



Investor Environmental Health Network

HEALTHY PEOPLE...HEALTHY BUSINESS

November 13, 2009

Mary L. Schapiro, Chairman
Commissioner Kathleen L. Casey
Commissioner Elisse B. Walter
Commissioner Luis A. Aguilar
Commissioner Troy A. Paredes
c/o Secretary
Securities and Exchange Commission
100 F St. NE
Washington, DC 20549-2521

Re: Reforming disclosure of emerging risks
/SEC Strategic Plan

Dear Chairman Schapiro and Commissioners Casey, Walter, Aguilar and Paredes,

I am writing on behalf of the Investor Environmental Health Network to urge the Commission to address current shortcomings in registrants' disclosure of emerging risks. In addition to taking specific actions defined in this letter and the attached report, we urge the Commission to integrate these issues into the SEC's Strategic Plan for fiscal years 2010 – 2015.

The Investor Environmental Health Network is a collaborative partnership of investment managers focused on the risks and opportunities associated with toxic chemicals in products. A list of members of the network is attached as an appendix to this letter.

In our experience, registrants generally fail to provide robust disclosure of emerging risks of interest and concern to us as investors, particularly when it comes to the material financial implications of emerging information on technological hazards of the registrant's products or activities.

We are concerned that the Commission's ongoing work, and its draft strategic plan, do not yet reflect the need for improved disclosure guidance on these issues. The draft strategic plan notes (p. 23) that the SEC will continue to evaluate and where necessary amend its requirements to improve the quality and usefulness of registrants' disclosures to investors. Stated areas of focus include disclosure about "risk management" and "discussion and analysis of results of operations and financial condition." Although emerging risks, both financial and technological, may be among the issues contemplated under either of these topical categories, we urge explicit inclusion or reference to the issue of emerging risks.

As a priority, we urge the Commission to:

- 1) Develop materiality guidance, clarifying further how and when the Management Discussion and Analysis applies to emerging environmental, health and social issues facing a company;
- 2) Exercise SEC oversight of the FASB to ensure improved contingent liability disclosure standards;
- 3) Ensure that shareowners can place resolutions regarding such emerging issues on the annual proxy statement.

Below, we will expand upon each of these recommendations.

Develop Guidance on Materiality of Environmental and Social Issues in the MD&A

As detailed in our enclosed report, **Bridging the Credibility Gap: Eight Corporate Liability Accounting Loopholes That Regulators Must Close**, SEC and FASB rules currently allow, and even encourage, registrants to conceal financial risks associated with emerging issues, as exemplified by the use of materials and products with significant toxicity concerns. For instance, our report found some companies heavily investing in **nanomaterials** today that appear to be engaging in inadequate or misleading disclosures related to potential hazards and the resultant financial implications. In particular, some of the materials being developed by nanomaterials companies have already been found to bear significant hazard similarities to asbestos, but this information is not contained in any registrants' disclosure statements.

Our report recommends clarifying the specific duties of disclosure in the Management Discussion and Analysis when emerging science forewarns of product hazards. A letter on environmental, social and governance-related disclosures submitted by the Social Investment Forum (SIF) to the Commission on July 21 integrates this recommendation in one of its two core recommendations. The letter proposes that SEC guidance require the following types of narrative disclosures:

- Discuss the relevant trends or developments such as trends or significant developments in scientific studies that may relate to public health or environmental risks associated with products or activities. The disclosure of these significant developments should be required even if there is scientific debate or uncertainty, such as some studies finding a lack of such impacts.
- Describe the severity and scale of the problem, such as the percentage of the company's expected sales volume that a potentially problematic product comprises, the potential extent of workplace exposures where materials are used in the fabrication of goods, or overall potential human health effects and to the greatest extent possible qualitatively or quantitatively describe the magnitude of potential liabilities or opportunities associated with the issue.
- Review measures being taken to minimize adverse impacts or maximize business opportunities associated with the issue. Examples could include consumer education,

research, materials modification or substitution, development of new products or services, exposure reduction, public policy efforts, fieldwork, third-party auditing, adoption of new codes, insurance, employee training or other actions.

Our report is supporting evidence for the SIF proposal, and we urge favorable Commission action on the entire SIF proposal, including integration of the needed staff resources into the Strategic Plan.

Engage in Oversight of the Financial Accounting Standards Board

We also document in our report how, historically, concealment of the true scope of asbestos liabilities preceded many a bankruptcy – with great cost to investors. There is much work to be done in order to apply the lessons of these corporate tragedies and to update the SEC and FASB disclosure frameworks to protect investors. However, in FASB deliberations currently under way, it appears that the Board is veering away from addressing serious investor information needs.

The draft SEC plan refers to oversight of the FASB accounting standards process; the FASB's recent back-pedaling on corporate disclosure of contingent liabilities underscores why strong SEC oversight is needed now.

In 2008, the FASB issued an exposure draft proposing revisions to a critically important standard, relating to contingent liability disclosures under FAS 5 and Fin 47. However, under fire from the registrant community and their attorneys, the board recently stated that it would reevaluate its proposal and consider ways of moving forward while avoiding requirements for disclosure of “predictive” information, because of concern that it could be potentially prejudicial in litigation.

This statement was in response to the position taken by the corporate bar in opposition to the FASB proposal; the attorneys essentially asserted that any requirements for new predictive disclosures would be prejudicial to companies' position in litigation and therefore should not be required by the FASB. Such an extreme position is strikingly different from the principled approach taken to “prejudicial” information by the courts, where a balancing test is used to weigh how prejudicial and how useful information will be. Under federal and state rules, evidence which might be considered prejudicial will nevertheless be found to be admissible in evidence if it is “more probative than prejudicial.” Instead of acquiescing in the FASB's elimination of disclosure of predictive information that is so important to investors, the SEC should instead encourage the FASB to shape its guidance to ensure that the categories of information required to be disclosed are those for which disclosure would be, as a general matter, “more probative than prejudicial” - in other words, to sort through the categories of potentially discloseable information in light of this principle. In so doing, it is apparent that there is substantial room to improve contingent liability disclosures.

The most prejudicial aspect of the FASB FAS 5 proposal, from the perspective of the corporate bar, might be the prospect (optional under the FASB proposal) of disclosing a probability-based

estimate of the total amount of liability. The likelihood of success in litigation is best known by the attorney handling the case. This would take strategic information - from the mind of an attorney representing the company in litigation, and highly relevant to negotiations -- and place it on record. Such disclosure of an attorney's mental impressions could indeed violate the fundamental integrity of the judicial system.

In contrast, information on the range of potential liabilities, severed from the question of the likelihood of specific outcomes, can in many instances be disclosed in a manner that is less prejudicial.

For example, one possible scenario for a company to identify and disclose the range of possible liabilities may be derived by benchmarking the number of cases pending at a company against similar suits that have been resolved at other companies. This is not prejudicial, since it is based on the simple application of mathematics to publicly available information.

Dow Chemical used such an analysis to disclose in its form 10-K for 2002 a previously unestimated \$2.2 billion asbestos liability after it acquired Union Carbide. Many other companies can and should have offered similar information to investors to fairly inform them regarding pending liabilities. But in the absence of rules requiring it, many hold back and resort to the "known minimum." Requiring such disclosures and projections would clearly be more probative than prejudicial.

Another scenario would involve calculation of the range of liabilities through the use of external consultants who produce their estimates using benchmarks and other public information, without access to any privileged information. Again, even though plaintiffs might reference such figures, the probative value of such data to investors (and the potential to avoid costly duplicative consulting work of this kind across the investing economy) would exceed any prejudicial impacts.

It will take leadership to get the FASB FAS 5 redeliberation back on track. We urge you to exercise such leadership in the SEC's FASB oversight process.

Improve the Shareholder Resolution No Action Letter Process

Another of the recommendations of our report relates to shareholder resolutions. The draft Strategic Plan states (p. 31) that the SEC will continue to improve the process for no action, interpretive and exemptive regulatory requests, ensuring that "responses are completed in a timely and efficient manner." However, the reforms should focus equally on empowering investors to use the process to address germane issues, including emerging risks.

We were grateful and delighted to see the Division of Corporation Finance issue its new Staff Legal Bulletin 14E, which allows shareholders to file shareholder resolutions requesting disclosure of the financial risks associated with significant social policy issues. This reversed a serious error in recent staff practice and one which was flagged in our report.

However, in a September 22 meeting of affected stakeholders with Corporation Finance Director Meredith Cross and staff, it became apparent to me and others attending that there remains a lack of clarity about whether **emerging issues** relating to hazards of products or activities of a company would necessarily qualify as a significant social policy issue sufficient to ensure that a resolution addressing such issues would not be excludable.

The staff implied during the meeting that shareholder resolutions addressing emerging issues might be excludable either because the staff might view the issue as not “big” or longstanding enough, (and for instance, if an issue had had not yet commanded front-page coverage in major news outlets), or if the resolution related to a retailer selling the products in question without control of the products’ manufacture. See, for example, *Walgreen* (avail. Oct. 13, 2006, addressing toxic materials in private label cosmetics and personal care products), *The Home Depot* (avail. March 4, 2009, relating to prominently featured CFL bulbs containing mercury) and *Wal-Mart* (avail. Feb. 27, 2008, addressing toxic materials in toys). These staff decisions allowed major retailers to exclude resolutions addressing the toxicity of products on their shelves – a serious concern to investors due to reputational, liability and regulatory risks associated with the sale of toxic products.

In many instances where exclusion has been allowed, the retailers’ purchasing power is significant. In fact, in the case of Wal-Mart and The Home Depot, the companies’ purchasing decisions are of sufficient scale to set standards that will drive market practices. These topics of social policy and risk monitoring are appropriate arenas of share owner dialogues and resolutions for concerned investors; indeed, despite adverse SEC rulings on shareholder resolutions directed at retailers, shareholders have made significant progress in dialogue with some retailers on these product toxicity issues, notably at Wal-Mart and CVS. Thus, the staff decisions allowing exclusion of resolutions addressing such emerging risks should be revisited as part of the Strategic Plan.

Thank you for your attention to these issues.

Sincerely,

A handwritten signature in black ink, appearing to read "Sanford Lewis". The signature is fluid and cursive, with the first name "Sanford" being more prominent than the last name "Lewis".

Sanford Lewis, Counsel
Investor Environmental Health Network

cc:

SEC Investor Advisory Committee

Kenneth A. Johnson, Office of the Executive Director, SEC

Appendix 1
Members of the
Investor Environmental Health Network

Adrian Dominican Sisters
As You Sow Foundation
Boston Common Asset Management, LLC
Calvert Group, LTD.
Catholic Healthcare West
Domini Social Investments, LLC
Green Century Capital Management, Inc.
Harrington Investments
Inhance Investment Management, Inc.
Maryknoll Sisters
Mercy Investment Program
Newground Social Investment
Parnassus Investments
Pax World Funds
Portfolio 21
Progressive Investment Management
Sentinel Investments
Sisters of Mercy, Regional Community of Detroit
Sisters of St Francis of Philadelphia
Trillium Asset Management Corporation
Trinity Health

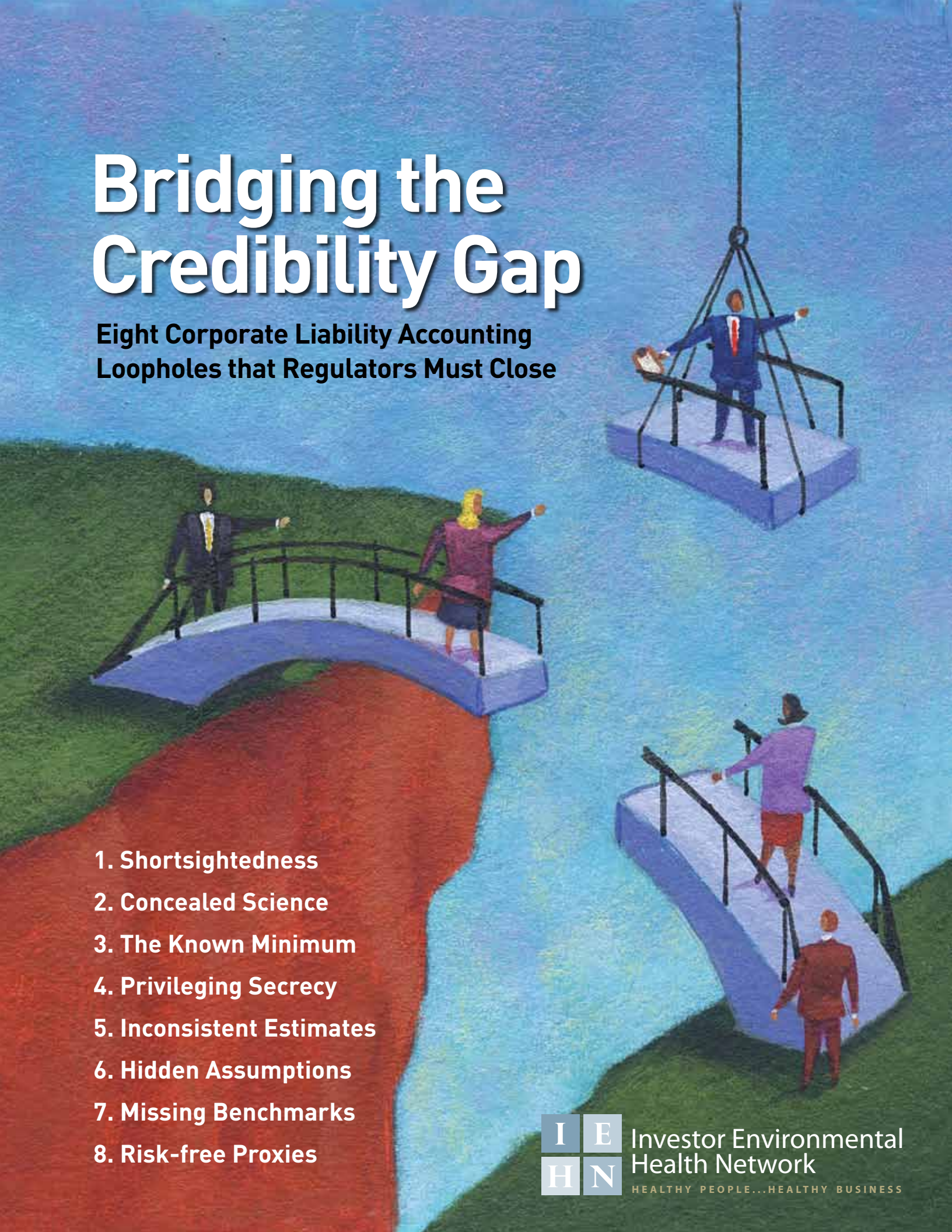
Appendix 2

Investor Environmental Health Network Report

Bridging the Credibility Gap: Eight Corporate Liability Accounting Loopholes that Regulators Must Close

Bridging the Credibility Gap

**Eight Corporate Liability Accounting
Loopholes that Regulators Must Close**

- 
1. Short sightedness
 2. Concealed Science
 3. The Known Minimum
 4. Privileging Secrecy
 5. Inconsistent Estimates
 6. Hidden Assumptions
 7. Missing Benchmarks
 8. Risk-free Proxies



**Investor Environmental
Health Network**

HEALTHY PEOPLE...HEALTHY BUSINESS

Bridging the Credibility Gap

**Eight Corporate Liability Accounting
Loopholes that Regulators Must Close**

**Sanford Lewis, Counsel
Investor Environmental Health Network**



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About the Publisher

This report is a publication of the Investor Environmental Health Network, which is a collaborative partnership of investment managers advised by nongovernmental organizations. Through public policy work regarding investor rights and disclosure, as well as dialogue and shareholder resolutions, IEHN addresses the risks and opportunities associated with toxic chemicals and safer alternatives in products. IEHN is a project of the Rose Foundation for Communities and the Environment.

About the Author

The author Sanford Lewis is counsel to the Investor Environmental Health Network and an attorney whose law practice focuses on corporate disclosure and shareholder rights. He participated in the March 6, 2009 roundtable of the Financial Accounting Standards Board regarding reform of contingent liability reporting under FAS 5.

Acknowledgments

The author wishes to acknowledge researchers Margaret Byrne, M.S., Joshua Nugent, and Emil Vasilev, and editorial assistance of Tim Little, Executive Director of the Rose Foundation for Communities and the Environment and Richard Liroff, Ph.D., Executive Director of IEHN.

Legal Disclaimer

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Summary

The current financial crisis has highlighted the failure of the federal regulatory system to ensure honest accounting. The meltdown of trillions of dollars of value followed upon prior regulatory failures earlier in the decade. Despite regulatory reforms instituted after Enron and WorldCom, such as the Sarbanes-Oxley Act, corporate disclosures failed to forewarn against most of the problems facing markets today.

This report examines one group of regulatory loopholes that continue to render corporate financial statements and disclosures a highly approximate and unreliable indicator of value. Our research identifies loopholes regarding disclosure and estimation of potential and pending liabilities that have already cost shareholders hundreds of billions of dollars, as companies with poor accounting and disclosure have declared bankruptcy, wiping shareholder value off the books.

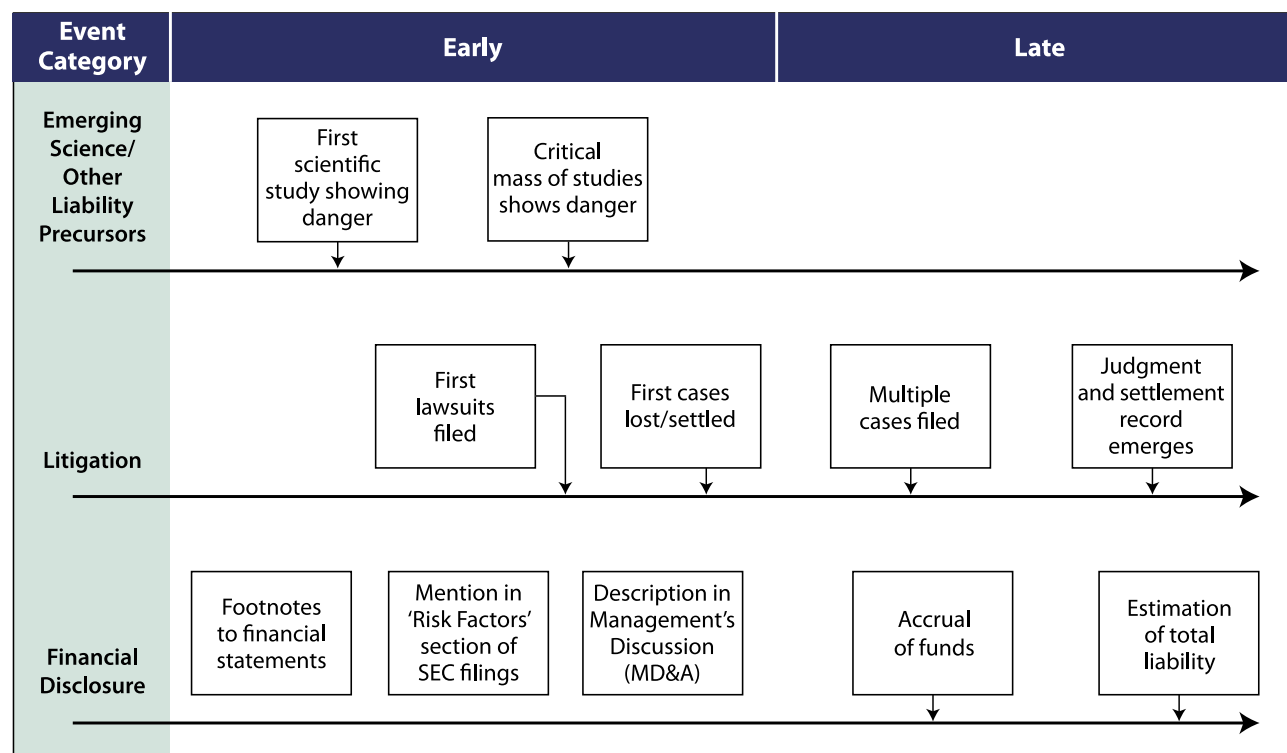
Among other things, the regulatory flaws encourage companies to conceal damaging scientific

findings from investors, fail to disclose estimates of the range of potential liabilities, and place undue reliance on litigators, in conflict with their obligations to protect privileged information.

Today the investing public is more aware than ever of the tendency of companies to deny, or treat as only remotely likely, issues that may one day pose dire financial consequences for the companies and their investors. The problem of ensuring honest accounting for liabilities is of critical concern to restoring investor confidence. Although disclosure of potential liabilities balances various considerations, our report documents that the current rules do not strike the optimal balance, and that there are practical solutions.

The issue is urgent. As Mary Schapiro, Chairman of the Securities and Exchange Commission has stated, "Until investors believe in basic integrity of financial markets, they will put their money in mattresses instead of mutual funds."

Emerging Risks/Contingent Liability Disclosure Timeline



Our research indicates that as a result of weak regulations, companies do not assess, quantify or disclose potential and pending liabilities on a timely basis. Consequently, shareholders and analysts are unable to use existing disclosures for a realistic evaluation of many companies.

We find that regulators have yet to close loopholes that have already cost shareholders hundreds of billions of dollars due to under-reported liabilities, wiping shareholder value off the books.

Today, as potentially ultrahazardous nanotechnologies enter the market, the same regulatory weaknesses that allowed asbestos manufacturers to conceal information from investors are being abused once again to conceal information regarding the newer technologies. Regulators must act now to prevent a repeat of past financial disasters, and to ensure that investors' expectations of forthright accounting are met.

Although our report focuses on product-related liabilities, many of our findings are equally applicable to the broader array of contingent liabilities that appear in disclosure reports and financial statements. We offer public policy recommendations to the Securities and Exchange Commission and the Financial Accounting Standards Board to ensure better assessment and disclosure of financially material liabilities.

Case Studies

This report focuses on two case studies—asbestos and nanomaterials—to assess the effectiveness of the existing financial disclosure regulations, and to develop recommendations for improvements.

Case Study 1: Asbestos

From the earliest days, asbestos companies concealed information regarding the emerging scientific understanding that their products were hazardous. Over the course of decades, more scientific information emerged signaling serious hazards to the human respiratory system. But asbestos companies hid this information from workers and investors.

Later, as asbestos lawsuits mounted, disclosures and estimates of the level of liability exposure were deferred and minimized for as long as possible, leaving investors in the dark. Asbestos companies relied on accounting rules allowing them to only accrue the “known minimum” liabilities, to hide key assumptions in order to reduce liability estimates, to provide different estimates to insurers and investors, and to fail to benchmark their emerging liabilities against those of other companies that had already faced similar claims. Investors were typically the last to know that a company's assets and income would not cover its liabilities. Eventually, the companies surrendered to the inevitable, disclosed their more realistic estimates, and declared bankruptcy. In many instances, investors were blindsided as unestimated and underestimated asbestos liabilities flipped suddenly into bankruptcy and shareholder value was eliminated in its entirety.

The asbestos case study examines numerous company examples, including:

- Johns-Manville, where lawyers pressured a scientist to use a series of assumptions that led successively to lower and lower disclosed estimates of liability exposure. Previously disclosed quarterly report liability estimate, \$350 million; estimate on bankruptcy, \$2 billion.
- Kaiser Aluminum, which failed to benchmark its liability estimates against litigation outcomes at other companies even though it would have led to much higher and far more accurate liability estimates. Previously disclosed liability estimate \$160 million; liability at bankruptcy amounted to billions of dollars.

- Dow Chemical, which acquired Union Carbide without disclosure of \$2.2 billion in asbestos liabilities that were only estimated later.

Case Study 2: Nanomaterials

The second case study relates to nanomaterials, a promising new technology which shows striking parallels to the history of asbestos. Investors are currently being poorly informed about the prospects of long-term liability associated with certain nanomaterials. This case study demonstrates the need for clearer standards for disclosure so that investors are armed with the data on risks essential to make rational and informed investment decisions.

Nanotechnologies are being deployed widely in the marketplace, despite evidence that the different size and surface area of nanoparticles may result in dramatically enhanced toxicity and harm to living organisms. Despite these concerns, an array of nano products are being deployed in cosmetics, food packaging, nutritional supplements, sporting goods, and clothing. Evaluation of the impact on human health and the environment is lagging the rapid introduction of these products to the marketplace, with future liabilities one likely result.

Carbon nanotubes are one type of nanotechnology. Some forms of these materials have already been found to cause granulomas in the lining, or mesothelia, of the body cavity of laboratory animals.¹ Granulomas are pathological responses known to be precursors of mesothelioma, one of the diseases caused by asbestos. Researchers conclude that “long, thin carbon nanotubes showed the same effects as long, thin asbestos fibers.”² However, companies producing carbon nanotubes have failed to disclose to investors whether the nanotubes they are producing are in this potentially harmful form, and if so, the existence of the studies of concern, for companies’ scope of potential liability or the measures they are taking to reduce these risks.

Just as investors a generation ago suffered from poor disclosure regarding asbestos liabilities, today’s nanotechnology investors are also being kept in the dark. The hidden issues may lead to both long-term liabilities and nearer-term regulatory and consumer backlash.

Dilemmas Revealed

The investor’s dilemma

Investors are in a weak position in the current regulatory environment. Investors considering buying stock of a particular company certainly want accurate and complete information about a company’s contingent and off-balance-sheet liabilities so that they can accurately assess value and risk, but they are not getting such information. By contrast, investors currently holding stock in the same company and considering selling the stock soon may prefer to have less disclosure of downside risks, especially if it could spur selling pressure that would eliminate value, or if the disclosure would demonstrate insolvency before the shareholders could unload shares.

The truth is that for companies facing substantial litigation or other pending liabilities, undisclosed and underestimated future losses can be so large as to swamp the remaining disclosed indicators of share-holder value.

Other investors hold other interests regarding disclosure. For example, disclosure of specific public health risks associated with products is of interest to investors that may be interested in avoiding those particular long-term risks within their portfolios. Similarly, investors who are committed to investing in so-called “green” companies may find that accurate disclosure of potential liabilities at companies with toxic legacies will help to increase the competitive edge for newer greener companies who are entering the market and are not saddled with such liabilities.

The manager's dilemma

Corporate executives face an array of pressures and concerns with regard to disclosure of contingent environmental and product liability claims. Disclosing more information than the law requires can lead to punishment in the marketplace and potentially weaken the company's

Companies that volunteer to disclose more than what is legally mandated may be punished by the market because their disclosures create a sense that they have proportionally more risk than their less disclosing competitors.

position in pending or future litigation. Therefore, executives have strong incentives to play their cards close to the chest—as close as the law will allow.

The current regulatory framework favors reliability over relevance by encouraging and allowing companies to estimate and disclose only information that is relatively certain. Under the current regulatory framework, companies are directed to estimate and disclose the “known minimum,” with an additional directive from the Financial Accounting Standards Board to disclose any additional liabilities considered to be “probable”. Disclosure is seldom enforced beyond the known minimum. Companies are typically just recording the “known minimum” amount of a contingent loss rather than attempting to speculate on the expected value of the loss. This often leads to low estimates and minimal disclosure. Companies that **volunteer** to disclose more than what is legally mandated may be punished by the market because their disclosures create a sense that they have proportionally more risk than their less disclosing competitors. To put it mildly, the incentives do not encourage more complete disclosure.

A company that wants to effectively manage its contingent liabilities needs better information than what is required for disclosure. But if a company chooses to develop such information for its internal use, it faces a serious Catch-22. By developing a second set of books, companies risk accusations of investor fraud. By contrast, if the company operates internally with nothing more than the information mandated for disclosure, it cannot effectively manage its contingent liabilities. It is forced by the regulatory framework to “fly blind.”

The broader society's dilemma

Lawsuits may ultimately force companies to internalize various costs that their actions imposed on society—environmental damages, health impairments, discrimination and the like. Thus, the legal system may provide an important corrective to imperfections in the marketplace, which appropriately affects not only companies, but also their investors. This is a fundamental operational principle for much of our legal system—the notion that if individuals and corporations are required to pay the full cost to others of their activities, it will provide an appropriate and essential financial incentive to minimize harm.

Information flowing to and from the investing marketplace can set the pace of the learning process about these externalities. The sooner those liabilities appear on the books or are disclosed on a narrative basis, the sooner the corporation and its investors may adjust their behavior to reduce such externalities. By delaying financial statement recognition of contingent liabilities and requiring only limited disclosure, the current regulatory framework does a poor job of ensuring market efficiency.

This disrupted feedback loop perpetuates companies' imposition of possibly avoidable and irreversible costs on society. By contrast, improving accounting and financial rules could help to improve market efficiency and companies' learning process, and temper the tendency of companies to impose health or environmental risks on society.

The regulator's dilemma

The Securities and Exchange Commission and the Financial Accounting Standards Board have overlapping responsibility and regulatory abilities to require companies to better disclose their corporate liabilities. While the SEC's authority relates to securities disclosure documents such as the annual and quarterly report, the prospectus, registration statement, and numerous other SEC filings, the FASB provides the definitive authority for what belongs in an audited financial statement. (The audited financial statement is also part of the annual SEC form 10-K report.) Thus, some of the key requirements an investor needs could be addressed by either agency, or by the two in collaboration. In addition, as many companies have chosen to go private, the FASB requirement for disclosure of contingent liabilities in the financial statement is relevant to many companies that are not regulated by the SEC.

While either agency can require better disclosure of the array of potential liabilities ("contingent liabilities" in accounting lingo), the treatment of these issues in their regulations has been ambivalent, and has failed to make use of the available tools and options for better disclosure. Securities and financial regulators have generally sought to strike a balance between, on one hand, informing investors of a company's pending liabilities and allowing accurate valuation of stock prices, while, on the other, avoiding requirements that might weaken a disclosing company's position in pending or future litigation and thereby produce worse financial results for their investors. This is a precarious balancing act.

This report demonstrates that the balance struck to date is skewed towards poor disclosure to investors. The truth is that for companies facing substantial litigation or other pending liabilities, the **undisclosed** and **underestimated** future losses can be so large as to swamp the remaining disclosed indicators of shareholder value. This should give shareholders significant cause for concern about the credibility of many securities disclosures

Eight Liability Reporting Loopholes That Regulators Must Close

The case studies reveal eight loopholes in the current system of securities and accounting regulation that currently prevent honest accounting for a firm's potential liabilities.

1. **SHORTSIGHTEDNESS.** Taking the short view and thereby effectively avoiding disclosure or estimation of potential longer term liabilities.
2. **CONCEALED SCIENCE.** Concealing emerging science that forewarns of potential liabilities in the future.
3. **THE KNOWN MINIMUM.** Disclosing only the "known minimum" of potential liabilities, even though a more realistic assessment might be so much larger that it would indicate the potential for a total wipe out of shareholder value.
4. **PRIVILEGING SECRECY.** "Privileging" concealment, by using attorney-client privileges as a shield against generating a public estimate of liability for investors.
5. **INCONSISTENT ESTIMATES.** Providing inconsistent liability estimates to insurers and investors, with larger estimates of liabilities typically provided to insurers than to investors.
6. **HIDDEN ASSUMPTIONS.** Using hidden assumptions to minimize estimates of liability.
7. **MISSING BENCHMARKS.** Refusing to benchmark liabilities against other companies whose published litigation results may demonstrate realistic estimates of liability.
8. **RISK-FREE PROXIES.** Refusing to allow shareholders to place on the annual proxy ballot questions requesting disclosure of specific risks of concern to investors.

and financial statements. The current regulatory system fails to apply a set of tools and principles that could yield much more sound disclosures.

Under the existing accounting regulations, the application of auditable standards of disclosure is hampered by long-established principles favoring protection of attorney-client communi-

cations and attorney work product. These principles were developed to ensure that companies gain the benefit of sound legal counsel without benefiting their adversaries in litigation. However, these principles also limit disclosure to investors of sensitive information about the possible future outcome of contingent liabilities.

To the extent that regulators maintain accounting standards that mandate disclosures which inherently rest on the advice and forecasts of legal counsel, such disclosures could force companies to waive protection of privileged information. Nevertheless, this report demonstrates that these accounting regulators can require companies to do a ***much*** better job of disclosing the range of their potential liabilities without compromising their position in litigation.

Restoring Credibility by Closing the Liability Disclosure Loopholes

In order to restore the credibility of the disclosure and accounting system, the Securities and Exchange Commission and the Financial Accounting Standards Board should work together to ensure that corporate disclosure requirements require all companies to:

1. **Recognize the materiality of the long-term, and need for disclosure of potential liabilities that may manifest in the long-term.**
2. **Disclose emerging trends and scientific findings regarding impacts of companies' products and activities relevant to both short and long-term outcomes.**
3. **Disclose the range of liability estimates, not just the "known minimum."**
4. **Utilize third-party consultants who work from non-privileged information to develop discloseable liability estimates.**
5. **Disclose inconsistencies in liability estimates and timelines provided to insurers or other parties and to investors.**
6. **Disclose nonprivileged critical assumptions used in estimating liability.**
7. **Benchmark liability estimates against other companies facing similar litigation.**
8. **Allow shareholder resolutions requesting disclosure of the risks of concern to investors to appear on the annual proxy ballot.**

A Call to Action

Together, the eight loopholes identified in this report allow companies to avoid estimation and disclosure of contingent liabilities. They reflect a pervasive "don't ask/ don't tell" approach which is no longer tolerable in a public policy environment where restoring investor confidence is the priority.

Current regulatory reform efforts already underway at the SEC and FASB provide opportunities to close these loopholes. The Securities and Exchange Commission, the primary regulator of disclosure by publicly traded companies, is in the midst of reconsideration of its disclosure requirements, upgrading the technology of disclosure through the application of information technology (XBRL) and working on a road map toward integration of international accounting concepts. The financial crisis has also necessitated reconsideration of the content of reporting and the level of oversight involved for many financial instruments.

The Financial Accounting Standards Board (FASB) is an independent nongovernmental body established to provide guidance to the accounting profession. Its statements and interpretations

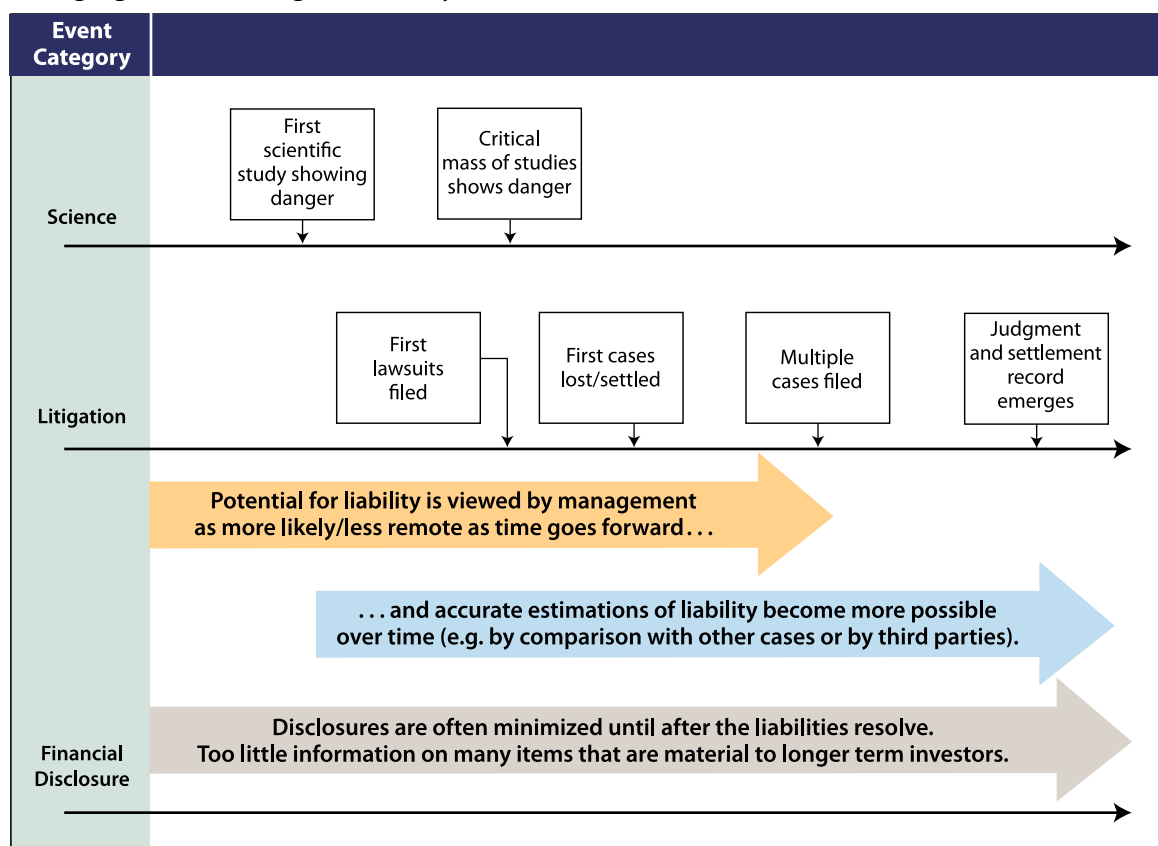
are the most important part of what are referred to as Generally Accepted Accounting Principles. In 2008, the FASB proposed enhancements to one of its oldest and most important accounting standards, Financial Accounting Statement 5, which relates to reporting and estimation of **contingent liabilities**. While the proposal was generally supported by investors, it met significant opposition from companies that must prepare and file financial reports. As a result of the array of comments received, the Board has expressed an intent to redeliberate the proposal during 2009. The ongoing process of deliberation presents an important opportunity to close loopholes in Generally Accepted Accounting Principles.

The single largest objection from the corporate community to expanding disclosure of potential and pending liabilities is that it will negatively affect the outcome of those cases, costing the companies more in settlements and judgments.

But we believe our recommendations show a path for regulators to require better use of information outside of the litigation process—data that are at least semi-public and nonprivileged—for which the availability in disclosures would arm investors with information that is crucial for investment decisions. Our recommendations can be implemented without compromising companies' position in litigation or increasing the magnitude of the liabilities that the companies may be required to pay.

This report is a call to action—an urgent call for regulators to bolster the integrity of securities disclosure and financial reporting, and to restore credibility to the investing marketplace. Based on the identified loopholes in securities and accounting rules, the credibility of corporate reports as a means of assessing share value remains at risk. The FASB and SEC must act quickly and decisively to close the eight loopholes.

Emerging Risks/Contingent Liability Disclosure Timeline



CASE STUDY 1

Asbestos: The Failure of Disclosure Rules to Warn Investors of Bankrupting Liabilities

According to the RAND Institute for Civil Justice, through the end of 2002 companies had paid \$70 billion in response to 730,000 personal injury claims, and 66 companies had been driven into bankruptcy due to asbestos related liabilities.³ Another estimate notes, “Six thousand independent entities have been named as asbestos liability defendants, 61 companies have filed for bankruptcy due to asbestos claims and 1.1 million claims have been issued. It is estimated that the total cost to insurers has been between \$200 and \$275 billion.”⁴

The companies bankrupted by asbestos liabilities were household names. The Johns-Manville Corporation specialized in asbestos textiles and construction materials. In 1982, Johns-Manville was listed as 181 on the Fortune 500 list, before it filed for bankruptcy protection resulting from asbestos lawsuits.⁵ Other companies bankrupted later (2000–2001) included Babcock & Wilcox, Owens Corning, Armstrong, W.R. Grace & Co., U.S. Gypsum Co., Federal-Mogul, and Building Materials Corporation of America.⁶

As the following examples will demonstrate, the liability disclosure system established by the Securities and Exchange Commission and the Financial Accounting Standards Board rules has generally failed to provide investors with adequate warnings as particular companies have faced growing liabilities associated with asbestos, even as these liabilities culminated in bankruptcies.

Johns-Manville—The largest and earliest asbestos manufacturer and promoter sets the bar for concealment of liabilities

At the outset, asbestos was used widely because of its durability and fire-resistance—it was promoted as a miracle product. This material was central to fire prevention efforts during the Industrial Revolution, especially in factories, steam ships, and on railroads. Asbestos use in building materials minimized the toll of fires on both human health and the economy. In fact, some scholars argue that in modern times asbestos has saved far more lives from fire than it has taken via disease.⁷ However, asbestos-related disease has been a well-known phenomenon for nearly 100 years. Despite the increase of asbestos research beginning from the 1920s, Johns-Manville neither disclosed asbestos’ harmful potential to its workers and their families, nor enacted safety regulations.

1928–1931:

Asbestos and lung damage linked

Investigations on asbestos-textile workers showed clear and consistent links between exposure to asbestos and lung damage. Dr. E.R.A. Merewether examined 363 workers and found 25% with evidence of pulmonary fibrosis. This study also found that workers who had been employed in the industry the longest had the highest incidence of pulmonary fibrosis. This study led the English Parliament to require improvements in ventilation and dust suppression and increased medical examinations, and made asbestosis a compensable disease.

1931:**Asbestos companies are warned**

The Metropolitan Life Insurance Company finished a study that was commissioned by firms representing the US asbestos industry, titled “Effects of the Inhalation of Asbestos Dust Upon the Lungs of Asbestos Workers.” After measuring occupational asbestos dust concentrations and conducting X-rays on workers, the report authors concluded that “prolonged exposure to asbestos dust causes a pulmonary fibrosis...” The report, received in 1931 by the asbestos companies, recommended that Johns-Manville and Raybestos-Manhattan “seriously face the problem of dust control in asbestos plants,” as well as provide chest x-rays and periodic physical examinations to employees of these factories.

1962–1963:**Definitive study of asbestos mortality**

Epidemiological studies on the health and mortality of asbestos-insulation workers by Dr. Selikoff (of Mount Sinai Medical Center) revealed the mortality of asbestosis. In a carefully controlled study, the death rate of 632 asbestos workers was found to be 25% higher than expected. The study showed that these men “had succumbed to lung cancer at seven times the expected rate, and to gastrointestinal cancer at three times the expected rate.” These studies “furnished incontrovertible evidence that industrial exposure to asbestos was extremely hazardous, and they marked a turning point in the views held by doctors and health officials around the world.”

Despite the eruptions of serious findings of hazards in the laboratory and scientific literature, until 1964, Johns-Manville maintained that it was unaware of the toxicity of asbestos, and that no documents existed to disprove this statement. However, a 1988 memo by lawyer David T. Austern clarifies the existence of documents that “are evidence of a corporate conspiracy to prevent asbestos workers from learning that their exposure to asbestos could kill them.”⁸ The collection of documents establishes an extended timeframe for Manville’s nondisclosure.

Johns-Manville first suffered an asbestos-related loss in 1966, when courts ruled against the company along with ten others. Subsequent lawsuits from former employees mounted at a rate of 6,000 a year.⁹

Just as Johns-Manville employees were not informed of potential health risks of asbestos, shareholders were also blindsided by the stock’s value collapse and the absence of an accurate warning from the corporation. The company’s last quarterly report filed with the SEC prior to its August 1982 bankruptcy implied a total cost of settling asbestos-related claims of around \$350 million. However, upon filing for bankruptcy, Johns-Manville estimated the amount to be closer to \$2 billion.¹⁰

As shown by the recent asbestos related bankruptcies, lawsuits of this nature continue to persist, impacting a company’s financial viability

Just as Johns-Manville employees were not informed of potential health risks of asbestos, shareholders were also blindsided by the stock’s value collapse and the absence of an accurate warning from the corporation.

long beyond a product’s market life. In fact, the rash of bankruptcies in the years 2000 and 2001 point to the latency of these liabilities. Where health effects take years to develop, financial impacts of liabilities may not be seen for decades.

Lawyers aid Johns-Manville efforts to minimize liability estimates

One of the first major late-stage tests of the FASB contingent liability accounting rule, FAS 5, occurred in 1981, when Johns-Manville was under increasing pressure to better estimate its liabilities under the growing body of litigation. As documented in detail in *Outrageous Misconduct*, au-

Consulting industry emerges and produces liability estimates

The requirements of insurance and other transactions have built an industry of consultants who are hired to produce liability estimates. Here are a few sample quotes from some of these consulting firms:

Navigant: Economics & Statistical Consulting/ Liability Forecasting¹²

We combine state-of-the-art research from medicine, epidemiology and demographics with knowledge of the history and current status of litigation and our client's specific liability experience. We also use well-accepted statistical and econometric methods to investigate analytical benchmarks and test key hypotheses related to the forecast problem.

We provide:

- Estimates of numbers, disease types and timing of future claims
- Evaluation of the efficiency of prior claims experience
- Projection of disease incidence and analysis of medical outcomes, latency and exposure rates
- Estimates of the value of pending and future claims
- Estimates of gross and net liabilities for pending future claims
- Long-term forecasts of liabilities under various scenario assumptions

The Brattle Group¹³

Our expertise in product liability and mass tort litigation includes statistical and economic expert testimony on damages issues, litigation risk assessments for liability and damages....

Our expertise includes:

- We conducted statistical modeling and applied decision analysis to value breast implant liability and damages claims.

- Members of The Brattle Group projected the timing and magnitude of future asbestos claims and analyzed potential insurance recovery.
- We estimated the level of funds required to cover future Dalkon Shield claims.
- The Brattle Group analyzed trends in product liability and bodily injury claims to project potential future claims related to a manufacturing firm.
- [A]nalyzed future liabilities in the context of facility and/or company acquisitions and divestitures, fraudulent conveyance, environmental disclosure bankruptcies, and insurance recovery claims.

Bates White, LLC¹⁴

Bates White provides services to estimate the financial impact of environmental and product liability for clients requiring a comprehensive understanding of potential liability. Our forecasts have withstood scrutiny from a number of major creditors and insurance underwriters and include a detailed assessment of important risks under a variety of possible scenarios. Our analyses of environmental and product liability valuation have been critical to clients for meeting Securities and Exchange Commission (SEC) disclosure requirements, addressing creditor concerns, and managing market perceptions.

In addition to the above consulting companies, there are numerous other specialized firms within this industry helping clients to estimate the expected value of liabilities, e.g., ARPC on asbestos and ERM and ENSR on environmental remedial liability.

thor Paul Brodeur describes how the company effectively minimized anticipated claims estimates. In 1981, strategists from Johns-Manville commissioned a study of future incidence of asbestosis, including an estimation of the potential number of claims and lawsuits.

The first estimates came from Dr. Nancy Dreyer of the consulting firm Epidemiological Resources, who estimated that 49,000 lawsuits would stem from an estimated 230,000 cases of asbestosis by the year 2000. The comparatively low estimates of lawsuits versus disease incidence are hedged by a caveat found in the Epidemiological Resources report: "The actual number of lawsuits might easily be as low as half or as much as twice the number our calculations suggest." A lawyer for Johns-Manville met with Dr. Alexander Walker, an associate epidemiologist at Epidemiology Resources, and after this meeting, Dr. Walker revised "his original estimate in such a way as to lower the projected number of people who might develop lung cancer as a result of exposure to asbestos." He did this by lowering the

choose the assumption which led to a smaller number of cases of disease." These changes in risk assumptions allowed Dr. Walker to estimate that a total of only 139,000 cases of asbestos disease would occur between 1980 and 2009. Just months before, Dr. Walker's colleague at Epidemiological Resources, Dr. Dreyer, had estimated 230,000 cases of asbestos related diseases in that timeframe. However, Paul Brodeur points out that the firm's epidemiology was generally questionable, making both of these estimates too low. Dr. Selikoff and his associates at Mount Sinai (who were considered the world's leading experts on the subject of asbestos disease) had estimated *270,000 excess deaths* from asbestos-related cancer *alone* by the year 2010. Other asbestos related diseases that were presumably not factored into that estimation include inflammation of the pleura (lining of the lungs), and asbestosis (widespread scarring of the lungs). All of the commercial forms of asbestos have been linked to both cancerous and non-cancerous lung disease.¹⁰

In sworn testimony, Dr. Walker revealed, "I was asked...that whenever I had to choose between two equally plausible assumptions, I should choose the assumption which led to a smaller number of cases of disease."

risk for lung cancer that had been calculated by Mt. Sinai asbestos expert Dr. Selikoff (who had found a fivefold risk increase in asbestos-insulation workers who smoke versus those who did not, and a similar fivefold risk increase in non-smoking asbestos-insulation workers compared with the general nonsmoking public).

In sworn testimony, Dr. Walker revealed, "I was asked...that whenever I had to choose between two equally plausible assumptions, I should

Thus, Johns-Manville lawyers successfully minimized the projected number of anticipated asbestos cases by encouraging scientists to use the low-end assumptions whenever a range of possible assumptions existed. The number of associated lawsuits was projected in a similarly unscientific way, by applying Dr. Walker's altered data to a mathematical formula created to predict the propensity for people with asbestos-related disease to sue. Ultimately, Corporate Counsel for Johns-Manville, Richard Von Wald, estimated that 52,000 additional lawsuits would come from the 139,000 cases of asbestos related disease. Paul Brodeur points out that the company was, at this point "compounding a series of errors" in its estimates of risk.

These compounded underestimations help to explain why the company eventually found it was subject to much more liability than it had projected. And accordingly, investors who relied on the company's disclosures were eventually stung by the firm's ultimate bankruptcy.

Consultants assist some asbestos companies to improve liability estimation and disclosure

The impact of the liability consulting industry described in the sidebar on page 10 can be observed in the evolution of some financial reports, for example those of Enpro Industries. Enpro Industries have been facing at least 118,800 asbestos claims. Enpro's reports on its liabilities evolved through three increasingly detailed and meaningful levels.

For its form 10-K for 2002 Enpro provided estimates of liability only in a very short window—once claims had reached advanced stages:

In accordance with internal procedures for the processing of asbestos product liability actions and due to the proximity to trial or settlement, certain outstanding actions progress to a stage where the cost to dispose of these actions can be reasonably estimated. These actions are classified as actions in advanced stages. With respect to outstanding actions that are in preliminary procedural stages, as well as any actions that may be filed in the future, insufficient information exists upon which judgments can be made as to the validity or ultimate disposition of such actions, thereby making it impossible to estimate with any degree of accuracy or reasonableness what, if any, potential liability or costs may be incurred. Accordingly, no estimate of future liability has been included for such claims.¹⁵

Subsequently, Enpro began a different procedure for estimation, hiring the consultant Bates White, LLC to estimate liabilities. As it reported in subsequent financial reports:

Prior to mid-2004, the Company maintained that its subsidiaries' liability for unasserted claims was not reasonably estimable. The Company estimated and recorded liabilities only for pending claims in advanced stages of processing, for which it believed it had a basis for making a reasonable estimate. The Com-

pany disclosed the significance of the total potential liability for unasserted claims in considerable detail. During 2004, the Company authorized counsel to retain Bates White to assist in estimating the Company's subsidiaries' liability for pending and future asbestos claims. Bates White's first report, dated February 17, 2005, provided an estimate of the liability as of December 31, 2004 for the following ten years, which represented a time horizon within which Bates White believed such liability was both probable and estimable within a range of values. Bates White has updated its estimate every quarter since the end of 2004. Each quarter until the fourth quarter of 2006, the Company adopted the Bates White estimate and adjusted the liability to equal the low end of the then-current range.¹⁶

However, their practice of **only including the low end of the range** was revised in the fourth quarter of 2006. The company explained this in the following disclosure:

In 2005 and the first three quarters of 2006, we recorded a liability related to asbestos claims at the low end of a broad ten-year range of equally likely estimates provided by the firm of Bates White, LLC ("Bates White"), a recognized expert in the field of estimating asbestos-related liabilities. Due to the uncertain nature of the estimated liability, we and Bates White believed that no single amount in the range was a better estimate than any other amount in the range. In accordance with the applicable accounting rules, we recorded a liability for these claims at the low end of the range of estimated potential liabilities. In the fourth quarter of 2006, based on our experience during the preceding two years and other factors, we identified a best estimate within the Bates White range and adjusted the liability accordingly. The significant assumptions underlying the material components of the estimated liability include: the number and trend of claims to be asserted;

the mix of alleged diseases or impairment; the trend in the number of claims for non-malignant cases; the probability that some existing and potential future claims will eventually be dismissed without payment; the estimated amount to be paid per claim; and the timing and impact of large amounts that will become available for the payment of claims from the 524(g) trusts of former defendants in bankruptcy. The actual number of future actions filed per year and the payments made to resolve those claims could exceed those reflected in our estimate. With the assistance of Bates White, we periodically review the period over which we can make a reasonable estimate, the assumptions underlying our estimate, the range of reasonably possible potential liabilities and management's estimate of the liability, and adjust the estimate if necessary. Changing circumstances and new data that may become available could cause a change in the estimated liability in the future by an amount that cannot currently be reasonably estimated, and that increase could be significant and material.¹⁷

Thus, the company went from only integrating imminent results of near term liabilities to an increased projection of liability that included unasserted claims. Enpro, following existing accounting rules, appears to use only a ten-year projection of liabilities, but at least after several years experience, they have stopped using only a low end estimate.

Where companies failed to benchmark their asbestos litigation against comparable cases at other companies, investors suffered

The choice of when and how to estimate and disclose major liabilities on the scale of the large asbestos cases may involve a choice by management about when and how to file for bankruptcy. A pattern emerges in the filings, and in literature about asbestos cases, in which companies and their lawyers worked to drive down their esti-

mates of the number of cases that would eventually be filed, and the cost per case. In many of these cases, a more accurate estimate, benchmarking against the results that are happening generally in this type of litigation, might have necessitated an earlier bankruptcy filing. Under the scrutiny and pressure of accounting rules that require companies to disclose and estimate contingent liabilities, such gaming of the estimation process appears to be the rule rather than the exception. Investors are typically the losers of this game—because they are the last to know that the company's assets and income will not cover its liabilities, as the preparer finally surrenders to the inevitable, bumps up its estimates, and declares bankruptcy.

An example of this deferred estimation of eventually bankrupting liabilities occurred at Kaiser Aluminum, a subsidiary of Maxxam Corporation, which underestimated its asbestos liabilities in the mid-1990's. In its 10-K report for 1995, Kaiser estimated that future cash payments in connection with asbestos litigation would be approximately \$13 to \$20 million for each of the years 1996 through 2000, and an aggregate of approximately \$78 million thereafter through 2008.¹⁸ The company noted there was no reasonable basis for estimating such costs beyond 2008. One could have predicted much greater asbestos liability, however, by comparing the amount per case that Kaiser was using to calculate its liabilities against the much greater amounts that were being paid out per case by other comparable companies in the course of their asbestos settlements. For example, asbestos cases against the Johns-Manville trust had, by 1990, paid an average of \$43,500 each on the first 24,000 claims. Maxxam, by contrast, had accrued only *\$160 million for 59.7 thousand cases* pending mentioned in its 1995 10-K. If Kaiser had benchmarked those 60,000 cases against the average Johns-Manville settlement figure of \$43,500, they would have calculated a total potential loss of *\$2.5 billion*—and disclosed potential liability more than 15 times the amount accrued.

By 1999, the Kaiser estimates had risen to \$387.8 million until 2009, more than double the previous estimate. In 2000 Kaiser's parent Maxxam made a third quarter charge for an increase in the net asbestos liability, and Kaiser's senior unsecured and subordinated debt were downgraded by Moody's Investor Services. According to a report in Dow Jones news service, after completing a thorough review, Moody's decided to lower Kaiser's ratings on a series of notes.

Enpro, following existing accounting rules, appears to use only a ten-year projection of liabilities, but at least after several years experience, they have stopped using only a low end estimate.

Moody's noted that the inherent uncertainties surrounding the asbestos liability, coupled with Kaiser's high leverage, vulnerability to volatile aluminum prices, and fairly high operating costs could adversely affect the company's ability to refinance certain notes.

By 2002, Moody's assessment proved true; Kaiser and 24 subsidiaries filed for bankruptcy. The company reported in its 2003 10-K, filed March 2004, that:

"[t]he necessity for filing the Cases by the Original Debtors was attributable to the liquidity and cash flow problems of the Company and its subsidiaries arising in late 2001 and early 2002. The Company was facing significant near term debt maturities at a time of unusually weak aluminum industry business conditions, depressed aluminum prices and a broad economic slowdown that was further

exacerbated by the events of September 11, 2001. In addition, the Company had become increasingly burdened by asbestos litigation and growing legacy obligations for retiree medical and pension costs. The confluence of these factors created the prospect of continuing operating losses and negative cash flows, resulting in lower credit ratings and an inability to access the capital markets."¹⁹

Another example of the failure to undertake such estimates at the time of significant transactions occurred in the acquisition of Union Carbide by Dow Chemical. Dow did not report any asbestos liabilities when it acquired Union Carbide in 2001. But two years later, Dow reported a \$2.2 billion asbestos liability associated with the acquisition, a figure arrived at by finally looking at comparable lawsuit outcomes at other companies. The company's 2002 form 10-K explains:

"At the end of 2001 and through the third quarter of 2002, Union Carbide had concluded it was not possible to estimate its cost of disposing of asbestos-related claims that might be filed against Union Carbide and Amchem in the future due to a number of reasons, including its lack of sufficient comparable loss history from which to assess either the number or value of future asbestos-related claims. During the third and fourth quarters of 2002, Union Carbide worked with Analysis, Research & Planning Corporation ("ARPC"), a consulting firm with broad experience in estimating resolution costs associated with mass tort litigation, including asbestos, to explore whether it would be possible to estimate the cost of disposing of pending and future asbestos-related claims that have been, and could reasonably be expected to be, filed against Union Carbide and Amchem."²⁰

CASE STUDY 2

Nanotechnology: Innovative Technologies Raise Early Stage Liability Disclosure Issues

Nanotechnology can be defined as “molecular manufacturing,” the science of manipulating matter at the molecular and even subatomic scale to build structures, tools, or products. Nanomaterials are particles smaller than 1,000 nanometers (nm). For a sense of scale, a human hair measures 100,000 nm across. Nanotechnology is a rapidly growing force in the marketplace, with worldwide sales of nanotechnology-based products doubling annually. According to Lux research, the medical, pharmaceutical, materials, coatings, catalysts, food and food processing industries, as well as green energy organizations, will spend more than \$1 trillion developing products based on nanotechnology by 2015.²¹ Current annual worldwide investment in nanotechnology research is over \$9.6 billion, and more than 2 million people work in the development, production, or use of nanomaterials.

Manipulations at the nano-scale can alter such factors as color, electrical conductivity, chemical reactivity or tensile strength. Nano-particles

Nanotechnology is regarded by some experts as having the potential to create a liability scenario on par with asbestos.

are often more chemically reactive than their larger scale counterparts. For example, carbon nanotubes exhibit extraordinary strength and unique electrical properties, and are efficient conductors of heat. These extraordinary features make these materials well suited for a broad range of potential applications, including nanoelectronics, composites, chemical sensors, biosensors, microscopy, and nanoelectromechani-

cal systems. The strength and flexibility of carbon nanotubes makes them of potential use in controlling other nanoscale structures, which suggests they will have an important role in nanotechnology engineering. Flexible solar cells containing carbon nanotubes and carbon nanospheres, called buckyballs, are also being developed. Nanotechnology as an emerging field holds much promise. Experts at Lloyds of London reported on the risks and opportunities posed by nanotechnology in March 2009, stating “nanotechnology has unquestionable potential to bring huge benefits for society and for business. In today’s economic climate, it seems that one of the few realistic routes to growth is innovation. Those companies which are able to exploit nanotechnology will be well placed to succeed.”²²

The novel qualities exhibited by nanomaterials are creating opportunities for innovation in fields such as biotechnology, materials science, chemicals and plastics, cosmetics, health care, energy, and the food industry. However, investors need a balanced view of the risks and benefits of nanotechnology to ensure that this promising technology is not hampered by stumbling blocks such as undisclosed liabilities and regulatory impediments.

Innovative nano-properties enhance likelihood of serious new health hazards

The new properties exhibited by nanomaterials are also responsible for novel toxicity risks for human health and the environment. Because of these additional toxicity characteristics, as well as the rapid deployment of these materials in various parts of the economy, nanotechnology is regarded by some experts as having the potential to create a liability scenario on par with asbestos.

Nanomaterials can represent a special threat to health and safety because the unprecedented manipulation of particles at the molecular scale brings with it unprecedented toxicity expectations—as the particle size decreases so dramatically, materials are able to penetrate the body much more aggressively. In addition, the molecular scale causes reactivity to increase so that harmful effects can be intensified. Previously harmless substances may even take on hazardous characteristics.²³

The Expert Forecast on Emerging Chemical Risks, established by 49 experts across Europe, puts nanoparticles at the top of the list of substances from which workers need protection.

Penetration of the particles into the body is much more severe than from conventional materials. Laboratory studies indicate that some nanoparticles ingested from food or water, or breathed in, can pass through the intestinal walls or lungs and reach the bloodstream, allowing them almost unrestricted access to the human body. Some inhaled nanomaterials can access the brain, as they can pass the blood-brain barrier via the olfactory nerve.²⁴

The level and kinds of harm that are possible are altered by the molecular scale. For example, nanoparticles have been shown to interrupt important chemical communication between enzymes and hormones, and to trigger immune responses.²⁵ Many types of nanoparticles interfere with normal cellular function, causing oxidative damage and cell death.

Scientists currently do not clearly understand how a variety of nanoparticles are absorbed, how they move around in the body and bloodstream, or how they are excreted. However, both the scientific community and risk assessors have

already raised serious questions about safety. This novel technology could revolutionize many markets, yet opportunities for growth in this field could be severely curtailed by the dearth of scientific research focusing on the health and environmental hazards of these materials.

Growing recognition of nanotechnology as emerging risk

Various entities have begun to recognize nanotechnology in general as an emerging risk that needs to be monitored for its liability concerns. For instance, a recent report called Expert Forecast on Emerging Chemical Risks, written by the European Agency for Safety and Health at Work (EU-OSHA), identifies the main groups of substances which could pose new and increasing risks to workers, contributing to diseases which range from allergies, asthma, and infertility to cancers. This Expert Forecast on Emerging Chemical Risks, established by 49 experts across Europe, puts nanoparticles at the top of the list of substances from which workers need protection.²⁶

Second-largest reinsurer finds liability parallels in asbestos and nanotechnologies

Insurers have also identified nanotechnology as a liability frontier and emerging risk. Swiss Re, the world's second largest reinsurer, has examined this issue at length in a 2004 report entitled "Nanotechnology: Small Matter, Many Unknowns." The report identified similarities between current emerging nanotechnology liabilities and the historical example of asbestos. It highlights the fact that both have known manufacturers, a wide range of uses, and the potential for a series of claims, and loss accumulation. "Nanotechnology: Small Matter, Many Unknowns" concluded that companies involved in the research, development, manufacturing, marketing, retailing, distribution and disposal of products containing nanomaterials may be held liable if nanoparticles are found to cause health or environmental hazards.

Insurer Swiss Re Finds Troubling Parallels between Nanotechnology and Asbestos

| Aspect | Nanotechnology | Asbestos |
|-----------------------------|----------------|----------|
| Manufacturer known | X | X |
| Defined substance | No | X |
| Worldwide dissemination | X | X |
| Wide range of uses | X | X |
| Acutely toxic | Unknown | No |
| Persistent | In some cases | X |
| Long-term effect | Conceivable | X |
| Risks | Unknown | Cancer |
| Claims series potential | X | X |
| Loss accumulation potential | X | X |
| Agent analytically provable | X | X |

Source: Nanotechnology: Small Matter, Many Unknowns. (Swiss Reinsurance Company, 2004).

Swiss Re also points out that “these artificially manufactured nanoparticles will be traceable back to the manufacturer, which makes the establishment of liability easier than in the case of substances that are universally present, such as ultrafine particles from diesel exhaust fumes.”²⁷

An unforeseeably large loss potential could accumulate, for example, in the field of health impairment.

Swiss Re notes a further parallel with the history of asbestos, “Risks arising out of the introduction of new products or innovative technologies need not reveal themselves immediately and may occur after an interval of years. Nanotechnology is set to spread to such a wide range of industries and in such a large number of applications and at such speed, that the individual claims conceivable on the basis of experience and resulting from defects can hardly expect to be long delayed. Things will become critical if systemic defects only emerge over time, or if a

systematic change in behavior remains undetected for a long time. In that case, an unforeseeably large loss potential could accumulate, for example, in the field of health impairment.”²⁸

The dangers of chronic exposure to nanoparticles could take some time before the health toll is known. Yet, investment in nanotechnology companies is underway, in an investing environment defined by lack of disclosure and clarity about the risks involved in broad dissemination of these technologies in the market and environment. Lloyd’s of London has identified the emerging risk of nanotechnology as deserving close attention, risk evaluation and disclosure. In March 2009, an analyst for Lloyd’s commented regarding nanotech in the context of the current financial crisis:

...when you think that part of the reason behind the turmoil in our financial markets was the blithe acceptance of complex products that many didn’t understand, the importance of getting to grips with and quantifying complex sources of risk has never been more obvious.²⁹

Nanotechnologies pervasive in cosmetics/personal care products despite heightened exposure risks

Companies using nanomaterials in their consumer products tend to acknowledge the opportunities that innovations such as nanotechnology offer, but seldom discuss the potentially heightened risks associated with the use of these materials in or on the body. For example, nanoparticles found in some Japanese toothpastes have been designed to repair tooth damage, and some nanocapsules can deliver active ingredients into lower layers of skin. These developments hold much promise for innovative products, as well as the novel health risks associated with greater penetration into the body as well as dramatically more surface area for reaction.³⁰

In its 2008 10-K filing, Procter & Gamble focuses on emerging technologies and innovation as a strength in their company, but does not specifically mention nanotechnology or its associated potential risks or liabilities.³¹ The company's website includes a discussion of nanotechnology in its research and development section.³² The summary on the website focuses on the documented safety of ultrafine metal oxides used in sunscreens, implying that nanoscale products should be equally safe, although ultrafine particles can be significantly larger than nanoscale particles and therefore lacking in the extremities of penetration and reaction that are possible with the smallest nanoparticles. Procter & Gamble has been engaged in the testing, development, and implementation of nanotechnology for many years. Many of their cosmetics that offer UV protection are enhanced with nanoparticles of the metal oxides titanium dioxide, and zinc oxide, which are commonly used sunscreens. At the nano level, these compounds are transparent on the skin. In 2001, a Procter & Gamble spokesperson said, "It goes on really light and sheer and doesn't leave a residue, so therefore people are much more apt to use it on a daily basis." However, this daily use might also be exposing Procter & Gamble's customers to unknown risks. The company concludes, "With a long history of

safe use in FDA-regulated products and a demonstrated lack of dermal absorption, there is extensive confirmatory evidence that nanoscale zinc oxide and titanium dioxide may be safely used in cosmetics and OTC drug products."³³

The cosmetics company Avon has made similar claims of product safety. In its spring 2008 statement in opposition to a shareholder resolution

Nano titanium dioxide (TiO₂), widely used in cosmetics, food and drugs, reacts entirely differently at nano-scale. It exhibited a dose-dependent effect on the sedimentation rate of red blood cells, as well as other effects that may pose harm to human health.

requesting a report on Avon's policies on nanomaterials product safety, the company broadly asserts in the proxy that these materials are safe. "Avon's evaluation included a specific assessment of the potential for nano-sized particles of these materials to be absorbed through the skin (several scientific studies have demonstrated that nano-sized titanium dioxide and zinc oxide do not penetrate the skin). In the opinion of Avon's scientists (toxicologists and other safety professionals) each of these materials can be used safely in cosmetic products."³⁴ Avon's 2008 annual report makes no mention of nanotechnology or the company's use of nanoparticles in any products, and their website does not discuss nano-sized particles as ingredients in their products.³⁵

Despite these reassuring comments by Avon and Procter & Gamble, many experts are still questioning whether these sunscreen nanoparticles have been tested thoroughly enough to determine safety. UV radiation causes damage to the integrity of the skin barrier, yet very few studies have examined the impact of UV radia-

tion on the ability of nanoparticles to penetrate the skin. In the first study of its kind, researchers exposed experimental animals to “quantum dot” nanoparticles, and found that the animals whose skin had been exposed to UV light exhibited a higher amount of penetration of nanoparticles through their skin. According to the authors, these findings “raise concern that nanoparticles of similar size and surface chemistry, such as metal oxide nanoparticles found in sunscreens, may also penetrate UV damaged skin.”³⁸

Very little publicly available information exists on whether penetration could occur through skin that is injured, sunburned, or abraded. Untested variables could influence the ability for nanoparticles to penetrate the skin or otherwise enter the body, including incidental consumption of the particles applied to the face, via the mouth. Additionally, many nanoparticles are coated or contain other materials; these variables could affect toxicity and penetration. Exposure to UV radiation, which would logically happen to nanoparticles in sunscreens, might change the reactivity of nanoparticles.

The uncertainties concerning safety of the nanoparticles used in sunscreens was questioned by Wall Street advisory firm Innovest Strategic Value Advisors, which in 2006 identified nanoparticle safety for titanium dioxide as a financial risk.³⁹ They noted:

While titanium dioxide (TiO₂) has been approved by the Scientific Committee on Cosmetics and Non-food Products (SCCNFP) in Europe and given a green light by the Food and Drug Administration in the United States, we are cautious about these findings for the following reasons:

- In February 2006 titanium dioxide was classified by the International Agency for Research on Cancer (IARC) as an IARC Group 2B carcinogen “possibly carcinogenic to humans.” The evidence showed that high concentrations of pigment-grade (powdered)

and ultrafine titanium dioxide dust caused respiratory tract cancer in rats exposed by inhalation and intratracheal instillation.

- A 1997 study suggests that TiO₂ may cause DNA damage, and the science is still uncertain regarding possible effects on damaged skin.
- The Scientific Committee on Cosmetics and Non-food Products (SCCNFP) used proprietary company studies to determine safety rather than setting preference for independent toxicity testing. Investors may note that the chemicals industry’s credibility problem could be partly attributable to this and may explain the existence of programs like the OECD’s High Product Volume Challenge, which takes proprietary company data and makes it public for peer review.

In 2007 Europe’s Scientific Committee on Consumer Products raised additional questions on the safety of nanomaterials in sunscreens. They stated in their Preliminary Opinion on Safety of Nanomaterials in Cosmetics Products, “For the nanomaterials used in sunscreen products, a safety dossier on nanosized Zinc Oxide (ZnO) was requested by SCCNFP in its opinion on ZnO in 2003 (SCCNFP/0649/03). An opinion on the safety of such material will be dependent on an adequate dossier. Since the SCCNFO opinion on titanium dioxide (TiO₂) (SCCNFP/0005/98), much new scientific data on nanosized particles, including TiO₂, have emerged. Therefore, the SCCP considers it necessary to review the safety of nanosized TiO₂ in the light of recent information and to consider the influence of physiologically abnormal skin and the possible impact of mechanical action on skin penetration.”⁴⁰ A 2008 study comparing the toxicity of microparticles versus nanoparticles of titanium dioxide indicated that the smaller nanoparticles had a more negative impact.⁴¹ Most recently, a December 2008 study from Rice University concluded that nano titanium dioxide (TiO₂), which has been

considered a non-toxic mineral particle, and has been widely used in cosmetics, food and drugs, reacts entirely differently at nano-scale. It exhibited a dose-dependent effect on the sedimentation rate of red blood cells, as well as other effects that may pose harm to human health.⁴²

Manufacturers deploying the sunscreen nanoparticles such as Avon and Procter & Gamble may be prematurely asserting safety, and neglecting to present a balanced picture of the limitations of testing conducted to date. Untested variables could influence the ability for nanoparticles to penetrate the skin or otherwise enter the body, including incidental consumption of the particles applied to the face, via the mouth.

Investors should be better apprised by companies of the state of the science, including the important health impact questions that have not yet been answered.

Nanotech is coming soon to supermarket aisle and other food applications

Nanotechnology is quickly entering the food industry. This category includes five categories of nanotechnology applications in the food sector, recognized by the European Food Safety Association: food contact materials or coatings designed to interact with the food or environment surrounding the food; food ingredients processed at the nanoscale to form nanostructures or nano-textures; nano-sized additives and processing aids such as flavorants or colorants; bio-sensor packaging utilizing nanotechnology; and nanosized pesticides or agro-chemicals used in food production. As one nanosector author wrote, "The potential benefits of Nanofoods—foods produced using nanotechnology—are astonishing. Advocates of the technology promise improved food processing, packaging and safety; enhanced flavor and nutrition; 'functional foods' where everyday foods carry medicines and supplements, and increased production and cost-effectiveness. In a world where thousands of people starve each day, increased production alone is enough to warrant worldwide support."⁴³

Major players in the food industry are investing in nanotech research and development, and many of them already have nanotech-based products on the market. Examples of such products include a nutritional supplement drink for

At least 104 nano-enabled food products are now on sale internationally, yet many food manufacturers may be unwilling to disclose the nanomaterial content of their products, making this only a small fraction of the total number of products now available worldwide.

children that contains iron nanoparticles, Cadbury chocolate bar wrappers, and Miller Lite beer bottles.⁴⁴ At least 104 nano-enabled food products are known to be on sale internationally, yet many food manufacturers may be unwilling to disclose the nanomaterial content of their products, making these disclosures just a small fraction of the total number of products now available worldwide.⁴⁵ This field is expected to continue growing, with experts estimating that the nanotech food industry will be worth \$6 billion by 2010.⁴⁶

Nanotechnology is slated for use in a number of novel food contact applications. Chemical-release packaging technologies are being designed to release nanocapsules of flavors, odors or nutritional additives into foods and beverages over time. This development will probably lead to increased consumption of nanomaterials, because food products can interact with their packaging. Currently, materials in conventional food packaging (like phthalates) are known to migrate into the food product with which they are in contact. Additionally, foods are known to leach flavor, color, or nutritional elements into their packaging. Food and food packaging regulators do not

require labels to indicate that nanoscale materials have been added. Despite the growing number of nanotech food products on the market, consumers have no way of knowing which products contain nanotechnology. Other proposed uses of nano in food include: “interactive” drinks that contain nanocapsules that change color and flavor, spreads and ice creams with nanoparticle emulsions that improve texture, and nanocapsules that carry nutrients and flavors into the body, increasing their bioavailability.⁴⁷

Nanofood packaging represents a new route of nanoexposure. One organization that has looked closely at this issue is The Project on Emerging Nanotechnologies, a nonprofit that was established in April 2005 as a partnership between the Woodrow Wilson International Center for Scholars and the Pew Charitable Trusts. The Project is dedicated to helping ensure that as nanotechnologies advance, possible risks are minimized, public and consumer engagement remains strong, and the potential benefits of these new technologies are realized. In June 2008, The Project published a report entitled “Assuring the Safety of Nanomaterials in Food Packaging: The regulatory process and key issues.” This report came out of a dialogue among experts and stakeholders from government, industry, and NGOs (collectively, the PEN/GMA Nanotechnology Project) which focused on understanding how the regulatory process would apply to “upstream” (currently not commercialized) nanotech food packaging materials, to identify issues that need to be addressed to ensure the process of regulating this application of nanotechnology works effectively.

According to the Project, most substances used in food packaging are regulated by FDA as “food contact substances” under the “food additive” provisions of the Federal Food, Drug, and Cosmetic Act. The regulatory system for food packaging is legally and scientifically complex. A core concept under these regulations is that the burden rests on the sponsor of a new food contact substance to demonstrate its safety. That is, the

company using nanomaterials must demonstrate that they are safe in a food contact application. The Project examined legal and policy issues, and scientific and technical issues that might arise in the application of the regulatory process to engineered nanomaterials. Manufacturers of engineered nanomaterials for use in food contact applications are faced with significant scientific and regulatory challenges, given the current state of scientific knowledge of these materials. The Project’s report recommends an early consultation with the FDA for parties seeking to develop and market new nanomaterial food contact substances. However, the FDA is surely overwhelmed with the prospect of regulating nanotechnology in food products, and these substances are already on the market.

In 2008, environmental organization Friends of the Earth published a report entitled *Out of the Laboratory and on to our Plates: Nanotechnology in Food and Agriculture*, which profiled the emerging use of nanotechnology in food and food packaging. Populations at risk in this use of nanotechnology include the public, workers in the food industry (broadly defined) or nanoproduct manufacturing facilities, and farmers. “The potential for ingested nondegradable nanoparticles to cause long term pathological effects in addition to short-term toxicity is of great concern.”⁴⁸

Health and environmental questions on nano in food

Putting nanomaterials into food products raises numerous flags on the safety of these products. Preliminary environmental studies suggest that food contact nanomaterials may be toxic to ecologically important species.⁴⁹ The long-term health impacts of many nanoparticles have not yet been studied, and food contact applications of these particles could put many consumers at risk. In general, our bodies’ defensive mechanisms are not as effective at removing nanoparticles. Larger particles are more easily removed from our lungs, GI tract, and organs. Nanoparticles are “more adhesive than larger

particles to surfaces within our bodies.”⁵⁰ As a result of these factors, nanoparticles are much more likely to be taken up into our cells and tissues than are larger particles. The obvious exposure scenarios of nanoparticles in food items highlight the need for disclosure of the potential public health hazards and related financial liabilities.

Companies using nanotechnology in food contact applications

Many companies recognize the promise of innovative goods in the nanofood sector, and have been investing in the development of nano-enabled goods. In many cases, mainstream retailers are using nanotechnology-enabled products without informing their shareholders or consumers. For example, the recent Friends of the Earth report indicates, “for the past few years, the food industry has been investing millions of dollars in nanotechnology research and development. Some of the world’s largest food manufacturers, including Nestle, Altria, H.J. Heinz and Unilever, are blazing the trail, while hundreds of smaller companies follow their lead.” These companies may not yet have nano-enabled goods on the shelves, but are investing in nanotechnology research and development.

By contrast, RBC Life Sciences, Inc, has the slogan “Pioneering Nanotechnology in Nutritional Science,” and currently offers a number of products that are nano-enabled. The “nutritional products” segment of RBC Life Sciences markets nutritional supplements and personal care products, and accounted for 79%, 83% and 83% of consolidated net sales in 2008, 2007, and 2006, respectively.⁵¹ According to the company’s most recent annual report, they market a line of over 75 nutritional supplements and personal care products, including herbs, vitamins and minerals, as well as natural skin, hair and body care products. Some of these are advertised as food products, while others are “nanoceuticals,” or nutritional supplements. One such product is RBC Life Sciences’ Slim Shake, containing CocoaClusters. CocoaClusters are described as follows:

“The natural benefits of cocoa have now been combined with modern technology to create CocoaClusters. RBC’s NanoClusters are tiny particles, 100,000th the size of a single grain of sand, and they are designed to carry nutrition into your cells. During the process of creating NanoClusters, pure Cocoa is added to the “Cluster” formation to enhance the taste and the benefits of this treasured food.”⁵² This food is touted as a “technologically advanced form of cocoa that offers enhanced flavor without the need for excess sugar.” However, nano-sized particles may not behave in the body the same way normal-sized particles of cocoa would behave. This product may therefore cause unintended health effects. RBC Life Science’s disclosure on the potential risks of its many nano-enabled products is non-existent in its annual reports.

Food contact applications of nanotechnology may offer promising or useful products, yet these goods may cause unintended harm and lead to liabilities due to their direct access to the human body down to the cellular level.

Honeywell launched a nylon-based nanocomposite under the Aegis name in September 2001, using nanoclays from Nanocor. These nanocomposite bottles are used in the Hite Brewing Company in Korea. The Honeywell website gives details on these products, showing that these nanomaterials may be used in food contact applications.⁵³ Their annual report does not mention the company’s investment in nanotechnology.

Food contact applications of nanotechnology may offer promising or useful products, yet these goods may cause unintended harm and lead to liabilities due to their direct access to the human body down to the cellular level.

Petitioners spotlight concerns regarding nanosilver's potential hazards

An increasing number of nanomaterial products are infused with forms of nanoparticle silver ("nano-silver"), because of the nano-enhanced ability of silver to kill microorganisms and bacteria. In 2008, the International Center for Technology Assessment petitioned the US EPA to request a rule change so these products would be regulated as pesticides. In their petition, the group notes, "While the risks of nano-silver to the environment and human health are not well understood, existing studies have indicated cause for concern, such as harmful impacts on fish and aquatic ecosystems, potential interference with beneficial bacteria in our bodies and the environment, and the potential development of more virulent harmful bacteria." "Nano-silver has quickly become the most commonly used nanomaterial in consumer products and the fastest growing sector of nanomaterial commercialization. The use of nanosilver as an antimicrobial agent is now widespread, with a wide variety of products now on market shelves. The petitioners discovered no fewer than 260 self-identified nano-silver consumer products."⁵⁴ A recent study reported that nano-silver could harm the immune system, and other researchers have suggested that if nanoparticles from disinfectants get loose and into the body, they might wreak havoc with the human immune system.⁵⁵

In its natural state, silver is extremely toxic to fish and other aquatic species. At the nano-scale, silver can be many times more toxic, because nanoparticles of silver have a greater surface area on which chemical reactions can occur than larger particles of silver. The potential impacts of the widespread use of nano-silver are unknown, yet an increasing amount of research now raises warnings about potential toxic effects on both human health and the environment. The petition notes that, "Recent research found that washing nanosilver impregnated clothing caused substantial amounts of nano-silver to leech into the discharge wastewater and eventually into the environment."⁵⁶

Disclosure of the ingredients of these nano-silver products has, in fact, recently decreased in the wake of the US EPA's 2006 decision to regulate nano-enabled products claimed to be antimicrobial as pesticides. "Unless you're making a claim to kill a pest, you're not a pesticide," said Jim Jones, director of the EPA's Office of Pesticide Programs.⁵⁷

Nano-silver has quickly become the most commonly used nanomaterial in consumer products and the fastest growing sector of nanomaterial commercialization.

Manufacturers of several products that were previously marketed as containing nano-silver, have removed the advertising or labeling noting the presence of nanosilver, as a recent Friends of the Earth report predicted. "The USEPA decision will only apply to products whose manufacturers make claims of antimicrobial action. This means that if a manufacturer withdraws marketing claims of nanosilver's antimicrobial activity, but changes nothing about the nanosilver component of a product, then that product will escape regulation as a pesticide. Many companies will simply remove all references to antimicrobial action from product labels, rather than registering their product as a pesticide and then being required to provide evidence of product safety."⁵⁸ The Sharper Image, which until recently advertised as anti-microbial several products containing nanosilver, has removed statements of pesticidal claims from its products treated with nanosilver, including slippers, socks and food containers.

The nanosilver disclosure gap

The previously mentioned company, RBC Life Sciences, also offers a nutritional supplement containing nanosilver, called Silver 22. Despite offering this and other nano-enabled products to consumers, there is absolutely no mention of

any nano-enabled product risks in the company's annual reports to the SEC.

RBC's website would lead one to believe that silver and nanosilver are simply a long-accepted nutritional supplement.⁵⁹ The website states that, "RBC's Silver 22 is nano-scale in size, is prepared by a unique, patented process and is suspended in colloidal form in purified water. It has undergone extensive safety testing. RBC scientists believe that the dose of 22 parts per million is the most effective level of silver for regular or periodic use. It may be used as a liquid or a spray." The website goes on to explain the healthful properties of silver. "Silver has been used for its purifying and preservative properties by many cultures throughout history. The Greeks used silver vessels to keep water and other liquids fresh. In the late 1800's and early 1900's silver was used for its germicidal properties. Today, silver is popular among alternative medicine enthusiasts because of many positive personal reports and some impressive research results."

Carbon nanotubes: if it looks like asbestos, and it hurts like asbestos...

A particular group of nanomaterials, carbon nanotubes, raises special concerns because they are similar in shape and rigidity to asbestos fibers. Carbon nanotubes are "seamless cylinders of hexagonal carbon networks and are 10,000 times thinner than a human hair. They are a hundred times stronger and six times lighter than steel and are used in adhesives, coatings and polymers and as electrically conductive fillers in plastics to make polymers more resistant against temperatures, harsh chemicals, corrosive environments, extreme pressures and abrasion."⁶⁰

Multiple laboratories have already independently found that certain carbon nanotubes can cause progressive, irreversible lung damage in test rodents.⁶¹ Two 2003 studies conclusively showed lung damage from exposure to certain carbon nanotubes. Further studies on this topic have increasingly strengthened the link between certain carbon nanotubes and pulmonary damage.

The International Council on Nanotechnology's online resource "Nano-EHS"⁶² contains a searchable database of published articles that examine the health effects of nanoparticles. Searching this database for "carbon nanotube" provided a list of studies focused on the toxicity and activity of these particles. This database only contains eight studies focused on carbon nanotubes in 2003. In 2004, this number doubled to 16. It continues to increase with 22 studies in 2005, 48 in 2006, 53 in 2007, and 70 in 2008. Two of these 2008 studies attracted trade media attention, as they found that carbon nanotubes can cause lung damage similar to asbestos in laboratory animals.⁶³ In one of these studies, researchers found that multi-walled carbon nanotubes caused granulomas, a precursor to mesothelioma, which is one of the diseases caused by asbestos. Researchers called these effects "asbestos-like pathogenicity."⁶⁴ In 2009, the National Institute for Occupational Safety and Health revealed on a preliminary basis a study showing that certain carbon nanotube particles pierce the lung lining in roughly the same manner as asbestos particles.⁶⁵

In fairness, a number of questions remain regarding whether carbon nanotubes will actually cause health harms to the same degree that asbestos did. For example, these materials are being produced various forms only some of which have been shown to cause harm. There are open questions about where the levels of exposure to carbon nanotubes by workers or consumers would be as abundant as the exposures that happened throughout the economy with asbestos. There are also questions about what the routes of exposure would be. Nevertheless, the findings in the laboratories flag significant enough parallels that we believe the reasonable investor would want to know more about these hazards now, even though as our analysis below will demonstrate, current disclosures lack sufficient detail and clarity on these issues.

Applying the Law to the Nanotechnology Case Study

Requirements applicable to product and materials safety risk disclosures to investors

As both of the case studies point out, the current regulatory framework as interpreted by the SEC and generally accepted accounting principles outlined by the FASB allow companies too much leeway to provide investors with the disclosure needed to evaluate financially material risk conditions. However, even under the existing framework and guidelines, there are at least three areas where information about emerging scientific hazards can and should be presented.

First, under SEC Regulation S-K, Item 303(a)(1) requires a company's Management's Discussion and Analysis of Financial Conditions and Results of Operations ("MD&A") to "identify any known trends or any known demands, commitments, events or uncertainties that will result in, or that are reasonably likely to result in the registrant's liquidity increasing or decreasing in any material way." Similarly, Item 303 (a) (3) (ii) requires the company to "Describe any known trends or uncertainties that have had or that the registrant reasonably expects will have a material favorable or unfavorable impact on net sales or revenues or income from continuing operations."

To what extent does this MD&A framework, requiring disclosure of information needed to deepen the reader's understanding of the company's annual report, reach to an issue that may not cause a loss for twenty or more years into the future? While the regulation refers in various locations to "long-term" issues, the general interpretation and application of the MD&A places a great deal of emphasis on the near term, for instance, how trends may affect returns during the current year, or possibly, the next two years. As such, issues that may portend liability 10 or 20 years into the future tend to be crowded out by

nearer term concerns. The SEC has done little to encourage companies to include these longer-term liability concerns, and indeed the regulators' instructions to focus on "the most important" issues may mislead companies to the conclusion that they do not need to disclose these longer-term questions. Further, it should be noted that, in some instances, on top of the liability issue, disclosure is also necessary because of the potential for more immediate consumer or regulatory responses to health-related concerns associated with materials.

Secondly, there is the risk factors disclosure. Item 503(c) of SEC Regulation S-K requires a company to discuss its risk factors: "the most significant factors that make the offering speculative or risky." The regulation directs a company to disclose risk factors that may include, among other things, the following:

1. Your lack of an operating history;
2. Your lack of profitable operations in recent periods;
3. Your financial position;
4. Your business or proposed business; or
5. The lack of a market for your common equity securities or securities convertible into or exercisable for common equity securities.

As with the MD&A, there are arguments for and against inclusion of the long-term liability issues associated with materials raising potential hazard issues. Again, the potential for consumer or regulatory responses which may restrict markets for the product in the nearer term may provide strong additional reasons why the risks associated with nanotechnologies need to be disclosed.

The existing Securities and Exchange Commission guidance and interpretations regarding the Management Discussion and Analysis and Risk Factors fail to ensure that potentially

severe issues such as nanotechnology hazards are disclosed.

Finally, there is the possibility of including these issues within the framework of contingent liability reporting, including in the footnotes to financial statements, guided by Financial Accounting Statement 5 of the Financial Accounting Stan-

The existing Securities and Exchange Commission guidance and interpretations regarding the Management Discussion and Analysis and Risk Factors are failing ensure that potentially severe issues such as nanotechnology hazards are disclosed.

dards Board. While disclosure of long-term liability risks considered by the management to be of a “remote” nature is not currently required to be disclosed in the financial statement, the FASB is in the process of reconsidering changes to its contingent liability reporting requirements, which could require disclosure of information regarding long-term contingent liabilities, especially if they could have a severe impact on the company over the long term. A disadvantage of including the disclosure in this section is that it would only be specific to potential liabilities, rather than also relating to potential regulatory restrictions or consumer backlash.

Scant disclosures by carbon nanotube manufacturers illustrate regulatory loophole

We conducted a review of financial statement disclosures and SEC filings regarding companies that have disclosed that they are producing or using carbon nanotubes. Despite deployment of carbon nanotubes by numerous companies, disclosure in securities reports of the potential health

risks and liabilities associated with these materials is scant.

In general, we found that many of the producers of carbon nanotubes disclose boilerplate statements on the scientific uncertainty surrounding nanotechnology and its health effects, and some mention the lack of regulatory coverage. However, none of the producers or users have yet disclosed the existence of emerging studies revealing the similarity to asbestos in the form and behavior of certain carbon nanotubes, nor provided any clarity about the scope of exposure the companies may have because of these materials. The users of the materials in consumer products were found to be engaging in no disclosure of the science indicative of potential health risks in their securities filings.

Here is an example from the risk factors section of the form 10-K for the year ended December 31, 2008 for one of the producers, *Applied Nanotech*, engaged in research based primarily on unique applications of carbon nanotube technology:

The health effects of nanotechnology are unknown

There is no scientific agreement on the health effects of nanomaterials, but some scientists believe that in some cases, nanomaterials may be hazardous to an individual’s health or the environment. The science of nanotechnology is based on arranging atoms in such a way as to modify or build materials not made in nature; therefore, the effects are unknown. The Company takes appropriate precautions for its employees working with carbon nanotubes and believes that any health risks related to carbon nanotubes used in potential products can be minimized. Future research into the effects of nanomaterials in general, and carbon nanotubes in particular, on health and environmental issues may have an adverse effect on products using our technology.⁶⁶

Similarly, the disclosure for Arrowhead Research, a company with diverse nanotech projects, including a subsidiary engaged in commercialization of carbon nanotube products for the electronics industry, in the form 10-K for the fiscal year ended September 30, 2008 reported in the risk factors section that:

Nanotechnology-enabled products are new and may be viewed as being harmful to human health or the environment.

There is public concern regarding the human health, environmental and ethical implications of nanotechnology that could impede market acceptance of products developed through these means. Nanotechnology-enabled products could be composed of materials such as carbon, silicon, silicon carbide, germanium, gallium arsenide, gallium nitride, cadmium selenide or indium phosphide, which may prove to be unsafe or harmful to human health or to the environment because of the size, shape or composition of the nanostructures.

For this reason, these nanostructures may prove to present risks to human health or the environment that are different from and greater than the better understood risks that may be presented by the constituent materials in non-nanoscale forms. Because of the potential, but at this point unknown, risks associated with certain nanomaterials, government authorities in the United States or individual states, and foreign government authorities could, for social or other purposes, prohibit or regulate the use of some or all nanotechnologies. The United States Environmental Protection Agency has in that regard recently taken steps towards regulation of the manufacture and use of certain nanotechnology-enabled materials, including those containing carbon nanotubes or nanosilver. Further, in a just-released report, the United States National Academy of Sciences/National Research Council concluded that the U.S. government needs to develop a more robust and coordinated plan for addressing the potential

environmental, health, and safety risks of nanomaterials.

The regulation and limitation of the kinds of materials used in or used to develop nanotechnology-enabled products, or the regulation of the products themselves, could halt or delay the commercialization of nanotechnology-enabled products or substantially increase the cost, which will impair our ability to achieve revenue from the license of nanotechnology applications.

While such disclosures might suffice under current SEC guidance, we believe that investors need more detailed disclosure. In particular, a disclosure stating that “the effects are unknown” may be contradicted by the substantial scientific concerns already expressed in scientific literature demonstrating the resemblance between some carbon nanotubes and asbestos. A disclosure which states that “future research may have an adverse effect on products using the company’s technology,” ignores and potentially even

A disclosure stating that “the effects are unknown” is contradicted by the substantial scientific concerns already expressed in scientific literature demonstrating the resemblance between carbon nanotubes and asbestos.

contradicts the truth that existing research already completed in the laboratories also may have that effect. These disclosures would also not inform investors regarding the scope of the potential liability exposure due to the use and sale of carbon nanotubes.

The Supreme Court has defined the materiality of disclosure as determined by whether a fact in question is something that a reasonable investor would want to know given the total mix of infor-

mation available.⁶⁷ In light of this definition, it seems likely that more information is material than is being disclosed. Specifically, the reasonable investor would likely want to know, in this instance, about the extent that the companies in question are producing or planning to produce carbon nanotubes, whether the products are of the types shown to cause health harm in lab tests, the existence of a whole series of scientific studies indicative of potential hazards of injury to lungs, more about risk mitigation or prevention measures being taken by each of the companies, and more about the scope of potential company liability exposure. In the following section, we will expound upon the scope of an appropriate disclosure standard.

Recommendations regarding an appropriate standard for disclosure for long-term technology, building upon carbon nanotube example

Disclosure of the risks associated with emerging technologies like nanotechnology will be better accomplished if regulators revise standards for disclosure to set forth more clearly the types of data needed by investors. This can be done either through footnotes to the financial statements that could be required under FAS 5, or revisions to SEC Regulation S-K, for disclosure in the Management Discussion and Analysis or Risk Factors section. Requirements in either location could clarify the need for better disclosure of these early-stage risks that are long-term and potentially severe:

1. Describe any trends in scientific studies that may relate to public health or environmental risks associated with the preparer's products or activities.

A critical question for an applicable regulatory standard is the threshold that would trigger disclosure of emerging scientific concerns. We propose that the trigger should be certain developments that may indicate public health, social or environmental impacts of the company's products, services or activities, including issues that may be harmful to the company's brand or repu-

tation, that have been recognized internally or externally to the company such as:

- i. Recognition implying potential public health, social or environmental impacts of the company's products, services or activities by significant institutes, task forces, institutions or agencies anywhere in the world, such as government research or regulatory bodies, insurers, reinsurers, think tanks, prestigious bodies, etc.
- ii. The appearance of several, or substantial, peer-reviewed studies in respected scientific journals, or literature survey reports, that are indicative of potential hazards of the company's products or activities.

In the instance of companies producing carbon nanotubes it is apparent that the science regarding their impact on lungs, and the resemblance of carbon nanotubes to asbestos, represent some specific developments that the reasonable investor would want to know. The following is a simple example of what such a disclosure might look like:

As a producer of carbon nanotubes, we may be exposed to potential long-term product liabilities associated with the changing scientific understanding of the health impacts of these products. Some peer reviewed laboratory studies have recently found that certain carbon nanotubes resemble asbestos structurally, cause a mesothelioma-like illness in laboratory rats, and may be capable of piercing the lung lining in a manner similar to asbestos. The carbon nanotubes that we are producing are similar to the form of the materials found to be harmful to lung tissues in laboratory tests. The management believes that the scientific community is a long way from resolving the extent of potential health effects from these materials, and that further studies are needed to resolve this issue conclusively. In addition, we believe that the patterns of potential exposure are not as extensive as the workplace and household exposures that occurred with asbestos.

In this sample disclosure the company could also disclose whether it is aware of other studies or circumstances that mitigate against the concerns about damage or harm. The disclosure would not require the company to weigh the evidence and determine who is right in the current scientific debate, but rather would reflect disclosure of some studies that would reasonably be of concern to investors because they may forewarn of long-term liabilities.

2. Describe measures the company is taking to prevent, reduce, or mitigate the potential long-term liabilities.

Secondly, we believe that investors want to know in the current circumstance whether the company is taking any specific steps to prevent, reduce, mitigate or cap these potential liabilities. These could include seeking insurance, promoting exposure controls, funding research, testing or modifying the materials, etc.

A sample disclosure for current carbon nanotube producers might read as follows:

We are currently participating in a consortium of nanotechnology companies that is funding research to assess the safety of carbon nanotubes. In addition, we are informing our customers of the existence of the laboratory studies, and providing guidance regarding workplace exposure prevention to minimize the potential for occupational health impacts. We have not obtained insurance to cover these potential liabilities, and do not intend to acquire such insurance within the foreseeable future.

In the instance of carbon nanotubes, one of the interesting issues is the question of insurance exclusions of product liability coverage. In 2008, Continental Western Insurance Group was the first insurer to publicly announce that it would not cover nanotechnology related risks. The firm specifically addressed the risks of nanotubes, stating “the intent of this exclusion is to remove coverage for the, as of yet, unknown and unknowable risks created by products and pro-

cesses that involve nanotubes. The exclusion is being added to make you and your customers explicitly aware of our intent not to cover injury and/or damage arising from nanotubes, as used in products and processes...”⁶⁸ Thus, it could be important to identify whether insurers have flagged these issues as an area of special risk or concern. Are there exclusions of these risks? Has the preparer been able to obtain insurance regarding these risks? Are there any special policy limits or extraordinary costs associated with the insurance?

3. Qualitatively describe the scope of potential liability.

Although it may be too difficult to quantify the extent of a potential long-term liability, some of the factors that may go into how large and severe such a liability could be are generally apparent long before the probability and final resolution of amount of liability are known. Investors would reasonably want to know as a baseline the extent of a company's potential exposure—such as how many people may be exposed and how big a portion of the company's activities involve use of the material in question.

Taking the example of carbon nanotubes again, some elements of disclosure might include (a) characterization of the portion of a company's sales or production that the product line in question constitutes; (b) potential avenues of exposure to the identified risk, such as consumer ingestion or workforce inhalation; and (c) traceability of products to the individual manufacturer. A sample disclosure might read:

At present, carbon nanotubes represent 30% of our intended production output. Potential avenues for exposure might include inhalation during the fabrication process or ingestion of dust that occurs as a breakdown by-product through consumer use of products fabricated with carbon nanotubes. Because carbon nanotubes may be of unique design for each manufacturer, it is likely that liability will be traceable to individual manufacturers.

Eight Corporate Liability Disclosure Loopholes and How Regulators Should Close Them

The asbestos and nanotechnology case studies in this report led us to identify eight regulatory loopholes that undermine the disclosures and estimates of contingent liabilities needed by investors. While the rules relating to disclosure of contingent liabilities require a balance of various interests, the balance struck by the current rules does not lead to an optimal result for investors or companies. Practical solutions are recommended to improve the credibility of disclosure reports.

1. SHORTSIGHTEDNESS

LOOPHOLE: Regulations currently allow companies to take the short view and avoid disclosure and estimation of longer-term liabilities.

Current accounting and disclosure rules tend to focus on disclosures relevant to short-term results—the current accounting period or year, or at best a few years into the future. In both the asbestos and nanotechnology case studies, we saw disclosures in which companies refused to look ahead far enough into the future—leaving investors in the dark as undisclosed risks continue to mount.

Despite the painful investor experiences with asbestos, regulators are still failing to adequately reinforce the importance of the long view. Securities and Exchange Commission regulation S-K establishes requirements to provide some forward-looking information to investors based on the management's analysis of important issues facing the company that may affect its financial results. However, there is little guidance to ensure disclosures reflective of any more than trends or developments posing near-term impacts. The question of whether a probable long term liability is "material" is a topic on which the

Securities and Exchange Commission has issued no straightforward guidance. Instead, the issue currently turns on whether a "reasonable investor" would want to know more, given the total mix of information that is available—a very general standard that is subject to situational interpretation that often yields a decision against disclosure. As a result, many important developments posed in longer-term liability concerns are omitted from the Management Discussion and Analysis.

Nor has the Financial Accounting Standards Board adopted a long view on liabilities. Even in its 2008 exposure draft proposing improved disclosure of contingent liabilities, the FASB proposed limiting disclosure of **severe** liability scenarios, if viewed by a company as only remotely likely to result in a loss, to those situations in which the issue **would resolve within the next year**.

By contrast, many investors are interested in more than just information about the gains and losses that may occur over the next quarter or year. They want to know about longer-term risks, and to be in a position to decide whether or not they wish to include those risks in their portfolio.

Fiduciaries such as pension fund managers also have a duty to inquire as to such longer-term risks. These trustees have a duty of impartiality—a legal obligation to be impartial as between those who may benefit from the near term returns and value of an investment, and the longer-term beneficiaries of that investment. The duty of impartiality requires a balanced approach between short-term and long-term obligations. This means that long-term, even intergenerational, risks must be transparent to those who are making investments as fiduciaries.⁶⁹

Corporate disclosure and financial accounting rules must meet the needs of long-term investors as well as those with only shorter term financial gain in mind.

The failure of regulators to recognize the importance of the longer term has significant consequences for both disclosure and estimation. For disclosure, it reduces the sense of imperative for companies to disclose risk factors or trends which may pose liability issues primarily in the long run. For estimation, it leads companies to estimate their liabilities over shorter time horizons, thereby failing to give the full picture of a corporation's likely liability by the time all claims relating to the issue are resolved.

SOLUTION: Recognize the materiality of the long-term, and need for disclosure of potential liabilities that may manifest in the long-run.

The SEC and the FASB should clarify that risks which may play out in the long-term, even over 20 or more years, can be material and should be disclosed in securities and financial reports. In addition, the regulators should specify that when preparing estimates of liabilities, the time horizon should be clearly stated and should reflect the company's best estimate of the potential range of long-term liabilities, not just those expected to resolve in the near-term.

2. CONCEALED SCIENCE

LOOPHOLE: Regulators currently allow companies to conceal emerging science that forewarns of potential liabilities in the future.

As demonstrated in both the asbestos and nanotechnology case studies, under the existing securities and accounting disclosure rules companies often fail to disclose emerging science demonstrating large potential hazards of their products or activities until after the litigation begins. This is too late to forewarn investors who

may wish to avoid investment in the particular risks associated with the products, materials, or activities.

Scientific findings of experts funded by a company that find "no harm" of the company's products or activities should not be a basis for omitting discussion of significant studies emerging

As demonstrated in both the asbestos and nanotechnology case studies, companies often fail to disclose emerging science demonstrating large potential hazards of their products or activities until after the litigation begins.

elsewhere in the scientific literature indicative of potential hazards, nor for dismissing such adverse science with a simplistic discussion of a company's viewpoint (e.g. We believe chemical X will not harm human health). Yet both Securities and Exchange Commission and FASB disclosure rules may currently allow a company's defensive science to color their judgment as to whether liabilities attendant to a chemical risk are "reasonably likely" and therefore merit disclosure.

In the history of public health issues such as asbestos and tobacco, companies' defensive science only staved off the eventual liability for a limited period of time; investors were not given fair warning in company disclosures.

SOLUTION: Require companies to disclose emerging trends and scientific findings regarding impacts of companies' products and activities relevant to both short-term and long-term outcomes.

To avoid allowing companies to continue the practice of misleading investors as they did in concealment of asbestos hazards, the duty must

be clarified in securities and financial regulations to require companies to disclose on a summary basis what is known about hazards of products as they become understood in the laboratory. Defensive science must not be allowed to be a rationale for nondisclosure. Instead there should be objective disclosure standards and triggers, adopted by both the SEC and the FASB. The SEC should clarify these disclosure obligations as an interpretive release regarding the Management Discussion and Analysis, or alternatively by promulgating a separate provision requiring these disclosures as a new section of regulation S-K. The FASB should also establish a requirement for these disclosures in the footnotes to financial statements as part of FAS 5, by clarifying the duty to disclose contingent liabilities, even if viewed by management as long term and remote, if they trigger thresholds as described below. For either the SEC or the FASB, the elements of an effective disclosure regimen on these issues would include the following:

- a. The threshold for disclosure should be where there are any substantial developments that may indicate public health, social or environmental impacts the company's products, services or activities, including issues that may be harmful to the company's brand or reputation, that have been recognized internally or externally to the company such as:
 - i. Recognition implying potential public health, social or environmental impacts of the company's products, services or activities by significant institutes, task forces, institutions or agencies anywhere in the world, such as government research or regulatory bodies, insurers, reinsurers, think tanks, prestigious bodies, etc.
 - ii. The appearance of several, or substantial, peer-reviewed studies in respected scientific journals, or literature survey reports, that are indicative of potential hazards of the company's products or activities.

- b. Briefly describe these issues, and quantify where possible.
- c. Describe briefly measures the company is taking to minimize or prevent the issue in question, examples: consumer education, research, materials modification, exposure reduction, public policy efforts, fieldwork, third-party auditing, adoption of new codes, insurance, etc.
- d. Provide brief indicators of the severity of scale of the problem—for instance, the percentage of the company's expected sales volume that a potentially problematic product comprises, indicators of the potential extent of workplace exposures where materials are used in the fabrication of goods, significant exposures to elderly or young consumers, etc.

In the history of public health issues such as asbestos and tobacco, companies' defensive science only staved off the eventual liability for a limited period of time; investors were not given fair warning in company disclosures.

3. THE KNOWN MINIMUM

LOOPHOLE: Regulations currently require accrual of only the "known minimum" of pending liabilities when greater likelihood of higher liabilities is uncertain.

The existing guidance from the Financial Accounting Standards Board (FASB Interpretation 14) requires companies to estimate the range of their potential liabilities associated with a claim, but if no single amount within that range is considered more probable than any other amount within the range, *it instructs them to record the low end of the range (the "known minimum")*. This is a widely used and abused practice, which re-

sults in companies commonly disclosing only the lowest possible projection of liability—often orders of magnitude lower than the eventual end liability. We saw in the Johns-Manville and Kaiser Aluminum asbestos case studies how this kind of approach can yield no realistic estimate until the very moment that the company declares bankruptcy, and shareholders lose billions of dollars in artificially maintained value.

Although companies would still only be required to accrue (recognize on the books) their estimated “known minimum” liability where no other estimate within the range of potential liabilities is more likely than that, in its 2008 exposure draft the FASB has proposed requiring additional disclosures beyond those recognized amounts. This includes some quantitative information—the amount of any claims against the company, and if there is no claim or assessment amount, then the company’s best estimate at the maximum exposure to loss. The company would also be permitted to provide other estimates if it believed the claim or maximum exposure amount would not be representative of the actual exposure. In response to their proposal, many companies and defense lawyers objected that disclosure of a probability weighted estimate would in most instances need to rely on a lawyer’s calculation of probabilities, something which is difficult for lawyers to provide and which also tends to breach attorney-client privilege if it is disclosed. In contrast, the range of potential liabilities may in many instances be ascertainable by a consultant working from non-privileged information to benchmark a company’s liabilities against similar cases facing other companies.

SOLUTION: Require at a minimum disclosure of the range of liability estimates, not just the “known minimum.”

FASB should revise its Financial Interpretation 14 to require at a minimum that companies which accrue the known minimum must also disclose the range of potential liabilities, and not just that known minimum.

4. PRIVILEGING SECRECY

LOOPHOLE: Privileging concealment, by using attorney-client relations as a shield against estimating liability for investors.

Securities and accounting regulators have struck a precarious balance in an attempt to provide shareholders with information about a firm’s liabilities, while not mandating disclosure of information that might undermine the firm’s position

The ABA Statement of Policy guides attorneys, in most cases, to avoid providing estimates of potential liabilities for the auditors.

in pending or future litigation. The goal of providing accurate information relevant to valuation has been balanced against the recognition that investors in a company generally do not want to see the company suffer additional litigation losses as a result of the disclosure process. The problem is, this balance has never proven particularly workable, but instead has ensured enormous gaps in disclosure and estimation of liabilities.

The need to protect privileged information is clear. Under well-established law, certain documents and communications involving attorneys are accorded special protection against disclosure to an opposing party in litigation. In particular, communications between an attorney and client for purposes of legal advice, and documents prepared in anticipation of litigation which contain attorneys’ “mental impressions, conclusions, opinions, or legal theories” are generally protected. The issue of waiver is a serious concern; for instance, legal opinions or memoranda provided to a firm as advice in anticipation of a settlement could lose their protected status if disclosed to an auditor in support of an assertion included within a company’s financial statements.

In addition, an auditor may ask an attorney for his or her assessment of the prospects or likely outcome of a case that the attorney is handling, specifically for purposes of assessing the adequacy of disclosures and estimates in financial reports. However, in the face of such a request, attorneys are limited in their ability to respond under the American Bar Association Statement of Policy Regarding Responses to Auditors' Requests for Information, (known as "the Treaty"). Under this so-called Treaty, lawyers are required to limit the kinds of judgments they can make and provide to auditors for purposes of financial statement disclosure and estimation. Attorneys are instructed by the policy that the likelihood of a loss in an existing claim can only be categorized as one of three categories—probable, reasonably possible, and remote (categories of probability adopted in FAS 5). The vast majority of cases fall into the middle category of reasonably possible, and ***therefore in most cases there is no real qualification of the probability of success other than to say that it is reasonably possible that the case might result in a loss.***

Moreover, the ABA Statement of Policy guides attorneys, in most cases, to ***avoid providing estimates of potential liabilities for the auditors***—the precise information that investors need. The Treaty states: ***"The lawyer also may be asked to estimate, in dollar terms, the potential amount of loss or range of loss in the event that an unfavorable outcome is not viewed to be "remote." In such a case, the amount or range of potential loss will normally be as inherently impossible to ascertain, with any degree of certainty, as the outcome of the litigation. Therefore, it is appropriate for the lawyer to provide an estimate of the amount or range of potential loss (if the outcome should be unfavorable) only if he believes that the probability of inaccuracy of the estimate of the amount or range of potential loss is slight."***

The outcome of this guidance regarding lawyers' communications is that, because lawyers are currently the primary experts that auditors and

companies turn to regarding projections of liability to include in shareholder reports, the disclosures and estimates contained in those reports are inherently limited.

SOLUTION: Require companies to utilize third-party consultants who work from non-privileged information to develop disclose-able liability estimates.

The determination of the likelihood of contingent losses is in the eye of the beholder. To the extent the company's auditors must rely upon the company's lawyers to verify the company's accounting disclosures, auditable estimates will not be forthcoming. In contrast to the disciplined reticence against prediction and estimation of liabilities by the legal profession, a separate consulting industry has developed to provide companies with projections of potential liability. In many instances, these consultants can provide ***a range of liability projections*** for a set of claims without reliance on privileged information, and therefore can produce disclosures that do not compromise the attorney-client privilege or attorney work product privilege. But so far, financial regulators have largely failed to tap the services of these consultants on behalf of investors.

The SEC and FASB should clarify that the limitations on lawyers to provide liability estimates for the company's auditors—and the associated limits this places on the ability of the client to include auditable assertions about contingent liabilities in its financial statement—can be overcome by use of third-party consultants that do not have an attorney-client relationship with the company. Such consultants can qualify as experts under Statement of Auditing Standard No. 73 "Using the Work of a Specialist" (SAS 73). Such experts can also be asked to develop these estimates and related disclosures without reliance on privileged information, thereby overcoming the major impediment to disclosure of estimates while still providing more useful information for investors. To the extent there is nonprivileged

information held by companies relevant to the assessment of liabilities (such as lists of sites, statistical information on claims, number of items sold), that information should be provided to the consultants for purposes of these assessments.

Any discussion of the role of corporate consultants must be tempered with a degree of skepticism. After all, we saw in the Johns-Manville case study how the estimation work of consultants can itself be subject to manipulation either by a company's attorneys, or by the consultant having a sense of the client's goals of minimizing estimated liabilities. Nevertheless, in conjunction with the proposed reforms related to loopholes five, six, and seven described below, we believe, bringing greater involvement of the consulting profession to the disclosure and estimation process holds a great deal of promise. The reforms described below would help to hold the line on abuses by consultants by requiring them to use benchmarking against liabilities at other companies, disclose their underlying assumptions, and disclose inconsistent estimates that may be given to other parties beyond the investors.

5. INCONSISTENT ESTIMATES

LOOPHOLE: Providing larger liability estimates to insurers than to investors.

There is a gulf between what companies know internally about the magnitude of their liabilities, or discuss with their lawyers and insurers, and what they choose to disclose to investors. When insured companies seek recovery from their insurance carriers regarding a body of asbestos claims, for instance, the insurers typically require a long-term estimate of the amount of liabilities anticipated. Such estimates may project liabilities as much as 50 years into the future. The insured and the insurer sometimes utilize such projections to analyze current liability defense and coverage strategies or to negotiate a near term buyout of the liability claims of the insured. By contrast, concurrent disclosures to in-

vestors may consist only of an amount accrued for the current accounting period or projected for only a few years into the future. So, the same company may tell its insurer to expect liability claims of \$2 billion while telling investors only that it expects liabilities of \$200 million over the subsequent five years, and that the future beyond that is too uncertain to project further. Dealing with the insurer, the company is motivated to plan for the worst and overstate the loss; when speaking to investors, the company is motivated to hope for the best and understate the loss.

SOLUTION: Disclose inconsistencies in liability estimates and timelines provided to insurers or other parties and to investors.

Both the Securities and Exchange Commission and the Financial Accounting Standards Board should establish guidelines requiring that in the course of disclosure of liability to investors, the reporting company should also disclose whether there are any inconsistent or larger estimates of liability (or timelines of liability estimates) provided to insurers, buyers or other third parties.

6. HIDDEN ASSUMPTIONS

LOOPHOLE: Using hidden assumptions to minimize estimates of liability.

As described in the asbestos case study, companies may easily deploy a set of assumptions biased towards finding lower estimates of liability. To the extent such hidden assumptions may exist within a liability disclosure, shareholders may be misled to believe the company's financial future is brighter than it really is.

The Securities and Exchange Commission has long been aware of the possibility of underlying assumptions that render projections or disclosures misleading. In its 1993 Staff Accounting Bulletin 92 (SAB 92) the SEC provided its interpretation of the FASB FAS 5 contingent liability disclosure standard, noting that disclosures

regarding loss contingencies should be included in notes to financial statements and further:

The staff believes that product and environmental liabilities typically are of such significance that detailed disclosures regarding the judgments and assumptions underlying the recognition and measurement of the liabilities are necessary to prevent the financial statements from being misleading and to inform readers fully regarding the range of reasonably possible outcomes that could have a material effect on the registrant's financial condition, results of operations, or liquidity. Examples of disclosures that may be necessary include:

- Circumstances affecting the reliability and precision of loss estimates.
- The extent to which unasserted claims are reflected in any accrual or may affect the magnitude of the contingency.
- Uncertainties with respect to joint and several liabilities that may affect the magnitude of the contingency, including disclosure of the aggregate expected cost to remediate particular sites that are individually material if the likelihood of contribution by the other significant parties has not been established.
- Disclosure of the nature and terms of cost-sharing arrangements with other potentially responsible parties.
- The extent to which disclosed but unrecognized contingent losses are expected to be recoverable through insurance, indemnification arrangements, or other sources, with disclosure of any material limitations of that recovery.
- Uncertainties regarding the legal sufficiency of insurance claims or solvency of insurance carriers.

Notably, this list of disclosure examples does not include, except in the most general way, the kinds of distortions in liability estimates reflected in the Johns–Manville example described earlier in this report. In that instance, the most important hidden assumptions had to do with a series

of assumptions by scientists and consultants that drove the overall estimation of number of cases and number of claims likely to be brought. While this might essentially be encompassed in the first bullet which refers to “Circumstances affecting the reliability and precision of loss estimates,” the lack of specificity by staff may be construed to imply a lack of scrutiny of these types of estimation assumptions. We believe the case example demonstrates that more guidance and scrutiny are necessary in order to bring transparency to the underlying estimation process used in liability projections and disclosures.

SOLUTION: Disclose nonprivileged critical assumptions used in estimating liability.

Both the Securities and Exchange Commission and the Financial Accounting Standards Board should assure that companies disclose critical assumptions regarding science, claims volume, etc. used in estimating their liabilities. These should include any assumptions that may significantly reduce the estimate or range of estimates.

7. MISSING BENCHMARKS

LOOPHOLE: No requirement to benchmark liabilities against other companies whose experience with relevant claims demonstrates realistic estimates of liability.

It is often possible to provide an earlier and more accurate estimate for investors, by benchmarking against the results that are happening at other companies that are further along in the course of similar types of litigation. Failure to utilize available benchmarks is one means by which companies may radically underestimate and underdisclose their liabilities.

As our asbestos case study demonstrates, a lack of a clear regulatory mandate to disclose benchmarks has meant that shareholders of companies like Dow Chemical and Kaiser Aluminum did not have the benefit of such comparative data at critically important times. When Dow Chemical

purchased Union Carbide, it did not disclose the magnitude of asbestos liabilities it was purchasing along with the company; two years later these were estimated by Union Carbide to amount to \$2.2 billion based on benchmarks against other companies. When Kaiser Aluminum estimated its pending liabilities for asbestos it may have been using the “known minimum,” but when the actual liabilities were tallied, the totals were closer to the amounts that could have been estimated had the company benchmarked against others’ liability experiences such as Johns-Manville’s. At Kaiser the difference meant that instead of these liabilities being just a chronic financial drain, they contributed to the company’s bankruptcy.

SOLUTION: Benchmark liability estimates against other companies facing similar litigation.

Both the Securities and Exchange Commission and the Financial Accounting Standards Board should assure that future liability disclosures are benchmarked by the disclosers against other companies with a substantial claims record that is relevant to the issue disclosed.

8. RISK-FREE PROXIES

LOOPHOLE: Refusing to allow shareholders to propose annual proxy ballot requests for corporate reports on specific risks of concern to investors.

When companies fail to disclose information on risks flagged by some investors, the shareholder resolution process is a logical avenue for recourse. Through shareholder resolutions on the annual corporate proxy, share owners are

empowered to ask questions and seek a shareholder vote on whether the company should disclose more information on a particular issue. However, for the last several years, the Securities and Exchange Commission has been blocking shareholders from filing resolutions which ask companies to disclose more information on particular financial risks posed to a company. Staff Legal Bulletin 14C formalized this staff position, and barred investors from filing resolutions requesting reports on financial risks associated with environmental, social or other issues facing a company. The staff decided that any shareholder resolution asking for disclosure of risks to a company would be treated as “ordinary business,” and therefore be excludable under existing SEC exclusion Rule 14a-8. The staff-created principle of exclusion has been applied to allow companies to exclude shareholder resolutions related to toxic chemicals, nanotechnology, climate change, offshore sourcing, and many other issues.

SOLUTION: Allow shareholder resolutions requesting disclosure of the risks of concern to investors to appear on the annual proxy ballot.

The Securities and Exchange Commission should reverse its position on allowing exclusion of resolutions seeking “risk evaluation,” including revoking Staff Legal Bulletin 14C. The right of shareholders to ask about short and long term issues of financial risk associated with the companies they invest in is a fundamental shareholder right that should be restored. The ability to ask about these questions should only be limited by the requirement for shareholders to avoid “micromanaging” how companies implement their analytical and disclosure processes.

Conclusion: Regulators Must Act Now to Ensure Honest Accounting

From the case studies in this report, we know leading asbestos manufacturers failed to disclose the science forewarning about health risks associated with asbestos, even though they had access to the information. Later, the same companies deferred accurately estimating their expected liabilities, making use of the “known minimum” to minimize their liability disclosures, only providing a realistic estimate at the very moment that those liabilities bankrupted them. Nanotechnology companies may be replicating the early stages of this pattern -- failure to disclose what is already known in the laboratory about the risks of their products in their current securities filings.

We believe the shortcomings of the current regulatory frameworks with regard to product liabilities are being replicated across the range of liabilities reported in securities filings and financial statements. Contingent liability disclosure rules

address an array of issues, from banks’ contractual liabilities, to carbon pricing issues for utilities in the face of climate change, to warranty related issues.

This report is a call to action -- an urgent call for regulators to bolster the integrity of securities disclosure and financial reporting, and to restore credibility to the investing marketplace. Based on the identified loopholes in securities and accounting rules, the credibility of corporate reports and the reliability of these reports as a means of assessing share value remain at risk. Hundreds of billions of dollars of liability are currently missing from financial disclosures. The FASB and SEC must act quickly and decisively to close the eight loopholes, so that investors can rely on the credibility of disclosures, and once again choose the investment marketplace over the mattress as a safe place to put their money.

APPENDIX

Technical Recommendations to the Financial Accounting Standards Board Regarding Revision of Contingent Liability Reporting Standards (FAS 5)

In 2008, the Financial Accounting Standards Board issued a proposal (exposure draft) to revise its contingent liability reporting guideline, Financial Accounting Statement 5. The Board received substantial comment and on March 6, 2009 held a roundtable discussion of various stakeholders to aid in the redeliberation of the proposed standard. The author was one of the participants in the roundtable at the FASB headquarters in Norwalk, Connecticut. After the roundtable, the author submitted the following recommendation for revision of FAS 5, along with a set of comments.⁷⁰

Early stage disclosures

The exposure draft for revision of FAS 5 proposed that potential liabilities viewed by the preparer as “remote” would only need to be disclosed if they were likely to be resolved within one year and the potential magnitude of loss would be severe. The Roundtable discussion agenda raised a question of the threshold for disclosure: “Are there some contingencies that are material to users of financial statements, and therefore should be disclosed, even though the likelihood of loss is remote? If so, do such loss contingencies require the same level of disclosure as those for which the likelihood of loss is more than remote (that is, at least reasonably possible)?”

In response, we note that there was strong support from financial statement users to require disclosure of severe, remote liabilities regardless of whether they would resolve within a year. We recommend that at a minimum the following disclosures be required under the revised FAS 5.

Require disclosure of circumstances that, in the case of an unfavorable resolution of future

claims, may reasonably lead to a severe magnitude of loss, even if viewed as remote and/or long-term by the management. At a minimum, include a footnote disclosure stating:

- a. In the case of potential for severe tort or product liability issues that may result from emerging scientific findings, briefly describe developments in the scientific literature that may indicate the potential for liabilities associated with the company’s products or activities, such as:
 - i. The appearance of several, or substantial, peer-reviewed studies in respected scientific journals, or literature survey reports, that are indicative of potential hazards of the company’s products or activities.
 - ii. Recognition given to such science by significant institutes, task forces, institutions or agencies anywhere in the world, such as government research or regulatory bodies, insurers, reinsurers, think tanks, etc.
- b. In the case of other uncertainties, such as severe contractual liability scenarios, describe other factual information or contingencies that may cause such contingent losses, for instance:
 - i. Government policies to set a cap on carbon emissions, currently under discussion, could dramatically increase the cost of certain existing contractual obligations held by an energy company;
 - ii. A decline in the value of home prices could lead to significant contractual losses.

- c. Describe briefly measures the filer is taking to minimize or prevent any eventual liability, such as consumer education, research, materials modification, exposure reduction, public policy efforts, insurance, etc.
- d. Provide brief indicators of the severity of scale of the possible liability—for instance, the percentage of the company's expected sales volume that this product comprises, the possible extent of workplace exposures where materials are used in the fabrication of goods, significant exposures to elderly or young consumers, etc.
- a. Disclosure of factual information, documentation of the claims asserted, and links to pleadings in those cases.
- b. An estimate of the range of potential liability. The financial statement filer should be encouraged to accomplish this estimation by one of the following two methodologies:
 - i. A professional third-party estimation of the range of potential liabilities utilizing publicly disclosed and available non-privileged information. (The preparer should clarify whether the third-party consultant conducted this assessment without access to privileged information, and if so, how this affects the accuracy of the estimate.) The preparer should provide the consultant with any non-privileged information in its possession that is relevant to the assessment, such as number of sites, number of claims, number of items sold, etc.
 - ii. Where the filer chooses to, it may provide information based on the estimations or predictions by its own counsel. The filer is encouraged to work with its counsel and auditors to undertake such disclosures in a manner that eliminates or minimizes the impact on privileged information, including aggregation of estimates.

Late stage disclosures and estimations

The Financial Accounting Standards Board has been wrestling with how it will encourage better disclosure of a company's potential liabilities while not jeopardizing the company's position in litigation. For instance it recently asked in a roundtable conducted at its headquarters in Norwalk Connecticut:

- If an estimate of the possible loss or range of loss can be made, should disclosure of that estimate be required? Should there be a prejudicial exemption from providing such an estimate?

By prejudicial exemption the board means allowing the company to conceal its liability estimates whenever its lawyers believe that it could potentially change the outcome of litigation. This is essentially what happens under the current system and the outcome is that investors get very little information. We have concluded that a different disclosure system will be necessary in order to arm investors with adequate information about impending liabilities. We recommend that for contingent liabilities that are nonremote, and for which the magnitude of loss may be material either individually, or in the aggregate as a group of similar or related claims, FAS 5 should require:

- c. The estimate presented by the company should be one of the following, working from the top of this hierarchy in descending order, and using the form highest on the list that is feasible:
 - Probability-weighted estimate of the liability;
 - The range of potential losses and the "most likely" estimate of the liability;
 - Range of potential losses associated with the liability, without defaulting to the known minimum.

- Known minimum should only be allowed to be disclosed ONLY when **no other** estimate can be developed.
- d. For any estimates, disclose critical assumptions used in the estimation.
- e. Regardless of whether or not an estimate of the contingent liability amount is disclosed, the following additional item shall be disclosed to the extent feasible:
- Total number of claims pending and average loss per claim
 - Where significant numbers of claims are being handled on a similar issue over the course of years, include tabulated information on related claims pending, claims settled and loss per claim on a year by year basis.
 - State the nature of the contingency and items that trigger this, for example:
 - Environmental cleanups: number of sites, acreage, and type of contaminants
 - Contractual liabilities: number of contracts, nature of contingencies, etc.
 - Total number of individuals reasonably likely to suffer harm as a result of the company's activities and portion of those individuals expected to pursue claims.
 - Where there is a record of similar claims at other companies, require benchmarking of estimates against other companies litigating the similar issue, and a brief discussion as to the extent to which such claims records are a reasonable reflection of the likely outcomes for the preparer.
- f. Disclose long term estimates of claims made to insurers or other parties, or otherwise known to the company, not just short-term liability estimates. Disclose instances when estimates of liability provided to investors diverge significantly in time horizon or magnitude from those provided to insurers or other parties such as in the course of a purchase or sale.

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