



Aberdeen *Group*

[Send to a Friend](#) 

## The Product Compliance Benchmark Report

---

*Protecting the Environment, Protecting Profits*

September 2006

## Executive Summary

---

### Issue at Hand

Compliance needs vary by industry and geography, but the one consistent factor for all manufacturers is an ever-increasing number of regulations. Companies across manufacturing sectors are faced with complex legislation that places constraints on the design of their products. In addition, customers often add their own requirements. In 2004, Aberdeen Group published [\*The Design for Compliance Benchmark Report\*](#), which disclosed that the vast majority of companies lacked insight into the regulatory, environmental, and operational rules that impact their products and that nearly 80% of them lacked a cohesive systems infrastructure to track, audit, or manage product compliance. Since that time, some progress has been made. Most manufacturers, however, still ***have not developed systematic, repeatable product compliance processes that efficiently address today's complex and challenging business environment.***

Manufacturers today spend considerable time and effort ensuring that their products comply with a multitude of regulatory mandates. Yet many companies' approaches to ensuring compliance have left them at a high risk of noncompliance, potentially resulting in an inability to sell in global markets, unmet customer mandates, blocked shipments, and associated revenue loss. This high risk level exists despite significant efforts to achieve compliance by most companies. In fact, meeting compliance challenges today has resulted in increased product development cost, decreased ability to innovate, and added staffing.

### Key Business Value Findings

Benchmark analysis, however, found little correlation between the cost of compliance and the resulting compliance performance. ***Compliance performance is less dependent on level of effort than on implementing best practices and enabling those practices with the appropriate compliance infrastructure.***

Companies are beginning to respond, and significant progress has been made since the 2004 benchmarks. Top business initiatives being pursued include:

- Designing products for compliance
- Improving compliance documentation and evidence
- Building compliance into new product development (NPD) processes
- Proactively monitoring product designs for compliance
- Physically auditing products against compliance requirements



## Implications & Analysis

Best in class companies have developed proactive strategies to address compliance and adopted process, organizational, and technology approaches that enable product compliance. These approaches have paid off, as the following findings indicate:

- Best in class companies have 90% or more of products in compliance, as compared with laggards (the bottom 25% of performers), who average 10% to 40% of products in compliance with applicable requirements.
- Leading companies have 53% percent fewer stop shipments than other companies, protecting their product flow and revenue streams.
- Top performers have 35% percent fewer product recalls than other companies, resulting in lower recall costs, less customer disruption, and secure brand image.

## Recommendations for Action

Companies cannot comply their way to profitability and growth. But to protect those business interests companies should evaluate their processes and enabling technology to ensure they accomplish the following:

- Adopt proactive compliance strategies, seeking to meet all published standards for current markets, and consider meeting or exceeding strictest global standards in order to enable global sales.
- Proactively monitor and assess compliance early in and throughout the product lifecycle, embedding compliance processes into conceptual designs and new product development (NPD) processes.
- Seek more detailed product composition from suppliers, and, in turn, target the ability to provide more detailed product disclosures to customers as needed.
- Audit content in addition to designing for compliance to address potential variability and data inaccuracy in supply chains.
- Standardize and centralize compliance processes and organizations, leveraging experience and expertise across the enterprise.
- Automate compliance processes with a compliance infrastructure, for repeatability and sustainability – including providing visibility to requirements, documenting product configurations, gathering data from suppliers, assessing compliance, and documenting compliance to support customer documentation or regulatory audits.

[Send to a Friend](#) 



## Table of Contents

Executive Summary .....	i
<i>Chapter One: Issue at Hand</i> .....	1
Drivers for Product Compliance .....	2
Impact of Recent Compliance Regulations .....	3
Current Compliance Levels .....	4
Inaccuracy of Self-Assessed Compliance (and Associated Risk) .....	4
<i>Chapter Two: Key Business Value Findings</i> .....	6
Compliance Initiatives Pursued.....	6
Challenges Faced by Compliance Initiatives .....	7
Addressing Compliance Challenges .....	9
<i>Chapter Three: Implications &amp; Analysis</i> .....	11
Best in Class Protect Revenue Streams and Customer Relationships .....	12
Best Practice – Early and Frequent Compliance Checking.....	13
Best Practice – Material Composition Analysis and Documentation .....	14
Best Practice – Product Content Audits .....	15
Standardizing Compliance Practices .....	16
Centralizing the Compliance Organization.....	17
Frequency and Scope of Performance Measurement .....	18
Enabling Product Compliance – Compliance Infrastructure.....	20
<i>Chapter Four: Recommendations for Action</i> .....	23
Laggard Steps to Success .....	23
Industry Norm Steps to Success .....	24
Best in Class Next Steps .....	24
<i>Appendix A: Research Methodology</i> .....	26
<i>Appendix B: Related Aberdeen Research &amp; Tools</i> .....	29



## Figures

Figure 1: Factors Driving Emphasis on Product Compliance .....	2
Figure 2: Business Impact of Recent Compliance Regulations .....	3
Figure 3: Product Compliance Framework .....	5
Figure 4: Top Initiatives Pursued to Address Product Compliance .....	7
Figure 5: Challenges Encountered in Achieving Product Compliance .....	8
Figure 6: Response to Product Compliance Challenges .....	9
Figure 7: Relative Product Compliance Strategies of Top Performers.....	12
Figure 8: Compliance Checking by Product Lifecycle Stage .....	13
Figure 9: Substance Disclosure Detail Required from Suppliers .....	14
Figure 10: Substance Disclosure Detail Documented Internally.....	15
Figure 11: Frequency of Product Content Audits .....	16
Figure 12: Standardization of Product Compliance Processes .....	17
Figure 13: Centralization of Compliance Organization .....	18
Figure 14: Frequency of Compliance Performance Measurement .....	19
Figure 15: Scope of Compliance Performance Measurement.....	19
Figure 16: Use of Automation to Support Product Compliance .....	20
Figure 17: Product Data Management Approach in Use for Compliance .....	21
Figure 18: Specialty Solutions in Use by Best in Class Companies .....	22

## Tables

Table 1: PACE Framework .....	27
Table 2: Relationship between PACE and Competitive Framework .....	28
Table 3: Competitive Framework.....	28

## Chapter One: Issue at Hand

### Key Takeaways

- Regulatory requirements have increased in recent years, placing greater burdens on manufacturers to comply in order to protect their business and revenue streams.
- Companies have spent significant effort to comply with recent mandates, resulting in increased cost, decreased innovation, and added staffing.
- Despite significant effort by many companies, the risk level for compliance is still widely varied by company.
- Self-assessed risk levels tend to be higher than risk levels assessed against Aberdeen's Product Compliance Framework, indicating a higher risk than companies perceive.

Compliance is a multi-faceted issue. Manufacturers today face multiple forms of regulation that apply to many aspects of their business, from financial controls to emissions standards. One category of requirements relates directly to product content, aimed at eliminating, reducing, or identifying the occurrence of specific substances within the product. These mandates are typically intended to protect the environment or the health and safety of those who come in contact with the product. The following issues were reported as high-emphasis or high-impact items by survey respondents and serve as examples of these “product compliance” regulations.

- *Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive*

This legislation from the European Union (EU), intended to reduce the introduction of environmental hazards into the environment from discarded electronics equipment, places limits on the inclusion of six specific substances in products. The first requirements from this legislation went into effect on July 1, 2006. Beyond the EU, China, Japan, California, and other US states are adopting similar legislation, albeit with different exemptions, limited substances, and concentrations.

- *7th Amendment to the Cosmetics Directive (2003/15/EC)*

This legislation from the European Union (EU), intended to identify the presence of allergens in cosmetics, requires disclosure of the inclusion of 26 ingredients. Similar requirements are enforced around the globe, such as the US Food and Drug Administration's (FDA) nutritional and allergen labeling standards.

These regulations have clear differences, given that one is intended to regulate electronics and the other personal care items. In addition, RoHS is intended to address issues with “discrete” manufactured items while the 7<sup>th</sup> Amendment addresses recipe-based or “process” manufactured items. What these regulations have in common, however, is the requirement to understand the material composition of products in order to disclose or limit specific levels of occurrence.

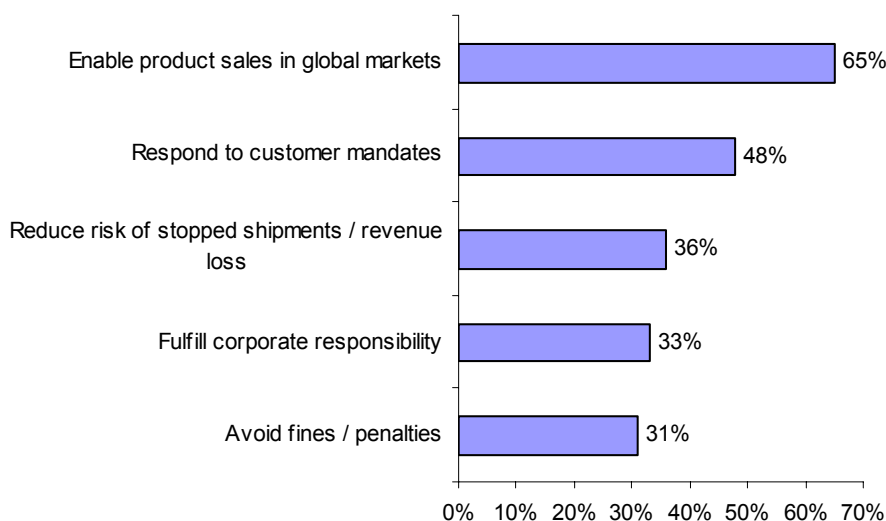


Another common characteristic is that the regulations in question are not worldwide in nature. Each of the regulations has requirements that complement and compete with requirements from other governing entities, adding to the complexity of addressing the directives.

### Drivers for Product Compliance

Despite the complexity involved, there are many reasons for companies to comply with regulatory mandates. Regulatory enforcement can result in fines or penalties that can involve significant costs. The benchmark study found, however, that cost was not the factor fueling compliance initiatives. Instead, the top compliance drivers are enabling and protecting revenue (Figure 1). Specifically, the top driver, identified by about two thirds of participants, is enabling product sales in global markets. As opposed to avoiding penalties, the top concerns indicated by benchmark participants are top-line issues, such as meeting customer demands and reducing the likelihood that a regulatory agency would stop the shipment of the company's products – leading to lost sales and disappointed customers. In fact, only about one third of respondents indicate that avoiding monetary damages was a top priority. Although cost is certainly a valid concern, corporate strategies today demand growth – and compliance is an underlying requirement to support it.

**Figure 1: Factors Driving Emphasis on Product Compliance**

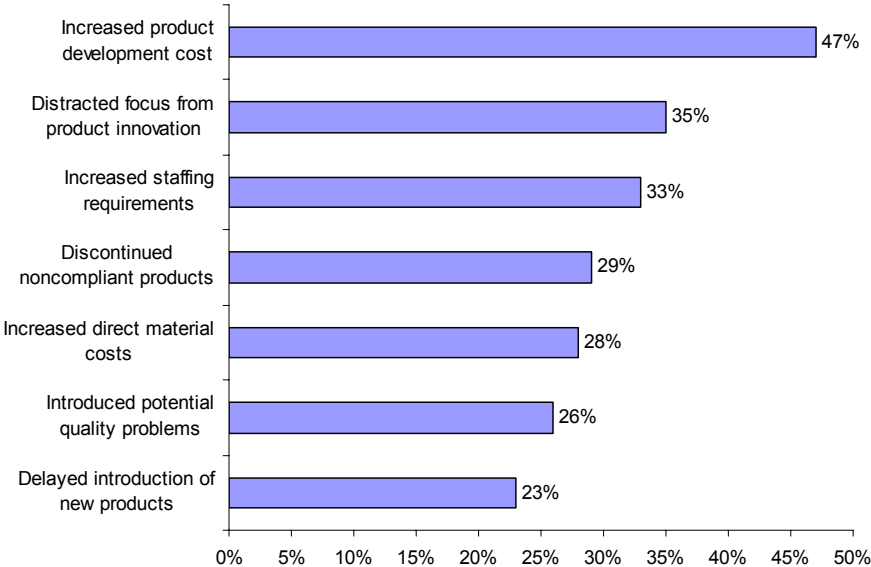


Source: Aberdeen Group, September 2006

### Impact of Recent Compliance Regulations

Achieving growth does not come without costs, however. Recent compliance regulations, such as RoHS and 7<sup>th</sup> Amendment, have placed a burden on manufacturers of all sizes. Many companies report significant effort and manpower focused on achieving and documenting compliance. Survey respondents report increased cost, decreased innovation, and added staffing as consequences of complying with regulations (Figure 2). The most prevalent impact was an increase in product development cost, followed by distraction from product innovation. These findings indicate the personnel were either added or diverted from high-value tasks to address compliance.

**Figure 2: Business Impact of Recent Compliance Regulations**



Source: Aberdeen Group, September 2006

Given the corporate focus on profits, compliance initiatives have seemingly run counter to corporate goals. But compliance is not optional and is a foundation on which sustainable growth is built. Therefore, companies must find ways to address compliance without continuing to add significant cost or diverting attention from innovation.



## Current Compliance Levels

Despite the effort and financial resources invested by many companies, the resulting level of compliance varies. Benchmark results show that while some companies are achieving high levels of compliance, others are achieving much lower rates. Aberdeen Group segregates companies into three distinct performance categories based on their performance against key metrics. (See the Competitive Framework Key.) Best in class performers are achieving compliance on 90% or more of their products. The laggards, which represent the bottom level of performance, are achieving compliance on 40% or less of their products, on average. There is clear differentiation between companies that are meeting the compliance challenge and those that remain at risk of noncompliance and the associated risks of revenue loss, customer dissatisfaction, poor brand image, and the potential of fines and penalties.

## Inaccuracy of Self-Assessed Compliance (and Associated Risk)

Actual levels of compliance may be lower than reported. As an example, Aberdeen’s [Environmental Compliance in Electronics](#) study examined how well companies were prepared for RoHS requirements, which went into effect in July, 2006. Electronics companies were asked to identify how well they were prepared for the deadlines, with many companies reporting favorably that they were prepared. Subsequent survey questions requested descriptions of their specific compliance efforts. These questions were based on Aberdeen’s Product Compliance Framework (Figure 3), and intended to evaluate the level of preparation for RoHS deadlines. The framework highlights four key business processes required to properly identify compliance requirements, capture the content included in manufactured products, gather supplier information, assess compliance, and document results to support an audit.

The study indicated that there was ***a strong disconnect between self-reported levels of compliance and assessed level of compliance***. This is particularly true for documenting compliance, an area in which many companies surveyed fell short and were not adequately prepared for audits. While the self-reported compliance levels were directionally accurate, the study indicates that ***actual compliance levels are lower and that companies are typically at a higher level of risk than they believe***.

### Competitive Framework Key

The Aberdeen Competitive Framework defines enterprises as falling into one of the three following levels of practices and performance:

*Laggards (30%)* —practices that are significantly behind the average of the industry

*Industry norm (50%)* — practices that represent the average or norm

*Best in class (20%)* — practices that are the best currently being employed and significantly superior to the industry norm

**Figure 3: Product Compliance Framework**

---



Source: Aberdeen Group, September 2006



## Chapter Two: Key Business Value Findings

### Key Takeaways

- Compliance expenditure does not guarantee compliance performance.
- Companies are beginning to seek more repeatable, sustainable solutions by addressing compliance during product design and throughout new product development (NPD) processes.
- Manufacturers are taking action to close the gaps in their product compliance processes.
- Progress has been made since Aberdeen’s 2004 benchmarks were conducted.

Despite major investments on their part, a significant number of companies are still at risk from the consequences of noncompliance according to benchmarks utilizing the PACE model (see PACE key, this page). Benchmark analysis, in fact, found little correlation between the cost of compliance and the resulting compliance performance. Companies that spent more money on their regulatory initiative, for example, did not consistently enjoy a higher percentage of products in compliance. Instead, benchmarks indicate a correlation between the approaches companies are taking to comply and the results they are achieving. This indicates that ***compliance performance is less dependent on level of effort than on implementing best practices and enabling those practices with the appropriate compliance infrastructure.***

### Compliance Initiatives Pursued

The actions that companies are taking to address compliance risk and improve processes are encouraging. While much of the recent compliance effort has been manual and labor-intensive, progress is being made in moving towards more repeatable, sustainable compliance processes. ***There is a growing recognition that complying with regulations is not a one-time event.*** Because of the globalization of markets, companies now need to understand and address compliance mandates from around the world. The resulting matrix of geography-specific and industry-specific regulations is complex and dynamic. A common food additive in the US, for example, may be considered a controlled substance in the EU. Similarly, China’s version of RoHS will involve a far greater number of controlled substances than the EU directive and has stated intentions to require laboratory testing. In addition to China, Japan and a number of US states (independently from the US federal government at this time) have begun pursuing their own versions of RoHS –

#### PACE Key — For more detailed description see Appendix A

*Aberdeen applies a methodology to benchmark research that evaluates the business pressures, actions, capabilities, and enablers (PACE) that indicate corporate behavior in specific business processes. These terms are defined as follows:*

**Pressures** — external forces that impact an organization’s market position, competitiveness, or business operations

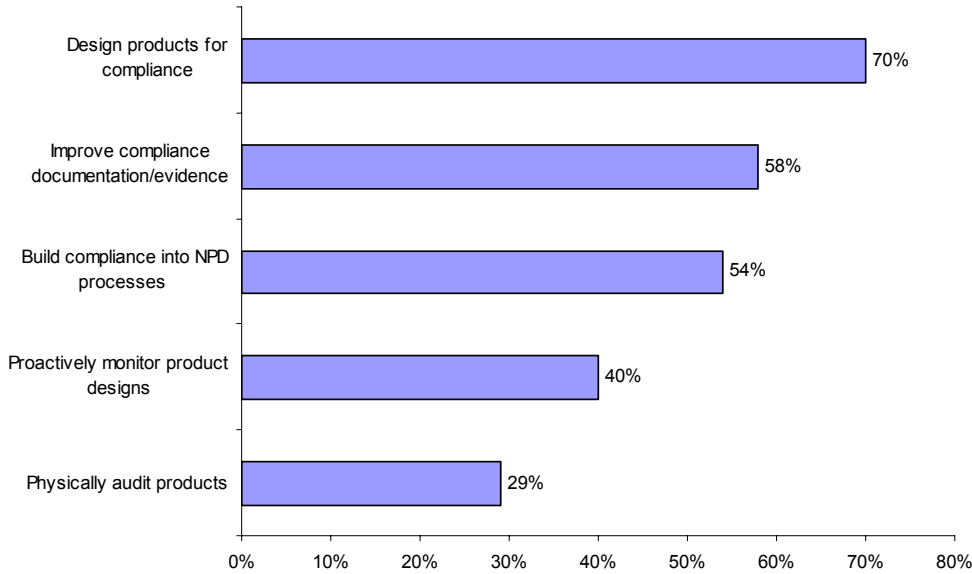
**Actions** — the strategic approaches that an organization takes in response to industry pressures

**Capabilities** — the business process competencies required to execute corporate strategy

**Enablers** — the key functionality of technology solutions required to support the organization’s enabling business practices

with the likely result of yet more sets of controlled substances, limits, exemptions (and headaches) for manufacturers. These trends have led companies to pursue more robust compliance practices (Figure 4).

**Figure 4: Top Initiatives Pursued to Address Product Compliance**



Source: Aberdeen Group, September 2006

These findings indicate that companies are moving proactively to ensure compliance, in particular, by addressing these requirements early in the product lifecycle (design). In addition, over half of the companies surveyed report that they are strengthening their compliance documentation. This action is a response to the fact that having a compliant product is only part of the challenge; companies must also be able to prove compliance. In reaction to an audit or incident, companies have limited time to prepare a response. Companies that can rapidly provide evidence of product compliance will be at an advantage over those that take longer to respond. One of the most encouraging findings is that companies are embedding compliance activities in their new product development processes and adopting proactive monitoring strategies, indicating that they are starting to consider compliance a core requirement of the business as opposed to treating it as an afterthought.

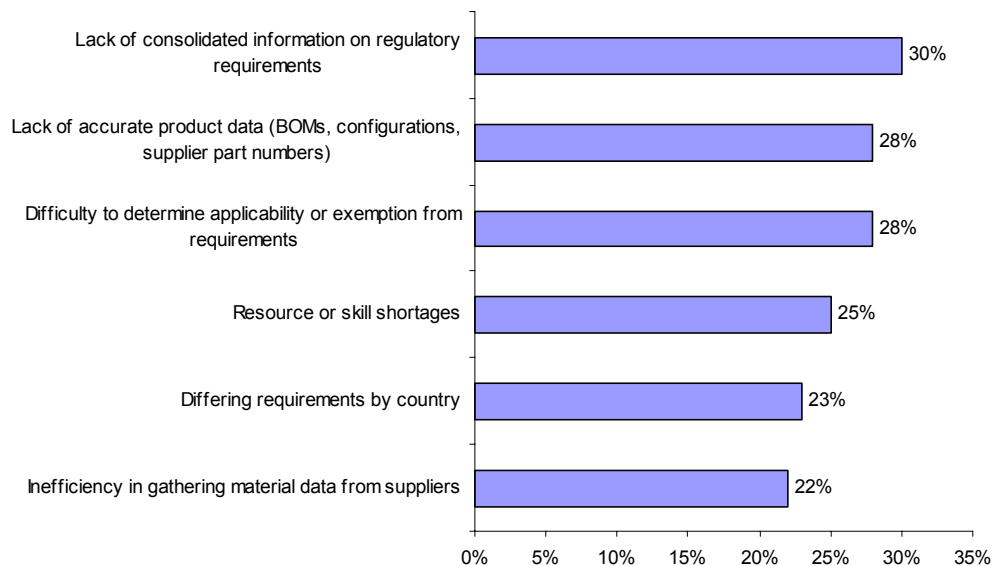
**Challenges Faced by Compliance Initiatives**

Despite the good news about the direction that many companies are taking to develop repeatable compliance processes, these initiatives face some significant new challenges (Figure 5). Key challenges indicate the need for a framework that addresses compliance holistically. Many companies still struggle with understanding which regulatory requirements are applicable. Requirements may come from multiple countries, internal mandates, and customer-specific specifications, so it is no surprise that developing a consoli-



dated view of this information is difficult. What's more, making this information readily accessible to engineers at the point when they are making their design decisions may be even more difficult. Some companies have made progress in this respect, however, because in 2004 over half of companies did not have access to this information and the benchmarks today indicate that this number has decreased to about one third.

**Figure 5: Challenges Encountered in Achieving Product Compliance**



Source: Aberdeen Group, September 2006

In addition to having difficulty understanding regulatory requirements, manufacturers still struggle with the accuracy of their product data. Too frequently, businesses do not have accurate bills of material (BOMs), approved vendor list (AVLs), approved material lists (AMLs), or supplier part identification data to support their material analysis efforts. Understanding product configurations, both as-designed and as-built, is a fundamental requirement for product compliance. Obtaining accurate product data can be particularly difficult in today's distributed environment typified by global design teams and contract manufacturing.

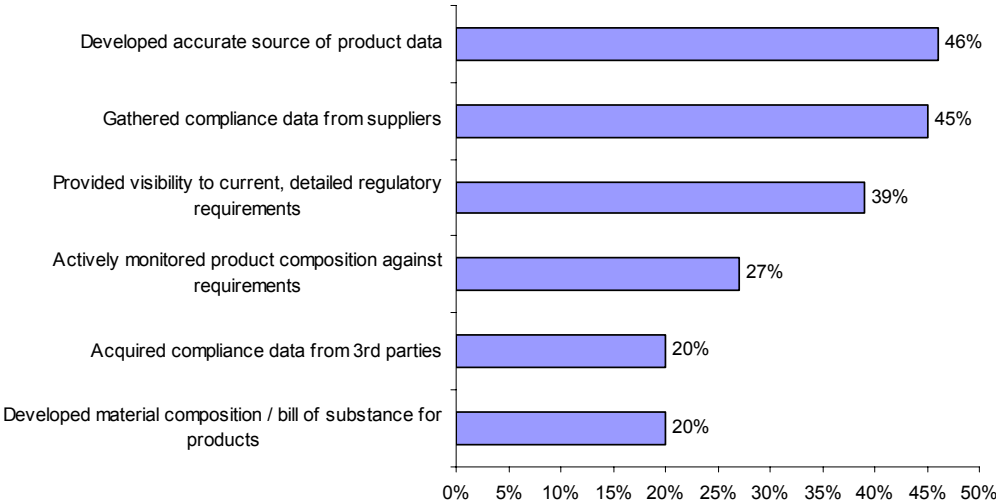
Other challenges stem from the complexity of the legislation. Determining which requirements must be followed for specific markets and understanding which products may be exempt from the regulations can leave companies puzzling over which regulations to address. This challenge will undoubtedly increase as new, conflicting regulations come into effect. The remaining challenges are related to people and workload. The burden of ensuring compliance has stretched already thin engineering organizations, and many companies simply do not have enough people with the right skills to address the new requirements. Current processes in most companies are very inefficient and labor intensive, requiring many to increase staffing levels. ***Inefficiencies in processes will continue to distract companies from innovation and add unreasonable costs without better, more automated approaches to product compliance.***

### Addressing Compliance Challenges

In addressing these challenges, most companies have focused primarily on gathering and consolidating required information (Figure 6). The top responses to challenges in product compliance, in fact, relate to product data. In this case, relatively equal numbers of companies are improving their internal product data as are gathering compliance data from suppliers.

These activities are the two pillars that support compliance analysis. Gathering supplier data can be a time-consuming, manual process, but is a critical element in any compliance strategy. A number of companies have outsourced this process or purchased a service that provides material compliance data in order to free up internal resources. By analyzing BOMs for compliant materials using supplier declarations companies can identify products that require attention or gaps in their documentation. As Figure 4 indicates, many companies also physically audit product content to account for errors in documentation and supply chain variability.

**Figure 6: Response to Product Compliance Challenges**



Source: Aberdeen Group, September 2006

Of course, an analysis cannot be complete unless the regulatory requirements are known and communicated. Consequently, over one third of the companies surveyed have taken action to provide visibility to current, detailed regulatory requirements. Extending product BOMs with compliance data on the components allows companies to assess the overall compliance of the product. Some companies are simply extending and analyzing compliance at the “yes/no” level, which is a step in the right direction. Other companies (20% of survey respondents) are going further, however, developing a detailed material composition or “bill of substance” for their products. In this case, the manufacturer extends the detailed material compositions of products by their BOMs (or recipes/formulas) to calculate total substance contents at the product level. This level of detail is challenging for many companies, but it also provides the ability to compare product contents to



multiple regulations dynamically and to assess the impact of an engineering change in detail. This capability will become even more important as more industries move towards full product disclosures.



## Chapter Three: Implications & Analysis

### Key Takeaways

- Best in class companies have adopted more aggressive, proactive compliance strategies.
- Best in class companies have roughly half the number of revenue-halting noncompliance events as other companies.
- Best in class manufacturers have implemented specific best practices that are helping them achieve their success, including earlier compliance checks, development of more full material content analyses, and more frequent compliance audits.
- Best in class companies have standardized processes, centralized control, and measured performance more than other companies.
- Best in class companies have automated more of their product compliance activities across all processes measured and more frequently use product lifecycle management (PLM) solutions.

Despite its inherent challenges, compliance with environmental and regulatory mandates is a fundamental requirement for manufacturers to stay in business in most parts of the world. What companies can choose, however, is how aggressively to address compliance mandates and what approach to use in addressing them. Here the science of compliance and the business of compliance meet – determining the best way to protect sales and enable growth, balanced with the need to innovate and keep costs in control.

Aberdeen Group analyzed the performance of survey participants to determine which approaches, capabilities, and enablers are being employed more commonly by top performers. Combining Aberdeen’s PACE and Competitive Frameworks allows Aberdeen to make recommendations to lower performing companies based on the approaches used by top performers. For more detail on Aberdeen’s research methodology, please see Appendix B. Based on the responses from survey participants, a number of common practices were identified among the top, or “best in class,” performers.

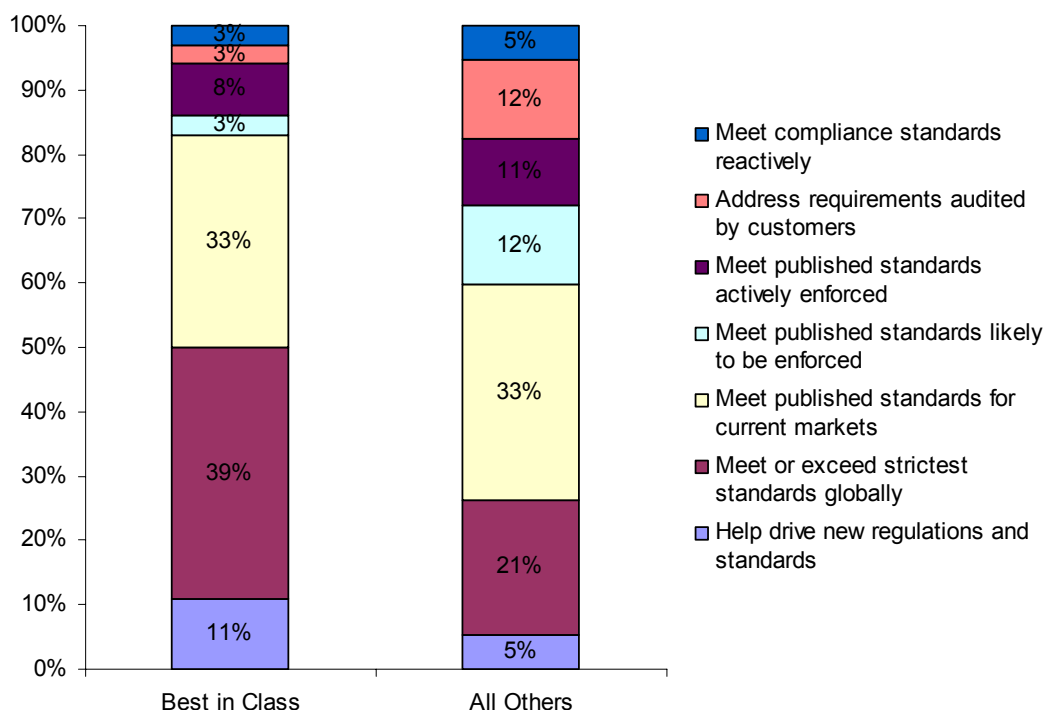
Using this approach, Aberdeen analyzed the compliance strategy of benchmark participants to determine how they choose to address regulatory requirements. Survey participants were asked to select from a range of strategies, from the most aggressive (not only complying with regulations, but actively helping to drive new regulatory requirements) to the most passive (meeting compliance standards reactively). The intent was to understand how companies should target their compliance and risk management strategies.

The results show that best in class companies have more aggressive strategies (Figure 7). At first glance this might not appear interesting. Given that the definition of best in class used in this benchmark is those companies with a higher percentage of products in compliance, one would expect that companies with more aggressive strategies would have more products in compliance. What is important to understand, however, is that what sets best in class companies apart is not their investment in compliance but their approach to



achieving it. In short, best in class companies are achieving their success at roughly the same level of investment as their lower performing peers. The significance of the benchmark, then, is that *those with more aggressive strategies are able to improve their compliance through better processes and infrastructure – without additional burden on their businesses.*

**Figure 7: Relative Product Compliance Strategies of Top Performers**



Source: Aberdeen Group, September 2006

### Best in Class Protect Revenue Streams and Customer Relationships

Top performers enjoy more than a comforting knowledge that their products are in compliance. They experience less disruption to their business from noncompliance. Specifically:

- Leading companies have 53% percent fewer stop shipments.
- Top performers have 35% percent fewer product recalls than other companies.

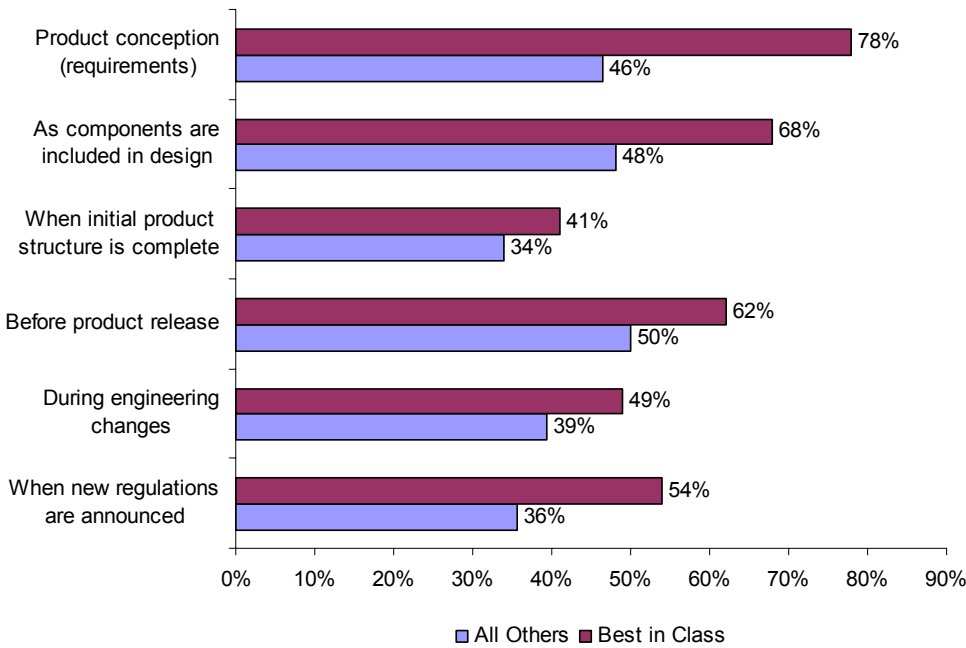
It may seem obvious that companies with a higher percentage of products in compliance will have fewer stopped shipments and a lower number of recalls. The point is that compliance matters. Fewer stop shipments help businesses protect their product flow and revenue streams. Fewer product recalls result in lower recall costs, less customer disrup-

tion, and a more secure brand image. The takeaway is that *investment in increasing compliance pays off in terms of top-line revenue.*

**Best Practice – Early and Frequent Compliance Checking**

Companies are achieving their success in product compliance through better practices, organizational approaches, and supporting technology infrastructure. Using the Competitive Framework, Aberdeen analyzed the business practices of survey respondents and identified several that are common to the leaders. First, best in class companies check compliance more frequently than their poorer performing competitors (Figure 8). What’s more – and this is the biggest differentiator between leaders and laggards – they focus on compliance more heavily in early design phases.

**Figure 8: Compliance Checking by Product Lifecycle Stage**



Source: Aberdeen Group, September 2006

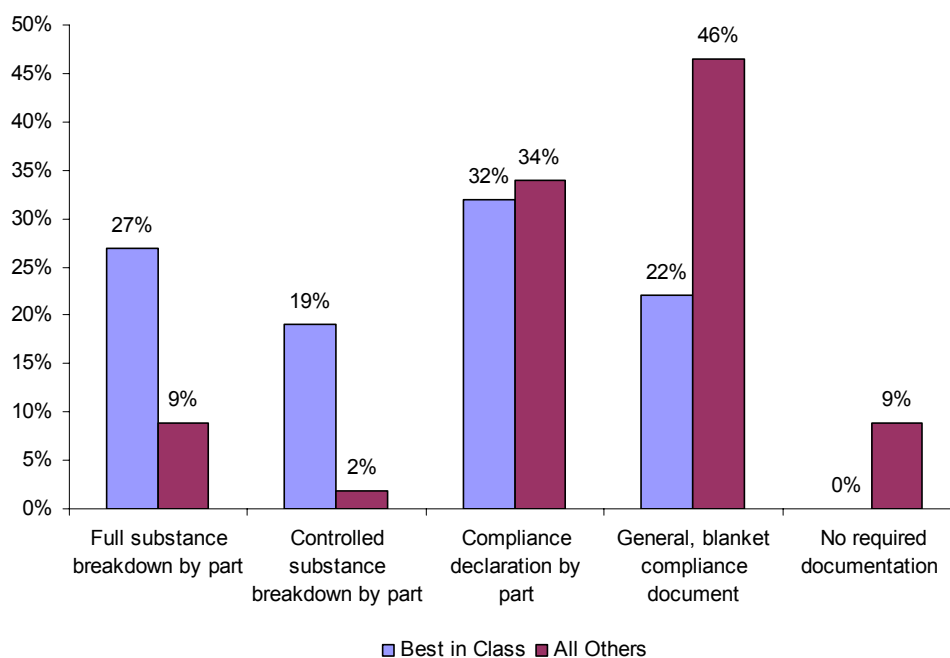
Early focus on compliance, as discussed in Aberdeen’s [Product Compliance: Protecting the Value of Innovation](#), results in numerous benefits. The cost of addressing noncompliance increases through the life of the product. As purchasing, equipment, and tooling decisions are made, the windows of opportunity close, and possible corrections become fewer, less appealing, and more costly. Late redesigns are often not only costly, but frequently negatively affect the performance of the product as a whole because the changes detract from its overall effectiveness. *The time to act is before non-compliant materials, formulas, content, or labeling are locked down.*



## Best Practice – Material Composition Analysis and Documentation

Another best practice observed in top performers is their level of detail in capturing and managing product content. This practice requires more granular information from suppliers than a simple checkmark on a certificate of compliance. Developing more detailed content, or a “bill of substance,” for a product requires in-depth knowledge of the composition of purchased and manufactured components. In fact, best in class companies gather more detailed product information from their suppliers than other companies (Figure 9). Approximately one half of the best in class ask for substance disclosures in addition to compliance statements. While some companies ask for the breakdown for only currently controlled substances, others want a full breakdown including currently unrestricted items. Specifically, over one quarter of top performers request a full substance breakdown from their suppliers. This can be challenging because many suppliers do not have – or do not want to share – this information. In industries in which product contents are considered intellectual property (such as cosmetics / personal care) suppliers may resist disclosing contents.

**Figure 9: Substance Disclosure Detail Required from Suppliers**

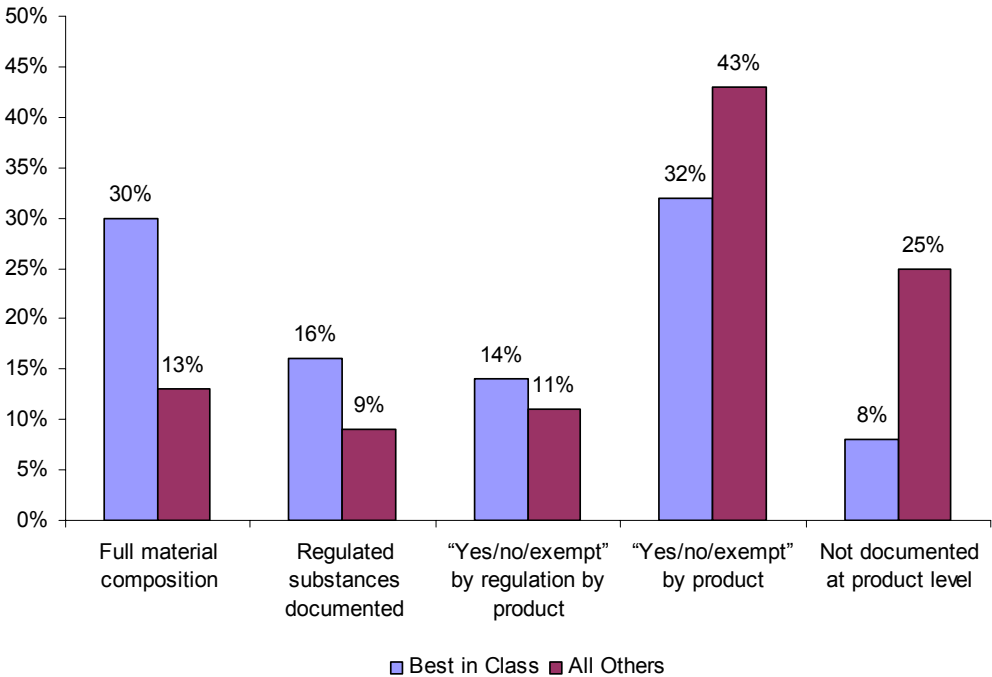


Source: Aberdeen Group, September 2006

Building on supplier material compositions, companies have the opportunity to calculate final material composition for their products. To determine the final compositions, some industries may need to make some complex calculations to account for mixing or solvent loss, but many discrete materials lend themselves to simple mathematics, using just the supplier declarations and product structures.

In fact, *leading companies are moving towards full substance disclosures, at least internally* (Figure 10). Regardless of whether the information is published externally, there is tremendous value in this information. By tracking detailed material composition, companies have the opportunity to analyze their products to see if they meet new regulations or customer requirements without the time and effort of gathering additional compliance data. Detailed compositions are required in some industries, while remaining optional in others. But trends indicate that more detailed disclosures will be required, for example, for RoHS in China and Japan.

**Figure 10: Substance Disclosure Detail Documented Internally**



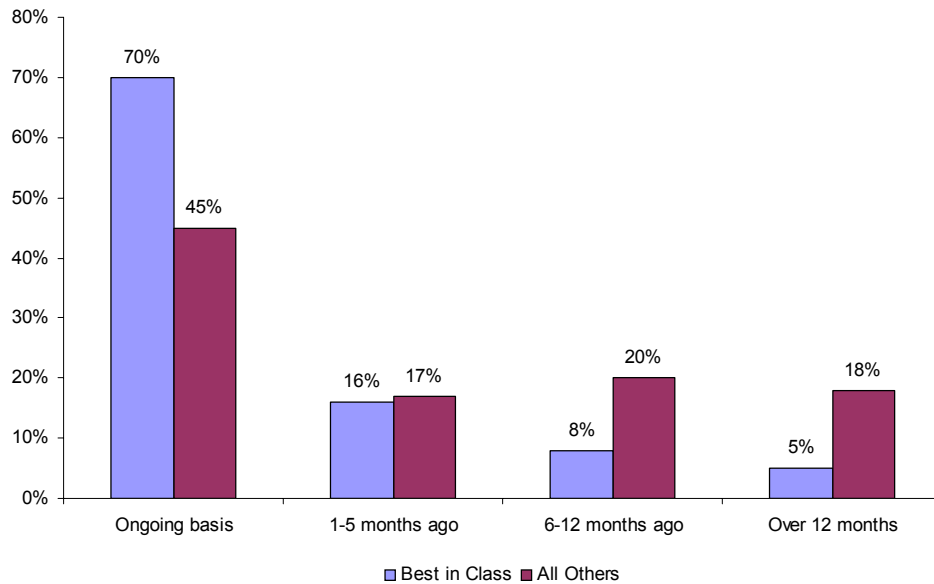
Source: Aberdeen Group, September 2006

**Best Practice – Product Content Audits**

Best in class companies also frequently audit product content. In 2004, Aberdeen reported that 75% of manufacturers had not audited product content within the past six months. This number is shocking considering the requirement for consumer goods companies to periodically audit content. Results from this current benchmark showed progress: less than one third of respondents indicate content was not audited within the last half year (Figure 11). Benchmarks also indicate that leading companies are auditing content more frequently than other companies. These audits may take the form of third-party inspections, documentation audits, or product sampling, to name some examples, and may involve the use of chemical analysis or X-Ray Fluorescence (XRF) technologies.



**Figure 11: Frequency of Product Content Audits**

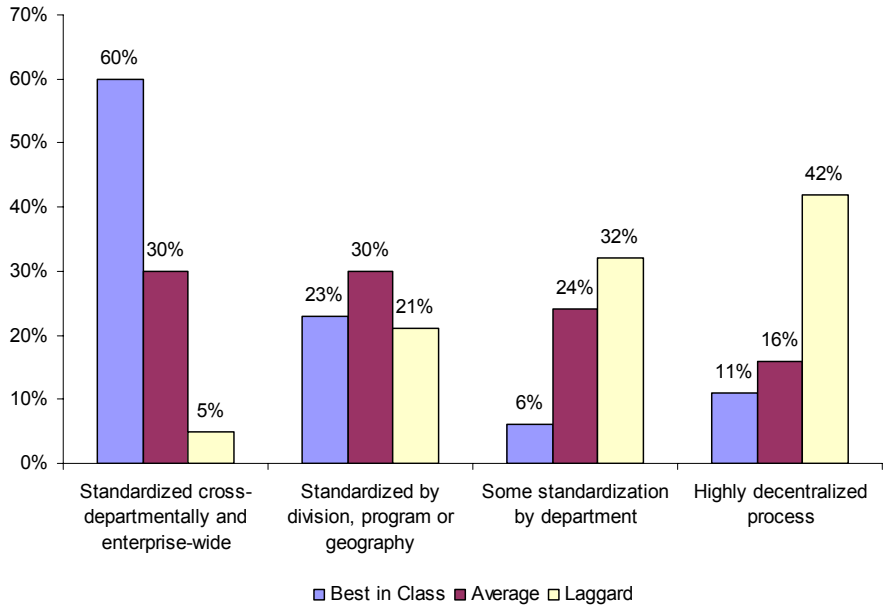


Source: Aberdeen Group, September 2006

### **Standardizing Compliance Practices**

Best in class companies also employ more standardized processes across departments and the enterprise. Developing common practices allows companies to continuously improve their process. It also promotes reuse of information across the enterprise because process alignment can ensure that deliverables used in one area of the business can be applied to others. In addition, standardizing practices facilitates developing “centers of excellence” that pool scarce or specialized resources for leveraging across the enterprise.

**Figure 12: Standardization of Product Compliance Processes**



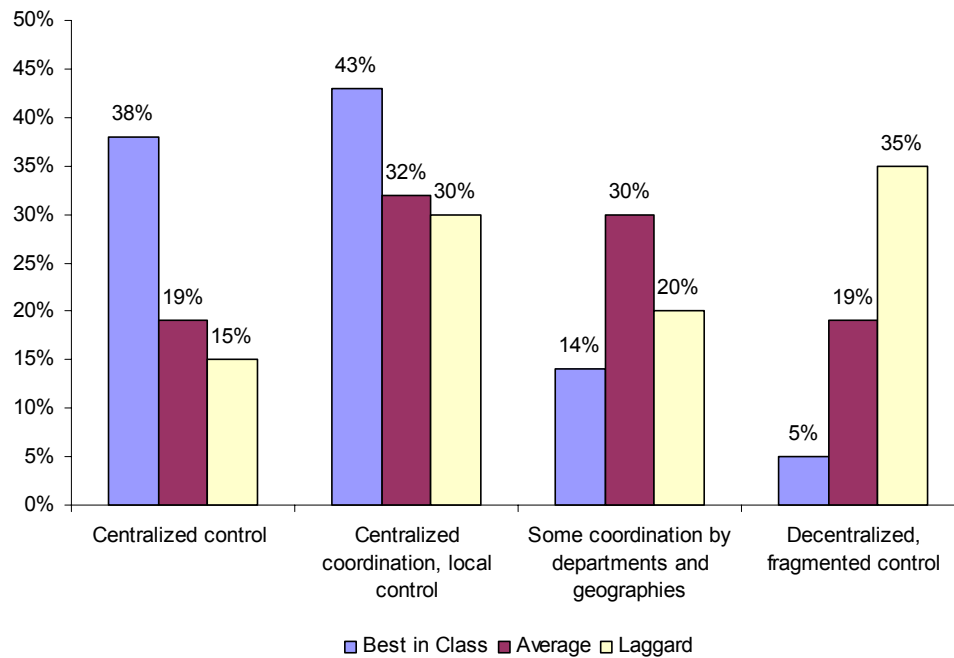
Source: Aberdeen Group, September 2006

**Centralizing the Compliance Organization**

Compliance knowledge is often a scarce resource in companies. For larger organizations, centralizing and sharing these resources can allow for specialized skills to be better utilized. In fact, while the majority of companies across all performance classes have some centralized control or coordination, the vast majority of best in class companies have centrally controlled or centrally coordinated compliance processes. Centralization, while it does not necessarily entail centralized control, is clearly more common in top-performing companies than in others.



**Figure 13: Centralization of Compliance Organization**



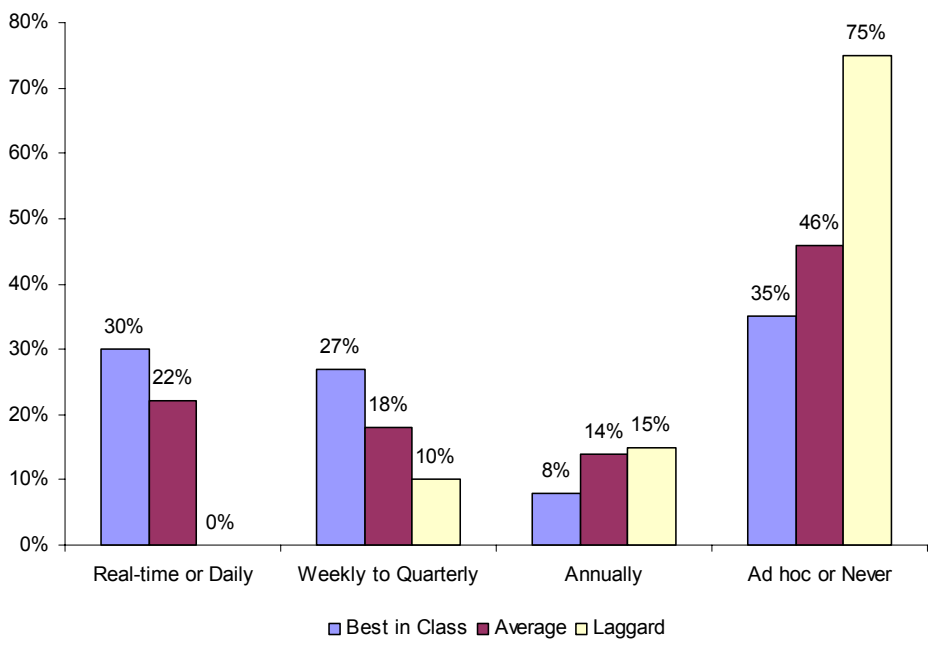
Source: Aberdeen Group, September 2006

### Frequency and Scope of Performance Measurement

Best in class companies are also differentiated by their more frequent measurement of key performance indicators (KPIs). There is a sharp contrast between top performers and laggards in this practice (Figure 14). The majority of best in class companies measure performance on at least a quarterly basis, with almost one third measuring compliance at least daily. Over three quarters of the laggards, on the other hand, measure performance on an ad-hoc basis if at all.

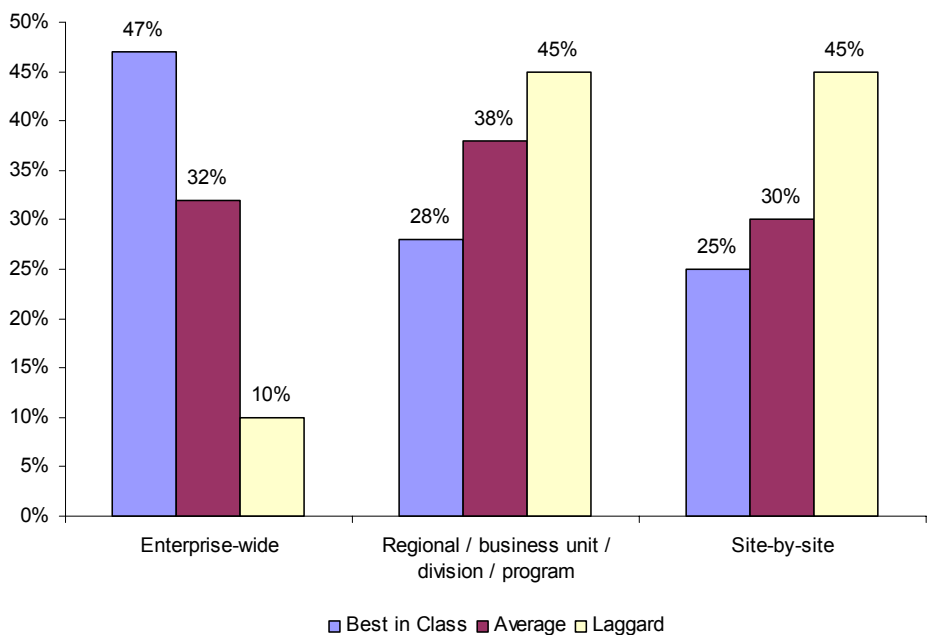
In addition, leading companies are more likely to measure performance enterprise-wide (Figure 15). Standardization of metrics across the enterprise helps companies more readily identify areas for improvement and best-practice performance across the business.

**Figure 14: Frequency of Compliance Performance Measurement**



Source: Aberdeen Group, September 2006

**Figure 15: Scope of Compliance Performance Measurement**



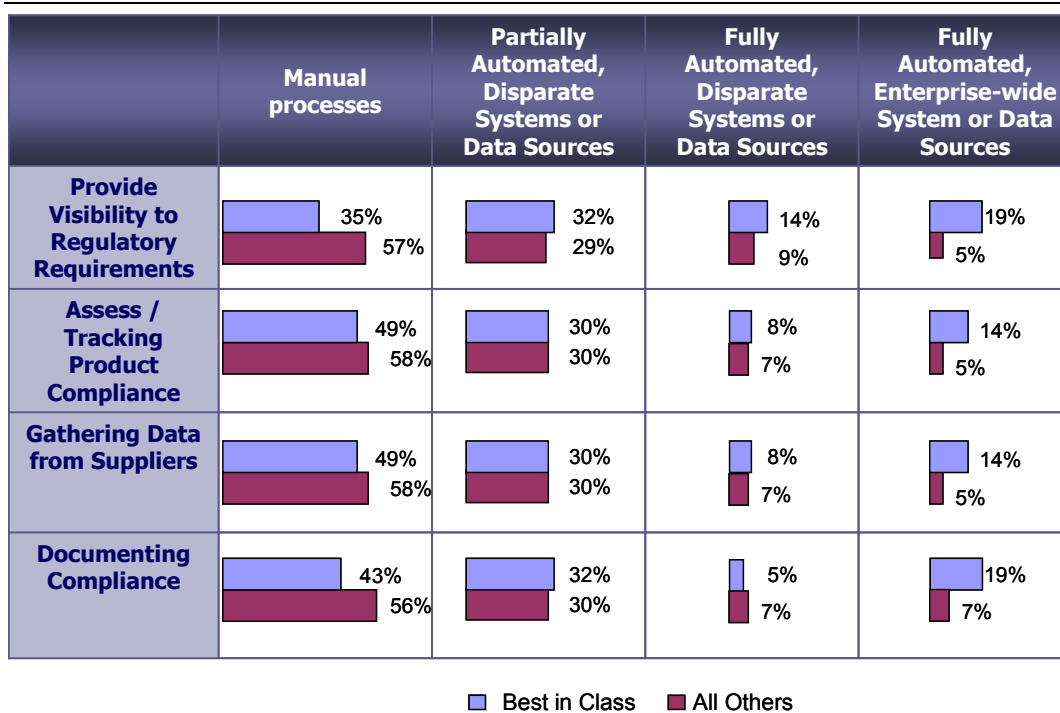
Source: Aberdeen Group, September 2006



## Enabling Product Compliance – Compliance Infrastructure

In addition to having common process and organizational practices, best in class companies typically exhibit high levels of automation. The 2004 benchmark indicated that nearly 80% of companies lacked a cohesive systems infrastructure to track, audit, or manage product compliance. This benchmark drilled further into this issue to determine more exactly the level of automation in underlying product compliance processes. Across all business processes analyzed, best in class performers were much more likely to have fully automated processes and data sources and to use them enterprise-wide (Figure 16).

**Figure 16: Use of Automation to Support Product Compliance**



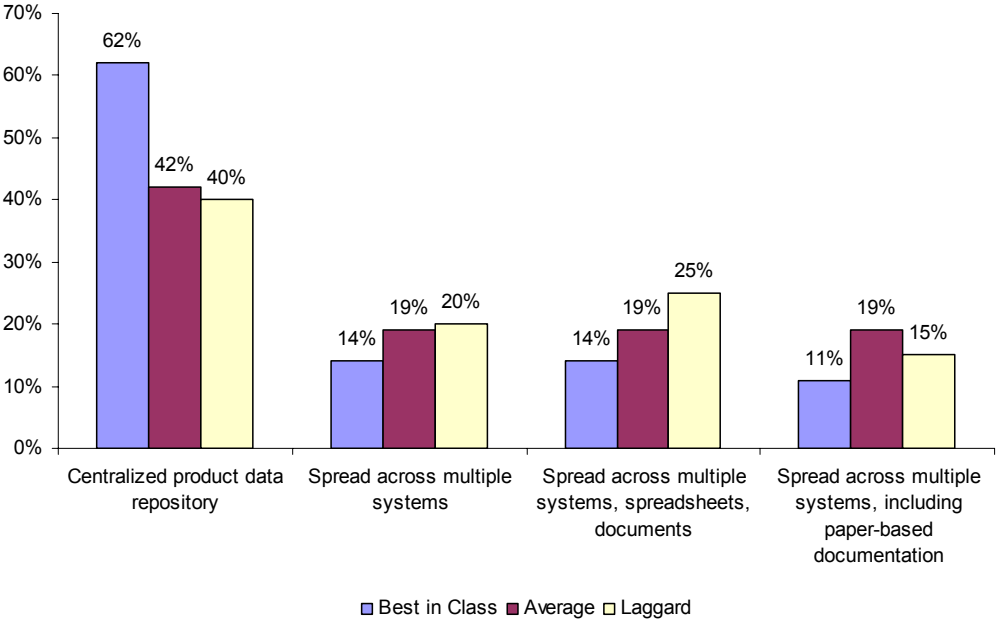
Source: Aberdeen Group, September 2006

The results still indicate that the majority of companies lack the systems infrastructure necessary to fully manage the underlying product development processes. ***Best in class companies, however, are more than twice as likely to have fully automated, enterprise-wide systems as other companies.***

The majority of companies, nonetheless, are still using manual processes for compliance. As regulations get more complex and expectations of having a compliance assurance system (CAS) mount, manual processes will become less acceptable. Taking RoHS as an example, addressing RoHS for China, Japan, other countries, and individual US states will quickly overwhelm most organizations that struggled to meet the current EU RoHS requirements. To enable a sustainable, repeatable approach to compliance, more companies will need to follow the lead of the best in class and adopt automation to support product compliance.

Best in class companies are also almost 50% more likely to have centralized product data repositories than other companies (Figure 17). Using PLM systems to support product compliance is a natural extension of their typical function as a common source of accurate product data. In fact, previous research indicates that many companies have extended their PLM solutions to address product compliance needs.

**Figure 17: Product Data Management Approach in Use for Compliance**



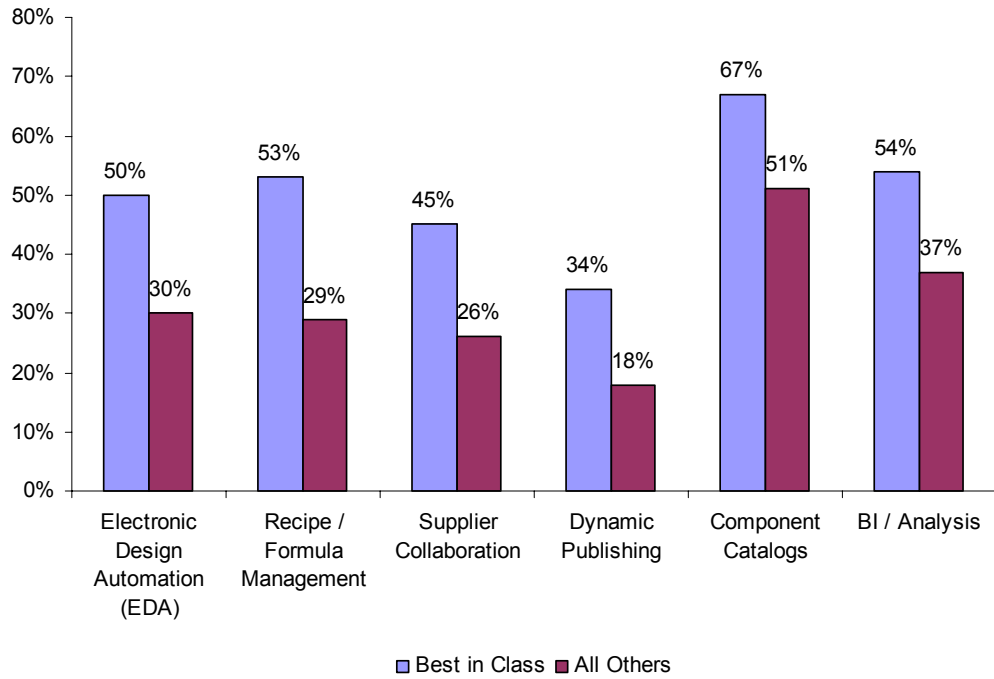
Source: Aberdeen Group, September 2006

Not only are PLM suite solutions more frequently used among best in class companies, but certain enabling technologies are far more prevalent among top performers as well (Figure 18). This indicates that these tools play a valuable role in promoting product compliance. Specific technologies identified include:

- Electronic design automation (EDA)
- Recipe / formula management
- Supplier collaboration
- Dynamic publishing
- Component catalogs
- Business intelligence / analysis tools



**Figure 18: Specialty Solutions in Use by Best in Class Companies**



Source: Aberdeen Group, September 2006



## Chapter Four: Recommendations for Action

### Key Takeaways

- Consolidate and provide visibility to regulatory requirements from all applicable regulations.
- Develop and centralize a source of accurate product data that reflects both as-designed and as-built product configurations.
- Collect detailed compliance information from suppliers and determine detailed material content.
- Document compliance to support customer requirements and potential audits.

Compliance alone does not ensure profitability or growth. However, companies that do not address compliance issues put their profitable growth strategies at risk. Companies should strive to comply with requirements proactively and “get ahead of the curve” on as many regulations as possible by building a compliance infrastructure that can be applied in a repeatable, sustainable fashion to new regulations and new products.

Whether a company is trying to gradually move from “Laggard” to “Industry Average,” or “Industry Average” to “Best in Class,” the following actions will help spur the necessary performance improvements:

### Laggard Steps to Success

1. *Proactively address compliance.*

Shift the corporate compliance strategy from reactive processes to more proactive approaches, seeking to meet all published guidelines for current markets. Monitor and assess product compliance more frequently, and monitor compliance during the product design process.

2. *Transition documentation of product compliance from “yes/no” certifications to include specific material content.*

Begin gathering data on product composition levels for currently restricted substances and developing product-level compliance data for those substances.

3. *Audit both content and compliance documentation.*

Perform mock audits to determine ability to meet documentation and verification needs. Address potential errors in compliance analysis and variability in supply chain content reporting accuracy by periodically auditing content.

4. *Standardize and centralize product compliance processes and organizations.*

Develop common best practices that span departmental boundaries (at a minimum).

5. *Enhance compliance documentation processes.*



Ensure that compliance documentation from suppliers is captured and managed in association with products and the product structures.

6. *Automate compliance processes.*

Acquire appropriate PLM and specialty tools to develop a common source of product data and to help enable engineers to design for compliance.

## Industry Norm Steps to Success

1. *Proactively address compliance.*

Shift the corporate compliance strategy to meet all published guidelines for current or likely potential markets. Monitor and assess product compliance more frequently, and incorporate product compliance checks in NPD processes.

2. *Transition documentation of product compliance to a broader substance set.*

Begin gathering product content data to broaden the number of controlled substances addressed beyond currently controlled substances and develop product-level compliance data for more substances.

3. *Audit content and compliance documentation.*

Perform mock audits to determine ability to meet documentation and verification needs. Address potential errors and variability in supply chain content reporting accuracy by periodically auditing content. Consider analytical methods such as chemical assays or XRF to validate supplier declarations on a spot-check basis.

4. *Standardize and centralize product compliance processes and organizations.*

Develop common best practices that span organizational boundaries.

5. *Enhance compliance documentation processes.*

Ensure that compliance documentation from suppliers is captured and managed in association with products and product structures, tying compliance documentation directly to product configurations. Develop reporting capabilities to rapidly assemble compliance documentation.

6. *Automate compliance processes.*

Extend PLM and specialty tools to leverage common data to support compliance analysis and develop a common source of product data to help enable engineers design for compliance.

## Best in Class Next Steps

1. *Proactively address compliance.*

Shift the corporate compliance strategy to meet the strictest published guidelines to allow selling in global markets. Embed compliance checks into NPD processes, including conceptual design.

2. *Transition documentation of product compliance to full content disclosure.*



Extend and augment product content data to capture full material compositions, disclosing this information to the market and customers as needed.

3. *Audit content and compliance documentation.*

Perform mock audits to determine ability to meet documentation and verification needs. Address potential errors and variability in supply chain content reporting accuracy by periodically auditing content. Consider analytical methods such as chemical assays or XRF to validate supplier declarations. Consider spot checking based on the risk of noncompliance for specific item types or suppliers.

4. *Enhance compliance documentation processes.*

Ensure that compliance documentation from suppliers is captured and managed in association with products and the product structures, tying compliance documentation directly to product configurations. Develop reporting capabilities for rapidly assembling compliance documentation.

5. *Automate compliance processes.*

Continue automating and integrating product compliance processes to increase efficiency and eliminate errors.

[Send to a Friend](#) 



## Appendix A: Research Methodology

---

**B**etween August and September 2006, Aberdeen Group examined the product compliance procedures, experiences, and intentions of over 100 manufacturers in a wide range of manufacturing industries.

Responding participants completed an online survey that included questions designed to determine the following:

- The current challenges of product compliance across a broad range of industries subject to differing requirements
- The structure and effectiveness of their existing compliance initiatives and infrastructure
- Current and planned use of automation to aid their compliance activities
- The results and benefits of successful technology, organizational, and process approaches aimed at improving compliance

Aberdeen supplemented this online survey effort with telephone interviews with select survey respondents, gathering additional information.

The study aimed to identify emerging best practices for a long-term, sustainable compliance strategy and infrastructure and provide a framework by which readers could assess their own compliance capabilities.

Responding enterprises included the following:

- **Job title/function:** The research sample included respondents with the following job titles: manager (30%), engineer (24%), director (21%), vice president (8%), senior management such as CFO or other C-level officer (5%), internal consultant (4%), staff (4%), CIO/IT leader (2%), and other (2%).
- **Industry:** The research sample included respondents from diverse discrete, process, and consumer industries including 19% from industrial equipment manufacturing; 10% from computer equipment and peripherals; 8% from high technology; 7% consumer packaged goods; 6% each from automotive, engineering, consumer electronics, food and beverage, and telecommunications equipment; 5% from medical devices; 4% from pharmaceutical manufacturing; 3% from aerospace and defense, chemicals, and retail; and 1% from various other industries..
- **Geography:** A majority of study respondents (78%) were from North America. Remaining respondents were from Europe (9%), Asia-Pacific (9%), Central and South America and the Caribbean (3%), and the Mideast and Africa (1%).
- **Company size:** About 17% of respondents were from large enterprises (annual revenues above US\$1 billion), 45% were from midsize enterprises (annual revenues between \$50 million and \$1 billion), and 37% of respondents were from small businesses (annual revenues of \$50 million or less).

Solution providers recognized as sponsors of this report were solicited after the fact and had no substantive influence on the direction of the *Product Compliance Benchmark Report*. Their sponsorship has made it possible for Aberdeen Group to make these findings available to readers at no charge.

**Table 1: PACE Framework**

PACE Key
<p>Aberdeen applies a methodology to benchmark research that evaluates the business pressures, actions, capabilities, and enablers (PACE) that indicate corporate behavior in specific business processes. These terms are defined as follows:</p> <p><i>Pressures</i> — external forces that impact an organization’s market position, competitiveness, or business operations (e.g., economic, political and regulatory, technology, changing customer preferences, competitive)</p> <p><i>Actions</i> — the strategic approaches that an organization takes in response to industry pressures (e.g., align the corporate business model to leverage industry opportunities, such as product/service strategy, target markets, financial strategy, go-to-market, and sales strategy)</p> <p><i>Capabilities</i> — the business process competencies required to execute corporate strategy (e.g., skilled people, brand, market positioning, viable products/services, ecosystem partners, financing)</p> <p><i>Enablers</i> — the key functionality of technology solutions required to support the organization’s enabling business practices (e.g., development platform, applications, network connectivity, user interface, training and support, partner interfaces, data cleansing, and management)</p>

Source: Aberdeen Group, September 2006



**Table 2: Relationship between PACE and Competitive Framework**

**PACE and Competitive Framework How They Interact**

Aberdeen research indicates that companies that identify the most impactful pressures and take the most transformational and effective actions are most likely to achieve superior performance. The level of competitive performance that a company achieves is strongly determined by the PACE choices that they make and how well they execute.

Source: Aberdeen Group, September 2006

**Table 3: Competitive Framework**

**Competitive Framework Key**

The Aberdeen Competitive Framework defines enterprises as falling into one of the three following levels of FIELD SERVICES practices and performance:

*Laggards (30%)* — FIELD SERVICES practices that are significantly behind the average of the industry, and result in below average performance

*Industry norm (50%)* — FIELD SERVICES practices that represent the average or norm, and result in average industry performance.

*Best in class (20%)* — FIELD SERVICES practices that are the best currently being employed and significantly superior to the industry norm, and result in the top industry performance.

Source: Aberdeen Group, September 2006



## Appendix B: Related Aberdeen Research & Tools

---

Related Aberdeen research that forms a companion or reference to this report includes:

- [\*Environmental Compliance in Electronics: Creating a Successful Strategy\*](#) (April 2006)
- [\*Product Compliance: Protecting the Value of Innovation\*](#) (January 2006)
- [\*Formula-Based Product Development: Recipes for Compliance and Success - Winning in the Food and Beverage, CPG, Health and Beauty Aids, Pharmaceutical and Chemicals Industries\*](#) (November 2004)
- [\*The Design for Compliance Benchmark Report: Leading Compliance with Product Design\*](#) (November 2004)
- [\*The Product Innovation Agenda Benchmark Report\*](#) (September 2005)

Information on these and any other Aberdeen publications can be found at [www.Aberdeen.com](http://www.Aberdeen.com).

*Aberdeen Group, Inc.  
260 Franklin Street  
Boston, Massachusetts  
02110-3112  
USA*

*Telephone: 617 723 7890  
Fax: 617 723 7897  
[www.aberdeen.com](http://www.aberdeen.com)*

*© 2006 Aberdeen Group, Inc.  
All rights reserved  
September 2006*

Founded in 1988, Aberdeen Group is the technology-driven research destination of choice for the global business executive. Aberdeen Group has over 100,000 research members in over 36 countries around the world that both participate in and direct the most comprehensive technology-driven value chain research in the market. Through its continued fact-based research, benchmarking, and actionable analysis, Aberdeen Group offers global business and technology executives a unique mix of actionable research, KPIs, tools, and services.

The information contained in this publication has been obtained from sources Aberdeen believes to be reliable, but is not guaranteed by Aberdeen. Aberdeen publications reflect the analyst's judgment at the time and are subject to change without notice.

The trademarks and registered trademarks of the corporations mentioned in this publication are the property of their respective holders.