to the precautionary principle. However, L’Oreal has committed to global reformulation under pressure from the Campaign for Safe Cosmetics (www.safecosmetics.org). The span and time frame for implementation of these reformulations is not specified. While L’Oreal has identified chemicals of concern and has developed vague action plans for these substances, Body Shop’s precautionary principle has led to a much more comprehensive list, with well-defined substitutions. With L’Oreal’s significantly

different approach to chemical screening in products, Body Shop faces risks of association. Risk by association is already evident from various consumer groups stating plans to boycott Body Shop in response to the acquisition. The majority of these boycotts are over animal testing issues. Although independence from the parent regarding chemicals policy and animal testing was a condition of the agreement, post transaction The Body Shop now clearly needs to re-emphasize its positioning to the public.

HEALTHCARE EQUIPMENT & SUPPLIES

The Healthcare Equipment & Supplies sector includes a number of mature and well established companies, and a significant number of companies that have formed as the result of mergers between smaller business units in the last few decades. These fast growing companies have profited on the strength of very specialized and innovative products.

Leading Medical Appliance and Equipment Companies Ranked by Market Capitalization¹⁰

Company	Market Capitalization (Billion USD)
Medtronic	61
Baxter International Inc	31
Boston Scientific Corp.	25
Stryker Corp.	23
Zimmer Holdings Inc	19
Becton, Dickinson & Company	17
Luxottica	14
Synthes Inc	14
Saint Jude Medical Inc	12

Conventional Industry Driving Forces

Demographics

With longer life spans, the aging population is increasing. As a result, demand for healthcare products has been stimulated. Growth in demand of products directly catering to this age group includes cardiovascular and orthopedic products.

¹⁰ "Industry Center-Medical Devices and Equipment", Yahoo Finance, Accessed Aug 7, 2006. www.finance.yahoo.com

Emerging Markets

We note heavy expansion of manufacturing facilities into emerging markets as well as a large dependency on sales from emerging markets. US medical device manufacturers garner 40% to 50% of their revenues in foreign markets.

Consolidation

As in many sectors, industry consolidation is increasing, driven by increased competition and the need for companies to gain critical mass in acquiring a larger market share. M&A activity is also being driven by the uncertainty caused by recent economic weakness and maturing markets.

Technical Change

New technologies are shaping the industry. There has been much advancement in innovations that are providing alternatives as well as a growing number of medical conditions that can be treated at home. The aging population will also encourage governments around the globe to promote new technologies to reduce the cost of healthcare.

Product Stewardship Trends in the Medical Devices Sector

Health Care Without Harm

Health Care Without Harm is a global coalition of 443 organizations in 52 countries working to protect health by reducing pollution in the health care industry. The organization is clearly a major force for change in this sector and claims on its website that in just one decade it has been able to:

- » **Eliminate the market for mercury-based medical equipment in the United States, and generate demand for safe alternatives.**
- » **Close thousands of medical waste incinerators and promote safer technologies and waste management practices in the US and around the world.**
- » **Create new markets for safe and healthy products by leveraging the purchasing power of the health care industry.**
- » **Initiate a Green Building program specifically geared to hospitals.**
- » **Develop a Healthy Food project that is changing the way hospitals purchase food to support sustainable agricultural practices.**

PVC/DEHP Phase-out

April 2006 marked the first supply of non-PVC/DEHP IV containers. Leading manufacturers Hospira and Baxter announced the launch of new containers, which weigh 40-60% less than comparable IV containers. Backed by intensive campaigning by the NGO community, the launch of these alternatives by the two largest players in

the industry signifies a future trend for medical device manufacturers. Hospira and Baxter represent approximately 90% of the market. Concurrent to this initiative, over 110 health care organizations have committed to reducing the use of medical supplies that incorporate PVC or DEHP.¹¹

Rising Regulatory Scrutiny

Several companies in the sector have committed to voluntary compliance with the European directive RoHS. Medical devices are currently exempt. However proactive companies are preparing for the eventuality that the sector will be included.

Key Chemicals Spotlight

Baxter and Hospira, representing 90% of market share in the US hospital supply industry are both committed to phase out of di-2-ethylhexyl-phthalate (DEHP), which has gained significant notoriety as an endocrine disruptor. DEHP is a softening agent that changes the properties of PVC (polyvinyl chloride) in order to make tubes and IV bags. It is persistent and bioaccumulative. Blood bags are one form of possible exposure to DEHP since it appears to be readily absorbed by blood. More generally Health Care Without Harm is working to reduce the use of a variety of harmful chemicals used in the industry including brominated flame retardants and mercury. There is also a call for firms to eliminate dioxins from the incineration of hospital waste.

Regulatory Issues

The process of bringing new products to market is lengthy, particularly for products classified as Class I and Class II medical devices (such as medical gloves and condoms) which require 510(k) FDA (Food and Drug Administration) approval and similar approvals from non-US regulatory agencies. These regulations are particularly advanced in the US, beginning with the Medical Devices Act of 1990 and in Europe, with the completion of the work required by the Single European Act of 1986 and its on-going implementation.

Global Regulatory Trends

In addition, harmonization of regulatory requirements on an international basis has led to the adoption of an international QMS (Quality Management System) standard, which is being implemented progressively by various regulatory authorities including the FDA, the Commission of the European Union, and the Japanese Ministry of Health and Welfare. Companies that preemptively identify emerging trends such as legislative changes (i.e. in product changes/ manufacturing) will be able to differentiate themselves from companies which take a more reactive approach. It may

Endocrine disruptors:

Substances which interfere with the endocrine system by mimicking, blocking or otherwise disrupting the function of hormones.

¹¹ *Top Hospital Suppliers Announce Safer Non-PVC Medical Devices at CleanMed.* 23 April, 2006. Health Care Without Harm. 16 July 2006 < <http://www.noharm.org/> >

also be less costly to gradually adapt rather than deal with abrupt change to the supply chain.

Case Study: Baxter International¹²

Information based primarily on communication with Julie Brautigam, Manager, EHS Compliance, Baxter International, 15th June, 2006 and Tracey Easthope, Health Care Without Harm, 11th September, 2006.

Pros of third party assistance:

Increased supplier cooperation: Confidentiality concerns are curbed if suppliers submit material compositions to a third impartial party.

Experience: Capable third-party assistance can aid in thorough material assessments and substitutions.

Time and resources needed to train employees and for benchmarking are reduced.

Marketing: association with a credible third-party can provide a powerful marketing tool to raise consumer awareness about the company's progress.

Baxter International Inc. develops, manufactures and distributes a diversified line of products, systems and services used primarily in the health-care field. The company is a leading manufacturer of intravenous (IV) supplies and systems. The company manufactures products in 28 countries and sells them in over 100 countries.

Basic Features of the Baxter Safer Chemicals Policy

- 1 **Developed a safer chemicals policy in conjunction with an impartial third-party**
- 2 **Baxter is preemptively and voluntarily complying with global regulations that currently do not apply to the company as yet.**

Baxter's strategy is to monitor for new chemicals of concern and prioritize which chemicals are most urgent for the company to act upon immediately. This involves some screening. Baxter International is another example of a company which employed the help of a third party not for the implementation but for the development of a safer chemicals policy, a trend we have noted in other sectors. Baxter's chemicals screening list is compiled with the help of the NGO "Health Care Without Harm". Subsequently, the company suggests these lists are adopted into the product development process. It is not clear how specifically they are used.

In addition to chemicals monitoring and prioritization, Baxter has preemptively committed to RoHS compliance, despite the current exemption of medical devices from this directive. Through the product development process every single material is screened to determine toxicity, community concerns, and customer concerns.

Senior management is not involved in the formulation of safer chemicals policies. Management members are simply made aware via briefings.

Baxter is currently in the preliminary stages of setting up a **supplier screening** process. Still in the planning phase, the company's R&D team, information systems team, and EHS department are currently working on establishing an integrated database for suppliers. Supplier screening criteria are determined by the FDA.

Consumer trends have also been relevant in company decision-making. Baxter claims that the phase-out of PVC/DEHP IV bags was prompted by its customers. Note that Baxter has also been pressured by NGOs to take this step since 1999. Baxter's apparent slow response has already had negative consequences. In

¹² Information based primarily on personal communication with Julie Brautigam, Manager, EHS Compliance, Baxter International, 15th June, 2006 and Tracey Easthope, Health Care Without Harm, 11th September, 2006.

Cons of third-party assistance:

Active engagement in formulation of chemical screen is at a minimum

Lack of internal science-based decisions regarding chemical screens makes the company highly dependent on third-party assistance.

Decreased autonomy in shaping policies to coincide with corporate mission statement and goals.

November 2005, Catholic Healthcare West, a system of 40 hospitals and medical centers in the western United States, contracted with a competitor, B. Braun Medical Inc. for PVC/DEHP-free IV bags switching away from Baxter¹³. **The lost contract was worth \$70 million.** There appears to be a continuing lack of managerial synthesis regarding the potential repercussions of a slow response to phase out issues. The company recently described DEHP/PVC-free materials as a "niche" market, although they had previously signed a Memorandum of Understanding with shareholders committing to timetables for the complete transformation of their IV product line. It is unclear if the company remains committed to the MOU.

Challenges to Implementing a Safer Chemicals Policy for Baxter

- 1 **Obtaining FDA approval for new products or for product changes**
- 2 **Establishing a comprehensive supplier database to thoroughly track chemicals in raw materials**

MULTI-LINE RETAIL

Leading Multi-line Retailers by Market Capitalization

Company	Market Capitalization (Billion USD)
Wal-Mart Stores, Inc	197
Target Corp	49
EBay	43
Wal-Mart e MEX SA De CV	36
Sears Holdings Corp.	26
Costco Wholesale Corp.	24
Marks & Spencer Group PLC	24
Kohls Corp.	22
Metro AG	22

Conventional Industry Driving Forces: Multi-Line Retail Sector

Low Profit Margins

Retail is a low profit margin, high volume sector, with revenues generated as a result of market share success rather than overall market growth. As a result, risks bear more weight relative to other sectors. With such severe competition, price becomes

¹³ Catholic Healthcare West Press Release. CHW Switches To PVC/DEHP-Free Products To Improve Patient Safety And Protect The Environment. Posted November 21, 2005. Accessed August 16, 2006.

the main determinant, achieved via cost reductions. To achieve desired cost-cuts retailers are currently looking overseas to market expansion and cheaper supply chains. As a result, retailers are exposed to a new set of risks regarding supply chain management and environmental issues. Safer chemicals policies provide an opportunity for retailers to enhance competitiveness and secure a niche market. Retailers which provide safer/alternative products have the benefit of specialization to stand out from competitors, fulfilling a need for concerned shoppers.

Supply Chain Issues

This is possibly the most important issue facing the sector, and has come under increased scrutiny from consumers, many of whom are taking a more active role in ensuring that the products they buy are manufactured in a responsible manner. At the same time, monitoring a supply chain for quality control has become increasingly difficult, with manufacturing being outsourced to less developed countries and supply chain structures becoming increasingly complex, consisting not only of primary suppliers, but secondary and tertiary suppliers. These additional dynamics within supply chain management pose great challenges for the retail company, which must endeavor to ensure its policies are implemented downstream. Leaders in the sector have adopted rigorous third party supplier audit systems and work with suppliers to adopt stringent screening standards.

Brands and Marketing

Success of a retailer depends heavily on the ability to create a more compelling sales mix by investing in new brands, marketing, and in-store presentation to drive business. With growing consumer awareness regarding safer chemicals, retailers can differentiate themselves by formulating a marketing plan which provides consumers with safer alternatives, thus attracting and maintaining a loyal customer base.

Online Sales

According to the US Department of Commerce, online retail sales reached \$87.8 billion (or about 2.5% of total retail sales) in 2005, up from \$69.2 billion in 2004. Online retailers increased their share of total retail sales in 2006, achieving \$25.2 billion in the first quarter, a 25% increase over the first quarter of 2005, and 2.6% of total retail sales. The scope of what operating a website can do for a retailer is changing. Consumers increasingly are using retailer websites as a place to research products before traveling to a store. This is providing an excellent opportunity for retailers to educate consumers about their safer alternatives. Online retail giant, drugstore.com, reported their "natural store" as being one of their fastest growing segments with a sales increase of 23% per annum.

Information based primarily on personal communication with Mike Barry, Manager, Head of Corporate Social Responsibility, Marks and Spencer, 16th May, 2006.

PVC Lifecycle

Of all the plastics, polyvinyl chloride plastic or vinyl is the most environmentally damaging.

From raw material inputs to disposal PVC is a problem.

Production involves volatile and toxic chemical additives. Finished products may release these harmful additives

PVC creates toxic wastes on disposal.

Marks and Spencer Case Study¹⁴

Marks and Spencer Group PLC's principal activities are retailing clothes, food, and home products. Marks and Spencer operates 399 UK stores and offices, and 155 stores managed under franchise in 30 territories, mostly in Europe, the Middle East, Asia, the Republic of Ireland, and the USA. With 70,550 employees, Marks and Spencer achieved sales totaling USD 1.1 billion in 2005.

Basic Features of Marks and Spencer's Chemical Policy

- 1 **Manage chemicals in the supply chain**
- 2 **Lobby for more stringent regulation**
- 3 **Convene and brainstorm with the chemicals industry to find practical solutions to substitution issues, etc**
- 4 **Invest in green chemistry research**
- 5 **Engage with stakeholders on issues**

Among the most notable features of the Marks and Spencer chemicals policy is the commitment to **phase out PVC packaging**. The company is part of a core group of retailers spearheading this movement. Innovest has been tracking the impact of this on upstream markets. Currently, the company is estimated to use over 70,000 tons of packaging. As a result of the new policy, 50-60 million items are presently packaged using the biodegradable polymer polylactic acid (PLA). This is congruent with Innovest's outlook for the future of PVC. Phase-out decisions, similar to that of Marks and Spencer, are becoming increasingly common, especially as viable alternatives are being developed quickly. The number of retailers adopting similar commitments is on the rise. Sector laggards which have not addressed this issue are facing risks of losing competitiveness as consumers are provided with increasingly available and affordable alternatives.

Another distinctive aspect of Marks and Spencer's strategy is the emphasis on **consumer and employee education**. Informative posters, credit card-sized cards explaining the company's policy, articles in the staff magazine, and frequent "table talks" are among the methods used by the company to raise employee awareness.

For customers, Marks and Spencer takes the thought-work out of the consumer's hands by providing a trusted brand that the consumer can generally resort to consistently rather than screen individual products.

¹⁴ Information based primarily on personal communication with Mike Barry, Head of Corporate Social Responsibility, Marks and Spencer, 16th May, 2006.

Information based primarily on personal communication with Stephen Johnson, Sustainable Development Manager, Alliance Boots Group, 10th May, 2006

In August 2006, **Boots-Alliance** announced plans to expand further into the US market following the successful launch of its products in Target. The company is currently conducting negotiations with CVS regarding its next phase of roll-out. CVS has stated that the plan should help increase sales for its cosmetic and skin care segment. In light of CVS's product mix, carrying a safer alternative may well serve that purpose.

Boots PLC Case Study¹⁵

In July 2006, Boots Group PLC and Alliance UniChem plc merged to create Alliance Boots. The health and beauty group currently operates about 3,000 drugstores in five countries in Europe and in Thailand. Alliance Boots is also a leading pharmaceutical wholesaler in Europe, serving more than 125,000 pharmacies, hospitals, and clinics in eight countries. The company has begun offering Boots-brand products in 500 of Alliance Unichem's Pharmacy shops.

Basic Features of Boots' Chemical Policies

- 1 The Chemical Working Group which provides technical expertise
- 2 Comprehensive supplier database
- 3 Invest in green chemistry
- 4 Adoption of the precautionary principle

The defining characteristic of the Boots policy is a keen awareness of the technical side of corporate chemicals management. The company has established a **Chemicals Working Group (CWG)** to make judgments about appropriate actions to be taken regarding specific chemical substances. In addition to scientific data, non-scientific opinion and public concerns are taken into consideration by the CWG. As a result, a well-defined, comprehensive priority substances list has been developed which sets priority for phase out of specific chemicals and establishes action items. Additionally, action dates are specified for each aspect of the policy. **Boots has adopted the precautionary principle regarding nonylphenol ethoxylates, CFCs, hexachlorophene, cyclotetrasiloxane, and phthalates.** Progress review is conducted every 6-8 weeks. As the company produces about 55% of the products sold in its stores, such decisions regarding specific chemical groups not only concern product screening, but become a fundamental aspect of product design.

Boots promotes consumer education via the company's website where the company provides comprehensive information on its chemicals screening policies and procedures. However employee education appears to be limited when compared with Marks & Spencer. While there are basic efforts in place, the company appears weak in terms of keeping employees informed.

Boots has developed a thorough supplier screening system. A central database includes all the products and their respective ingredients (including secondary preservatives). The database is then assessed for risks and policy decisions are made accordingly. The decision is then relayed to the development team and reports are written up. The company has its own scientists to assess hazards and compliance. Boots has developed a Risk Assessment Model to gauge the

¹⁵ Information based primarily on personal communication with Stephen Johnson, Sustainable Development Manager, Boots Group Plc, 10th May, 2006

environmental, social, and economic benefits of each product. The company also states that it attempts to influence legislation.

Analysis

Competitive Corporate Chemicals Policy Trends in the Retail Sector

PVC packaging: We note an increasing number of retailers that have committed to PVC phase-outs. While retailers are at different stages of implementation, we see this as a trend in both European and US markets. Within such a competitive sector, companies that do not offer shoppers alternatives may very well risk losing business to competitively-priced alternatives. For example, as noted above, Marks and Spencer committed to a PVC phase-out. By the end of 2002, one year following its commitment, the company had replaced approximately 99% of PVC packaging on food products. Major supermarket chains in Austria have eliminated PVC. Nearly all supermarkets and many other major retail chains in Germany don't accept any PVC in packaging material. Danish retailers are also rejecting PVC. However, this is not exclusively a trend in the European market as can be seen from retail giant Wal-Mart's decision to phase out PVC in its private label packaging by the end of 2007.

When analyzing leaders in the retail sectors we note different approaches that are taken to achieve successful chemicals screening policies.

Some companies take a scientific hands-on approach in identifying chemicals of concern. Retailers that choose this approach will have structured scientific teams that monitor research and conduct their own testing concurrently. This approach augments the company's credibility; gives the company greater autonomy in developing its own effective chemical screens, and helps companies avoid the risk of being associated with third parties. The downside to this approach are the costs associated with launching and maintaining a competent scientific team, as well as the resources that such a team might divert from issues such as consumer education and employee awareness.

Another pattern that companies follow is dependence on a third party for scientific background, while concentrating on the outreach aspects of a safer chemicals policy. Typically companies will collaborate with NGOs to develop up-to-date lists of chemicals of concern. Benefits of such an approach include reduced costs as the research aspect is outsourced. Additionally, collaboration with a third party can guarantee impartial judgment during policy development. Furthermore, a company's association with an NGO or with an equally trusted entity may increase consumer confidence and serve as a powerful marketing tool. On the flipside, fundamental differences in ideology and objectives may hinder cooperation between retailers and NGOs. This becomes even more of a problem if the company does not have a scientific team and is solely reliant on the third-party for their research needs.

HOUSEHOLD DURABLES

The household consumer durables sector includes household furniture (SIC 251), household appliances (SIC 363), and lawn and garden equipment (SIC 3524). Sales of these items are intrinsically tied to disposable income and therefore general economic conditions.

Household Durables by Market Capitalization

Company Name	Market Capitalization (billions USD)
Philips Electronics KON	46
Matsushita Electric Industrial Company	44
Sony Corp.	44
Nintendo Company Limited	31
Sharp Corp.	18
Fortune Brands Inc	13
Garmin Limited	12
LG Electronics Inc	8
Newell Rubbermaid Inc	8
Whirlpool Corp.	6
Harman International Industries Inc	6
Casio Computer Company Limited	6
Black & Decker Corp.	5

Conventional Industry Driving Forces

Real Estate

The real estate market and the household durables market are closely linked as home owners purchase/expand their homes and furnish them. With household purchases on the rise, household durables are expected to grow concurrent to this trend. The US Census Bureau estimates that new housing starts rose 5.6% to 2.1 million units in 2005, compared with nearly two million in 2004. Additionally, as private homes get larger, this translates into a higher demand for household durables.

Demographics

Baby boomers are the demographic responsible for the largest contributors to sales in this sector. For example, baby boomers are the most active demographic group when it comes to remodeling, accounting for about 56% of all home renovations. According to the National Association of the Remodeling Industry (NARI), a trade association, Americans spent \$250 billion to renovate their homes in 2005, a 60% increase in comparison to 2000.

New Product Development

In recent years, notable trends in product development include the development of “smart products” and the improvement of product functionality. With such rapid product development, R&D is an increasingly important indicator of performance. Maytag estimates that, in 2005, about one third of its revenues derived from new products. Companies that are prescient with product development remain competitive in wake of increasing consumer demand for the new and improved.

Emerging Markets

As manufacturers in emerging markets provide cheaper alternatives, US furniture manufacturers have been slowly losing market share. According to the Department of Commerce, imports increased at an annual rate of 13.7% between 1996 and 2005. As a result, US manufacturers have had to employ drastic cost-cutting measures to remain competitive, including moving manufacturing facilities to emerging markets.

Product Stewardship Trends in the Household Durables Sector

Emerging Markets Competition

The household durables sector has minimal pricing power and low profit margins. To remain competitive, companies are providing consumers with quality, innovative designs to attract and retain a loyal consumer base. Among quality offerings are products which provide consumers with safer chemical alternatives, creating a niche market immune to foreign competition. Companies that have not created an innovative mechanism of differentiating themselves will be subject to fierce competition from cheaper imported alternatives. According to the US Department of Commerce, US household furniture imports increased 10.9% in 2005, and imports from China comprised 48.6% of that total.

Industry Eco-Initiatives

THE CARPET AND RUG INSTITUTE GREEN LABEL PROGRAM

Green Label Plus is an independent testing program which was initiated by the Carpet and Rug Institute (CRI) to identify products which have met, and continue to meet, emissions standards for a range of possible chemicals including benzene, formaldehyde, styrene, and vinyl acetate. Compliant products are labeled to instill consumer confidence. With increasing consumer product safety concerns, eco-labels can help differentiate companies from competition, and provide them with a loyal consumer base. Currently 23 companies provide “Green Label Plus” certified products, including industry leaders such as Interface, Mohawk, and Shaw Industries.¹⁶

¹⁶ *Green Label Testing Programs*. July 29, 2005. The Carpet and Rug Institute. 20 July, 2006 <<http://www.carpet-rug.org/index.cfm>>

NON-PVC CARPETS

Healthcare giant, Kaiser Permanente, announced the need for PVC-free carpet to meet its stringent environmental standards in 2004. As a result, Collins & Aikman Floorcoverings (C&A) introduced a new carpet line, which uses an alternative plastic material for the carpet backing. We note a growing number of carpet products in the market that provide the consumer with a PVC-free alternative. Currently Interface, Milliken & Co, and Shaw Industries are among the suppliers of PVC-free carpets. Companies which have committed research efforts towards providing their customers with alternatives are now enjoying a niche market. As consumer concerns over product safety increase, companies which have not been prescient risk losing market share and brand trust.

Case Study: Steelcase

Steelcase, the world's biggest office furniture manufacturer, realized sales of \$3 billion in 2006. The company's wide range of products includes architectural solutions, tables, desks, lighting, as well as surface materials.

Basic features of the Steelcase safer chemicals approach:

- » **Thorough investigation of material composition with the aid of a third-party**
- » **Facilitating supplier cooperation using a third party to overcome confidentiality issues**
- » **Identifying business risks and opportunities associated with material composition (example: PVC phase-out commitment).**

Steelcase has opted for third party assistance in implementing a safer chemicals policy. Product and process design firm McDonough Braungart Design Chemistry (MBDC) has developed a protocol to determine and categorize materials chemistry up to parts per million. Currently, MBDC is assessing all materials that are used by Steelcase for product production. This assessment phase, which has been ongoing for the 18 months, is currently at 50% of completion. Upon completion of material assessments, the company will proceed to address the problematic aspects of the materials currently used. Problematic materials are defined according to human and environmental health criteria classified by MBDC. Evaluation criteria for materials include carcinogenicity, reproductive toxicity, mutagenicity, and endocrine disruption. This phase also entails defining all business impacts and opportunities associated with such materials and, finally, the appropriate management strategies are put into place. Currently, Steelcase has committed to not using PVC in all new products and a phase-out of PVC from all existing products is scheduled by 2012.

When analyzing the Steelcase experience, the benefits from third party assistance include:

- 1 Increased supplier cooperation. One of the main obstacles cited by companies implementing safer chemicals initiatives is the lack of supplier cooperation. Confidentiality concerns are curbed if suppliers submit material compositions to a third impartial party.**
- 2 Experience. Capable third-party assistance can aid in thorough material assessments and substitutions allowing the company to bypass employee training and the allocation of resources needed for benchmarking.**

Steelcase's leading policy has given the company a competitive advantage in the bidding phase, with reportedly 80-85% of all bids involving an environmental requirement. The company reports increasing consumer requests regarding products using PVC, formaldehyde, and other materials with environmental and health concerns, which have been a major driving force behind the company's decision to commit to a PVC phase-out. As PVC phase-out requests are being viewed by the company as a greater market shift towards PVC alternatives, we note the company's initiative in identifying this market trend in its earlier phases. Steelcase has taken advantage of this consumer trend, which has enabled the company to create a niche market.

Case Study: Herman Miller

Herman Miller is a top US manufacturer of office furniture with products including ergonomic devices, storage solutions, and freestanding furniture. Partially owned by Ariel Capital Management and Barclays Global Investors, sales in 2006 amounted to \$1.7 billion.

Basic Features of the Herman Miller safer chemicals approach:

- 1 Material evaluations with the aid of a third party**
- 2 Cradle-to-cradle design methodology was developed by the company using MBDC's concepts as a model for their own system.**
- 3 Thorough understanding of the business case for environmentally salient product development.**
- 4 Significant senior management involvement in safer chemicals policy formation**
- 5 New employees hired specifically for the implementation of Herman Miller's Design for the Environment Program.**

Herman Miller is another example of a company that has adopted the McDonough Braungart Design Chemistry (MBDC) Cradle to Cradle Design Protocol. Through the MBDC design protocol all new products are evaluated according to material chemistry, ease of product disassembly at the end of their useful life, and recyclability (recycled content of products and the ability of the product to be recycled at the end

of its useful life). Through its work with MBDC, Herman Miller has developed its Design for the Environment Program to evaluate product in the design phase. The company's DfE product assessment tool evaluates product design through "material chemistry" which involves identifying all chemicals used to manufacture a product down to 100 parts per million. After the chemicals are identified, the potential toxicity is evaluated and each chemical is assigned a "score" accordingly.

In order to thoroughly evaluate material chemistry thoroughly, and to identify safe, suitable substitutions, significant work with the supply chain was needed. Subsequently, Herman Miller has adopted a stringent supplier screening process which entails gathering detailed chemical content data from suppliers, especially manufacturers of plastic parts, coating finishes, and colorants.

Employee awareness of Herman Miller's efforts is impressive. The Design for the Environment Program is used effectively to improve employee morale. This was facilitated due to heavy senior management involvement in the Design for the Environment Program, as managerial sentiment was relayed to junior employees resulting in an impressive sense of ownership by staff members.

Concerning consumer education, Herman Miller discloses its work extensively via its website. Additionally, the company's affiliation with the reputable MBDC serves as an additional marketing tool.

Analysis

The employment of a third-party to aid the implementation of an effective chemicals screen is an approach that is often affiliated with cost savings, as additional staff are not needed. The case of Herman Miller is not consistent with this pattern, as the company employed additional staff to enhance internal capacity building. Additionally, staff devoted to the correct implementation of this policy ensures that third-parties have more insight into the company's needs and goals, thus steering the chemicals management policy accordingly. Another winning aspect of this strategy is the company's ability to continue with its Design for the Environment Program, independent of MBDC's involvement. Conversely, Herman Miller is incurring additional expenses to implement a safer chemicals policy relative to sector peers.

SCORING METHODOLOGY

An analytical set was established to ensure a wide range of variance in the results. The screening methodology consists of the following criteria:

- 1 Companies filtered according to Standard Industrial Code or SIC code**
- 2 Products of interest constitute minimum of 10% of revenues**

3 Companies within the large-cap range.

Within this set, companies were then analyzed using a tailored variation of the Innovest methodology focused on market risks, product risk and improvement, and strategic profit opportunities. Within the resulting analytical set of 40 companies, leaders and laggards were defined within each segment and subsequently best practice was determined. Companies were evaluated based on a comparative analysis of strategy and approach within specific industry sectors.

Scoring within sectors was based on a *relative benchmarking* within the set of companies listed. A relative comparison does not immediately indicate ideal performance it simply depicts better practice within the group. Additionally, scores are not comparable across sectors. Best practice between sectors is very differently defined and a unified definition is not applicable.

	A-Range
	B-Range
	C-Range

To differing degrees the following criteris were applied in determining the ratings:

A well-defined chemicals policy outlining a list of chemicals of concern, specific targets and a time-frame for these targets.

Some indication of upper management involvement or support of the chemicals policy.

Consistency of product formulations across all global operations.

The integration of the policy with core business operations.

A preemptive approach to regulatory developments; voluntary compliance to impending regulation.

Close collaboration between R&D and EH&S staff.

An understanding of the business case for a stringent chemicals policy especially the effect of proactive policies on brand trust.

The firm's ability to raise customers' awareness regarding the issues pertinent to product safety and sustainability.

Internal Capacity Building: The firm's ability to establish internal structures, protocols and training in order to strategically adapt and respond to product stewardship issues.

Data Development: A firm's ability to track regulatory and scientific developments and develop internal tracking of sales patterns related to product stewardship efforts.

Supply Chain Alignment: Coordination with suppliers in order to develop safer and alternative products for the market and in order to ensure that certain chemicals are not present in proprietary products

PERSONAL CARE AND HOUSEHOLD PRODUCTS

	Corporate Commitment to a Safer Alternatives Policy	Consumer Awareness	Internal Capacity Building	Data Development	Supply Chain Alignment
Avon Products Inc	4	3	3	2	3
Christian Dior	0	2	2	2	1
Clarins	0	1	3	2	3
Colgate-Palmolive Company	1	0	2	3	3
Elizabeth Arden Inc	0	0	0	0	0
Estee Lauder Companies Inc	0	0	0	0	0
Henkel	6	6	7	7	5
L'Oreal	1	0	2	5	5
The Body Shop	10	6	10	10	10
Revlon Inc	1	0	0	0	0
Shiseido Company Limited	0	0	1	2	4
Unilever PLC	6	6	7	6	7
Procter & Gamble Company	5	7	5	5	7

HEALTHCARE EQUIPMENT AND SUPPLIES

	Corporate Commitment to a Safer Alternatives Policy	Consumer Awareness	Internal Capacity Building	Data Development	Supply Chain Alignment
Baxter International Inc	9	8	6	5	2
Becton, Dickinson and Co	8	3	4	4	1
Pall Corp.	6	4	3	3	4
Medtronic	3	1	2	1	1
Polyone	1	0	2	2	2
Poly Medicure Limited	0	0	1	1	2
Terumo Corporation	7	7	5	5	7
Tyco International Limited	2	1	3	3	5

MULTI-LINE RETAIL SECTOR

	Corporate Commitment to a Safer Alternatives Policy	Consumer Awareness	Internal Capacity Building	Data Development	Supply Chain Alignment
Costco Wholesale Corp.	3	2	2	5	0
Kohls Corp.	0	1	0	0	5
Marks & Spencer Group	10	8	9	9	9
Target Corp.	6	4	4	5	4
Wal Mart Stores Inc	8	7	7	6	8
Boots Group PLC	10	8	8	10	9
Kingfisher plc	9	7	7	8	8
Home Depot	2	1	3	3	2
Lowe's	4	1	4	4	3
Sears Holdings Corporation	0	1	1	1	1

HOUSEHOLD DURABLES – VERY LOW RESPONSE RATE. WE ANTICIPATE THAT THE RESPONSE RATE WILL IMPROVE WITH SUBSEQUENT EDITIONS OF THIS REPORT.

3 Investment Strategy

A Note About Laggards in the Analysis

We encountered an inconsistent response rate across all sectors. In the case of a non-response, it was assumed that the company either did not have a policy and/or that it was very weak compared to other companies in the set. In these instances we relied solely on information from the website when available. It is difficult to point specifically to one firm to show how the lack of policy or a low quality policy would have immediate repercussions. However the following concepts point to the growing importance of the business case for sophisticated corporate chemicals management and going forward it may become increasingly easy to put dollar figures to these concepts:

Wal-Mart Creates Sea Change for the Sector

In this case, Wal-Mart is on the verge of launching a mass campaign to “green” its supply chain including a comprehensive chemicals screening policy. The details of this are emerging. However, the implications of such a move are fundamentally clear. When as a result of Wal-Mart’s actions safer alternatives to conventional products are produced in larger volumes, the price premium – the primary barrier to market penetration until now – will be eliminated.

Liability

Personal care products and blood bags are inherent examples of where a chemicals policy is the first line of risk avoidance. Once a particular ingredient becomes widely known as a potential hazard, market share is lost and then regulation may occur. The swift exit of talcum powder for babies is one example.

Charging a Premium for Differentiated Products

We have mentioned throughout the report that companies are availing themselves of the opportunity to provide differentiated, higher valued products. Steelcase and Herman Miller are providing non-PVC chairs at a premium. However the increasing emphasis on green building and sick building issues means that the premium will be worth it for some customers.

Number of Companies Increasing

Laggards will increasingly feel competitive pressure as the number of companies adopting chemicals management strategies increases. Given the above factors, those companies who fail to keep up may find themselves missing out on market share and repeat business.

Investors

The use of extra-financial analysis to complement traditional financial models in portfolio management has been expanding rapidly across Europe and now even in the United States. The reason for this is clear; these issues are reflective of management quality, which is a key determinant of performance in the stock market. In certain sectors chemicals management is a key proxy for overall management quality in that it affects the core revenue stream and basis for increasing market share: corporate imaging and brand trust. In light of this, use of the model will become increasingly applicable to a wider range of companies and will serve as a way to determine differences between firms operating within sectors. In the meantime, investors would do well to place investments with firms who scored well on our initial attempt to conduct this rating. See pages 37-38 for sub scores.