2010

CONSUMER PRODUCT FRAUD: DETERRENCE AND DETECTION

Strengthening Collaboration to Advance Brand Integrity and Product Safety

GMA
The Association of Food, Beverage and Consumer Products Companies

GMA
Science and Education Foundation®

A.T. KEARNEY

The Grocery Manufacturers Association (GMA) represents the world's leading food, beverage and consumer products companies. The Association promotes sound public policy, champions initiatives that increase productivity and growth and helps to protect the safety and security of the food supply through scientific excellence. The GMA board of directors is comprised of chief executive officers from the Association's member companies. The $2.1 trillion food, beverage and consumer packaged goods industry employs 14 million workers, and contributes over $1 trillion in added value to the nation's economy.

For more information, please visit www.gmaonline.org.

The GMA Science and Education Foundation works with the Grocery Manufacturers Association to help consumers, manufacturers and distributors of food and consumer products gain a better understanding of scientific, legislative and regulatory issues. As a recognized leader in science and education, the Foundation conducts innovative research and outreach programs to improve public health and economic stability of these industries, and also offers insights to help recognize and acknowledge the forces driving future change.

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ABOUT THE STUDY

Overview

The Grocery Manufacturers Association (GMA) and its Science and Education Foundation (SEF) partnered with A.T. Kearney to study consumer product fraud in the food, beverage and consumer product industry. Supported by 13 leading consumer packaged goods companies, this study demonstrates the industry's commitment to enhancing brand integrity and product safety.

The study's primary objectives are to:

- Broaden industry stakeholders' understanding of economic adulteration and counterfeiting and the implications
- Provide strategic recommendations and tactical options to minimize risks associated with these practices
- Establish a basis for advancing public and private partnerships to monitor and address the threats of economic adulteration and counterfeiting

Definitions

For the purposes of this study, consumer product fraud refers to economic adulteration and counterfeiting.

Economic adulteration is defined as the intentional fraudulent modification of a finished product or ingredient for economic gain through the following methods: unapproved enhancements, dilution with a lesser-value ingredient, concealment of damage or contamination, mislabeling of a product or ingredient, substitution of a lesser-value ingredient or failing to disclose required product information.

Counterfeiting is defined as the unauthorized representation of a registered trademark carried on goods similar to goods for which the trademark is registered, with a view to deceiving the purchaser into believing that he or she is buying the original goods.

These and other definitions of terms used in this paper are in the sidebar *The ABCs of Consumer Product Fraud* on the following page.

Audience

The study findings are most relevant to food, beverage and consumer product company executives with a desire to protect brand integrity and further enhance product safety. This includes executive leadership and management in operations, supply chain, procurement, risk management, brand protection, quality assurance and product safety. The findings will also interest other value chain participants, including suppliers, retailers, governments and academic organizations that study appropriate solutions to meet the challenge of economic adulteration and counterfeiting.

Approach

The study findings are based on approximately 100 interviews with senior managers in the food, beverage and consumer product industry, 50 responses to an industry-wide survey, a 150-incident repository, and A.T. Kearney research and expertise. The study analyzes recent economic adulteration cases, motivational drivers and the resulting cost implications. The study explores leading practices and success stories related to fraud deterrence and detection, and examines opportunities for manufacturers, industry at-large and governments to reduce the risk of economic adulteration, protect brands and enhance consumer product safety.

Study Participants

Participants in the six-month study include the following companies:
Cargill, Inc., ConAgra Foods, Inc., General Mills, Inc., Henkel Corporation, Kraft Foods, Inc., McCormick & Company, Inc., Nestlé USA, Inc., PepsiCo, Inc., The Coca-Cola Company, The Kroger Co., The Procter & Gamble Co., The Quaker Oats Company, Inc., and Unilever.

THE ABCs OF CONSUMER PRODUCT FRAUD

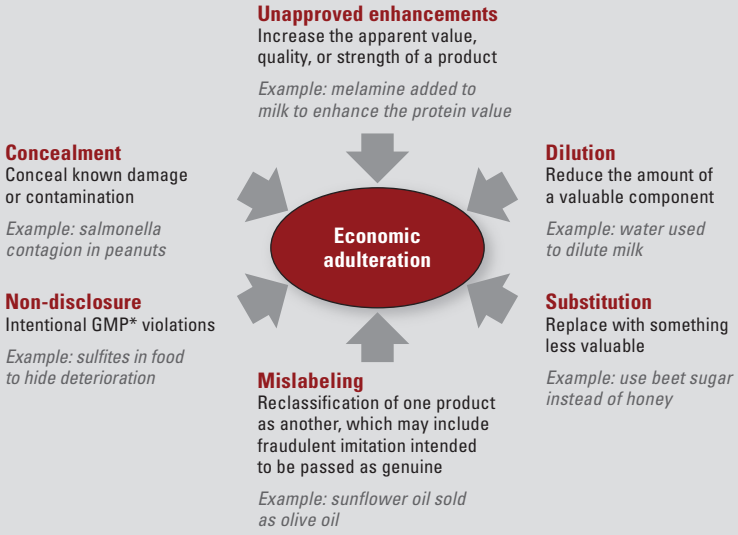
As companies and their stakeholders grapple with consumer product fraud, understanding keywords associated with the growing threat will help provide a context for discussion. The following are the main terms and their definitions.

Counterfeiting. Unauthorized representation of a registered trademark carried on goods similar to goods for which the trademark is registered, with a view to deceiving the purchaser into believing that he or she is buying the original goods.[1] Counterfeiting is often associated with non-food consumer products such as apparel and toys.

Contamination. Unintended presence in food of potentially harmful substances, including microorganisms, chemicals, and physical objects.[2] Contamination is often used in the safety realm to describe the occurrence of pathogenic substances such as *salmonella*, *listeria* and *e-coli* in food and other processed products.

Economic adulteration or economically-motivated adulteration. Economic adulteration is defined as the intentional fraudulent modification of a finished product or ingredient for economic gain. Fraudulent, intentional substitution or addition of a substance in a product for the purpose of increasing the apparent value of the product or reducing the cost of its production, that is, for economic gain.[3] Economic adulteration, classified in the six categories shown in the figure, can be likened to counterfeiting as commonly seen in pharmaceutical products. The problems range from mislabeling, hiding damage and diluting products to not disclosing violations, substituting ingredients or enhancing the product with unapproved substances.

Figure: Categories of economic adulteration



**GMP stands for good manufacturing practices*
Sources: Federal Drug Administration (FDA), Center for Food Safety and Applied Nutrition (CFSAN), Food Standards Agency (FSA), United Nations Interregional Crime and Justice Research Institute (UNICRI); A.T. Kearney analysis.

Fraud. Intentional misrepresentation or concealment of information in order to deceive or mislead. In the legal context, fraud is generally defined as an intentional misrepresentation of a material existing fact made by one person to another with knowledge of its falsity and for the purpose of inducing the other person to act, and upon which the other person relies with resulting injury or damage. Fraud may also be made by an omission or purposeful failure to state material facts, which nondisclosure makes other statements misleading.

Food fraud. The deliberate placement of food on the market, for financial gain, with the intention of deceiving the consumer. The Food Standards Agency in the United Kingdom considers two main types: 1) the sale of food that is unfit and potentially harmful, such as recycling animal byproducts back into the food chain, and 2) the deliberate mis-categorization of food; while not necessarily unsafe, it deceives the consumer as to the nature of the product (such as products substituted with a cheaper alternative), for example, farmed salmon sold as wild salmon.

[1] *Organization for Economic Co-operation and Development (OECD)*
[2] *Center for Food Safety and Applied Nutrition (CFSAN)*
[3] *Food and Drug Administration (FDA)*

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EXECUTIVE SUMMARY

The strategic consequences of food and consumer product safety have become a concern for food, beverage and consumer product companies—with fraud emerging as a key topic. Although fraud is still not a top of mind issue for products manufactured in most advanced markets, the industry is making proactive strides to manage against the risk of future fraud. Recent incidents of consumer product fraud require a collaborative industry effort to further protect brand integrity, enhance product safety and ensure consumer confidence.

Study Findings

Food and consumer product safety is becoming a major focus

- More product recalls and the recent string of contamination incidents, with significant economic and health consequences, have thrust product safety into the limelight
- Media coverage and growing consumer advocacy and government scrutiny has further increased attention on product safety

The melamine incident was a trigger point

- Melamine was a trigger point that proved that economic adulteration can have global consequences, affecting consumers, companies, industries, and countries, even contributing to fatalities and bankruptcies
- Economic adulteration and counterfeiting of global food and consumer products is expected to cost the industry $10 to $15 billion per year
- The cost of one adulteration incident averages between 2 and 15 percent of yearly revenues, depending on company size; this could translate to a $400 million impact for a large $10 billion company, or a $60 million impact for a small $500 million company

Industry collaboration is crucial to thwarting economic adulteration

- An industry clearinghouse that collects and disseminates information can provide the safeguards for industry-wide information sharing
- Shared audit programs can be a deterrence and reduce costs; a shared library of ingredient data could reduce analytical costs and increase quality
- Partnerships with trade associations and governments can facilitate information sharing and help enforce laws and regulations

Companies should continue to "raise the bar" on product safety and quality

- Evaluate past incidents across the industry and observe market trends to gain a better understanding of product vulnerabilities to fraud
- Improve detection programs and employ deterrence strategies
- Increase safety by changing local value systems or accepted local practices

Every value chain participant has a role in preventing fraud

- Suppliers can facilitate appropriate testing procedures, increase transparency and partner with manufacturers
- Retailers can partner with suppliers and manufacturers and verify authenticity of the products they receive
- Governments can protect legitimate businesses by enforcing property rights and reducing the number of illegal operations

The new baseline for product safety

- Companies can do more to shore up deterrence and detection strategies and to bolster investments already committed to their supply chains
- Industry at-large can boost information sharing and promote collaboration by approaching fraud as a broad societal issue
- Governments can be facilitators in establishing global standards and sharing intelligence on emerging threats

In recent years, the strategic consequences of food and consumer product safety have become a concern for food, beverage and consumer product companies—with fraud emerging as a key topic. While fraud is not currently a major issue for products manufactured in most advanced markets, the industry has already made effective strides to "proactively" manage against the risk of future fraud. However, the significance of recent incidents of consumer product fraud require a concerted and collaborative industry effort to further protect brand integrity, enhance product safety and ensure consumer confidence.

GROWING CONCERNS ABOUT FOOD AND PRODUCT SAFETY

Concerns about food and consumer product safety have been around for years. In the early 1900s, unsanitary conditions and corrupt practices were common in some segments of the meat packing industry, while harmful chemicals and additives were widespread in other food and consumer products. The industry and governments in many countries have made strides to address safety challenges and protect the supply chain. Indeed, as industry safety systems continue to be improved and evaluated in close collaboration with regulators, today's consumers in the industrialized world have access to one of the safest food and product supplies in history.

What is economic adulteration? It is defined as the intentional fraudulent modification of a finished product or ingredient for economic gain.

What is different today? There is more attention to safety. With an increasing number of product recalls per year and the recent string of contamination incidents that resulted in significant economic and health costs, consumer product safety continues to be a top priority for manufacturers and consumers alike. The fraudulent adulteration cases of toys, milk, toothpaste, peanuts, and alcoholic beverages, continue to destroy consumer confidence. According to the Center for Food Integrity, consumers rank food safety among the top non-economic issues for a second straight year. Media coverage, growing consumer advocacy and government scrutiny are also pointing attention to this issue *(see sidebar: Why Food and Product Safety Is Top of Mind on page 4)*.

In a global marketplace with instantaneous communications, fraudulent activity can implicate all industry players—from farmers, manufacturers and suppliers to retailers, consumers and governments. Safety is on everyone's mind.

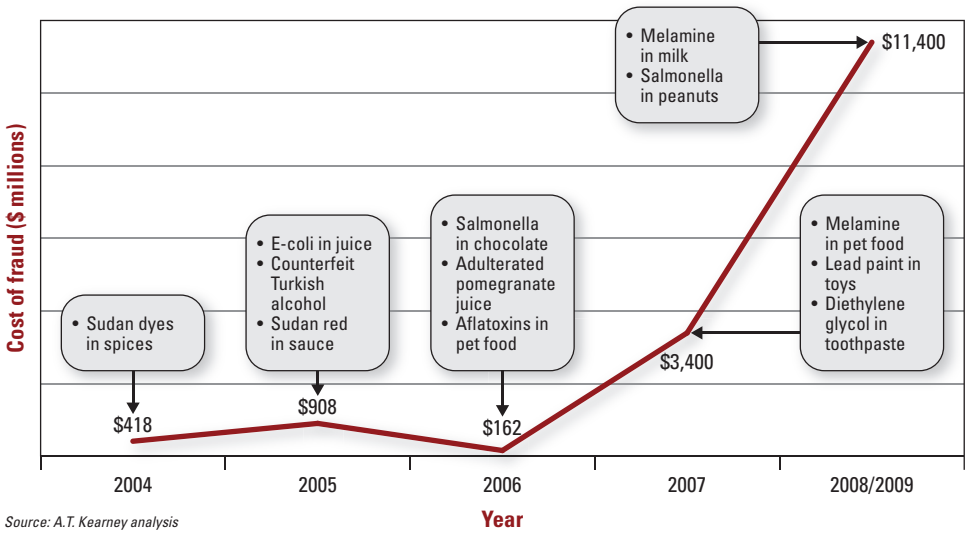
ECONOMIC ADULTERATION —A REAL RISK

It is estimated that economic adulteration and counterfeiting of global food and consumer products may cost the industry $10 to $15 billion per year. The economic consequences of fraudulent adulteration range from lost sales and bankruptcies to adverse health consequences and possibly even fatalities. Since 2007, prominent contamination cases such as diethylene glycol found in toothpaste, melamine contamination in milk and pet foods, lead-tainted toys, and *salmonella* contaminated peanuts, have resulted in an estimated $15 billion in costs and damages combined *(see figure 1).*

The cost of one product adulteration incident averages between 2 and 15 percent of yearly revenues. This could translate to a $400 million impact for a $10 billion company, or a $60 million impact for a $500 million company.

Figure 1

Timeline of major consumer product safety incidents



Source: A.T. Kearney analysis

Melamine: The Trigger Point

Melamine is perhaps the proverbial straw that broke the camel's back or the trigger point for all industry stakeholders. From melamine, the industry recognized that one economic adulteration incident can have global market consequences, with broad and deep implications for company brands, industry performance, peoples' lives, and countries' reputations. With a $10 billion price tag, 290,000 consumers affected around the world, and more than 50,000 hospitalizations, the melamine contamination of milk products created a new reality *(see figure 2).*

Figure 2

Total impact of the melamine incident

Sources: BBC News; A.T. Kearney analysis

Factors That Influence Economic Adulteration

What motivates economic adulteration and counterfeiting? Profiteering, low risk of detection and, if detected, punishment that is often fairly lenient *(see figure 3)*. Yet, today a host of new factors have further increased and complicated fraudulent activities and will continue to do so. These factors include:

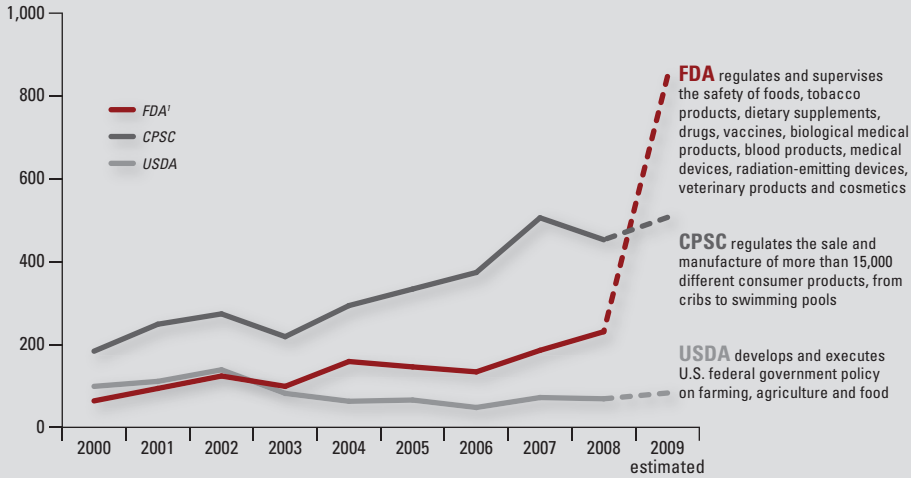
Expanded global marketplace. International fraud threatens supply chains as global sourcing and offshoring shifts to developing markets. As supply chains converge, and the global marketplace is more connected than ever, companies have less visibility and control of key processes. Already, approximately 40 percent

WHY FOOD AND PRODUCT SAFETY IS TOP OF MIND

Never before has the food, beverage and consumer product industry suffered as many product recalls or contamination incidents. The significance of these events and the economic and health costs, puts food and product safety on everyone's minds. The following highlights some of the main reasons for the increased attention.

Increasing number of product recalls. As the number of recalls has risen so has the impact on the market *(see figure)*. For example, the more than 300 food recalls annually translates to more than 75 million food borne illnesses, 325,000 hospitalizations, and 5,000 deaths per year. Although these figures have fueled more scrutiny on product safety, many of these recalls are the result of more vigilance and detection by the Food and Drug Administration (FDA), the United States Department of Agriculture (USDA), and the Consumer Product Safety Commission (CSPC).

Figure: United States has increasing number of product recalls



[1]*A significant portion of the 2009 estimated recalls are due to potential salmonella contamination in peanut products*
Sources: Federal Drug Administration (FDA), Consumer Product Safety Commission (CPSC), United States Department of Agriculture (USDA), A.T. Kearney analysis.

String of safety incidents. In the traditional food and consumer product safety realm, the focus is typically on the unintentional contamination that occurs in the production, processing and distribution activities in the supply chain. Recent cases of intentional adulteration have shown that this activity can also have major health and economic consequences on a local, national and global scale.

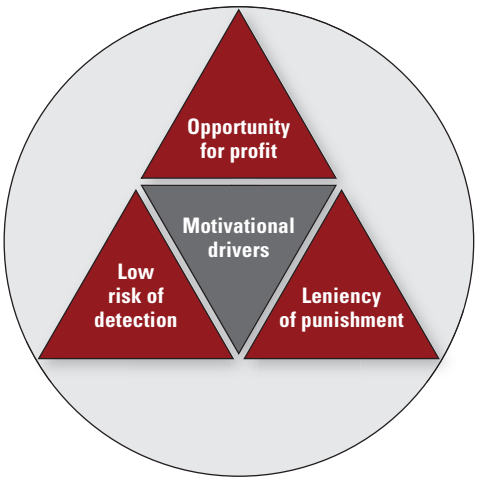
More connected society. With a more connected society, media coverage amplifies the impact and cost of each incident. The Internet, for example, has rocketed the globalization effect serving as a very efficient information outlet. Cases of fraud are increasingly reported quickly around the world with significant loss of brand integrity and product safety.

Consumer activism and government scrutiny. More educated and activist consumers, and more government scrutiny around the world, has further propelled consumer product safety into primetime. As the voices of consumer and food safety advocates grows louder there is increased pressure on governments to intervene. In recent polls conducted by the Pew Charitable Trusts, 83 percent of likely U.S. voters believe the federal government should be responsible for ensuring that food is safe to eat. An even higher percentage, 89 percent, support the federal government enacting new measures to better protect people from getting sick from contaminated food.

of all trade in agriculture, fisheries, and forestry occurs between developing and developed countries. As the United States increases its annual food imports, supplier integrity is critical to protecting a company's brand and its consumers. What was once a local effort to stop economically motivated fraud has become an international challenge.

Figure 3

What motivates economic adulteration and counterfeiting?



Source: A.T. Kearney analysis

Tighter economic conditions. In bad economic times when commodity prices fluctuate and ingredients are in short supply, there is often a spike in fraudulent activity as suppliers are squeezed by costs and surrender to temptation.

Rising power of the Internet. The Internet serves as a retail channel for consumer products and, increasingly, for counterfeit products. Unlike traditional channels, counterfeiters can use the Internet to reach once unreachable consumers, while also remaining anonymous and thus reducing the likelihood of being caught and prosecuted. Furthermore, Internet transactions are difficult to monitor and prosecute due to different rules and jurisdictions across geographies.

More sophisticated perpetrators. Perpetrators are becoming more sophisticated in committing fraud. For example, in the melamine incident, the guilty parties used their knowledge of the "value" ingredient protein and the indirect nitrogen-based testing method used to measure it, to mask and enhance the naturally occurring protein levels in milk products and cheat the test methods.

Accepting value systems in certain markets. There is a common misconception that local values in certain countries condone economic adulteration. In reality, it is the interplay between economics and infrastructure that make adulteration acceptable. People with little regard for consumer health can be traced to markets with severe economic tension, weak regulations and poor legal frameworks and, in many cases, poverty. Brokers and distributors in these markets sometimes have little knowledge or accountability for the products they handle and are mostly concerned about their personal economics.

Markets where product adulteration is common (because of less scrutiny) have become key sources of global supply—exposing manufacturers, brokers and other purchasers to risk of fraud. A recent A.T. Kearney survey finds that ingredient suppliers and product origin are the leading sources of economic adulteration and counterfeiting.[4]

Silent global food crisis. While the food crisis might appear to be unrelated to economic adulteration, the two are closely linked. Food shortages, economic crisis and rising demand for goods create an imbalance that motivates fraudulent activity. On a macro level, the world population is expected to double by 2050,

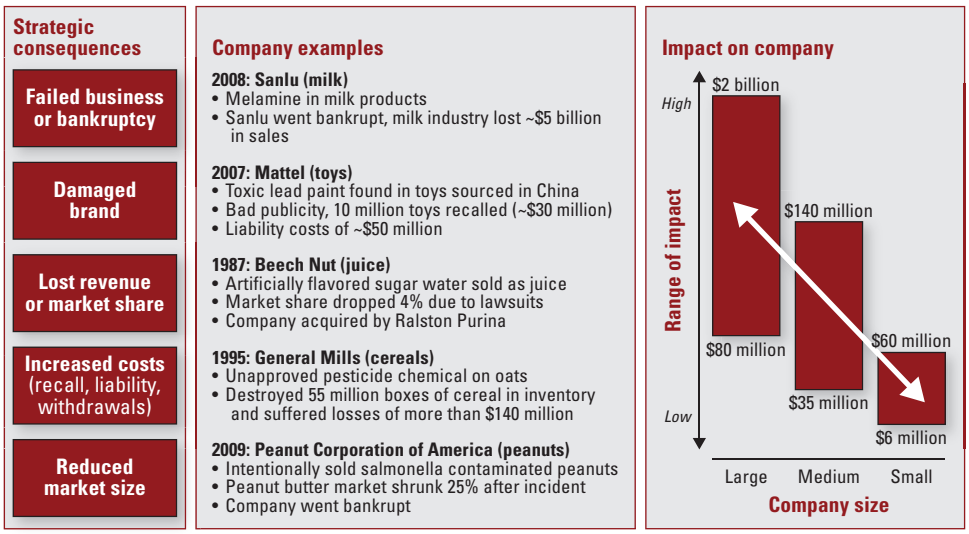
[4] *2009 Economic Adulteration Survey*

particularly in developing countries, and crop production from arable land in these parts of the world is expected to remain flat. Without preemptive actions, the silent food crisis could worsen if already declining food supplies are intentionally adulterated.

The impact on the industry could be significant. The cost of one adulteration incident averages between 2 and 15 percent of yearly revenues, depending on company size. This could translate to a $400 million impact for a large $10 billion company, or a $60 million impact for a small $500 million company *(see figure 4).*

Figure 4

The cost of fraud



Source: A.T. Kearney analysis

STRENGTHENING INDUSTRY COLLABORATION

The melamine incident—which disrupted both the dairy and pet food industries—clearly illustrates that fraud within the food, beverage and consumer product industry is not just a company specific issue. Rather, individual companies, the industry at large and governments all need to collaborate to improve existing programs while developing new strategies to detect and reduce fraud more quickly. Although many companies have thorough, well developed internal programs in place to address the threat of fraud, gaps still exist throughout the supply chain.

Collaboration can take the industry to the next level in safety and quality, and reduce the risk of more devastating incidents such as melamine. Until now, there has been some concern about collaborating and sharing information for fear of compromising a competitive advantage. While this concern may be valid with respect to competitive intelligence, food safety should not be a competitive advantage. Rather, it is an issue the whole industry can come together on for the protection of consumers. Successful models of collaboration in sectors such as pharmaceutical and automotive can provide valuable insights for the food, beverage, and consumer product industry.

Collaboration can further minimize the risk of economic adulteration by protecting internal competitive intelligence, safeguarding against additional liabilities, and

improving regulatory deterrence. The following offers a brief discussion of six possible ways to bolster industry collaboration.

1. Establish a Clearinghouse to Share Intelligence

Leading companies already share information *informally* across the industry. However, these informal communications primarily provide reactionary data while failing to alert companies to potential incidents.

More formal methods of collaboration can help improve efficiency and identify possible future threats. For instance, a clearinghouse, whose central role is to collect and disseminate information, when established with the necessary safeguards, can facilitate secure information sharing across the industry. It can smooth the process of sharing market intelligence through, among other things, the analysis of commodity price fluctuations, geopolitical events, environmental drivers and macroeconomic factors. Industry-wide collaboration can provide the necessary scale to manage the large amount of information needed to develop insightful market intelligence and alert all industry members to potential threats.

Collaboration can take the industry to the next level in safety and quality, and reduce the risk of more devastating incidents.

The pharmaceutical industry provides a good example of how a clearinghouse can facilitate information sharing. The industry launched a consortium called Rx-360, whose members include biotech and pharmaceutical manufacturers and suppliers. Less than a year after initiating the concept, Rx-360 has support from almost all the global pharmaceutical leaders, including Abbott, Amgen, Astra Zeneca, Baxter, Bayer, Biogen, Bristol-Myers Squibb, Cephalon, Genentech, GlaxoSmithKline, Eli Lilly and Pfizer. Rx-360 was established to address supply chain integrity concerns, including sharing of market intelligence and supplier audits. Participants focused heavily on developing the legal framework and standards for the shared audit system to encourage participation.

There are several ways the food, beverage and consumer product industry can establish a clearinghouse. For example, it can be launched through a new independent organization or through existing organizations, such as the Joint Institute for Food Safety and Applied Nutrition (JIFSAN), The Consumer Goods Forum, Center for Animal Health and Food Safety at the University of Minnesota (CAHFS), or the Grocery Manufacturers Association (GMA).

2. Improve Shared Audit Programs

Many believe that supplier audits are the best deterrence to potential risks. However, audits can be costly, time consuming and often fail to catch upstream issues. One solution is for the industry to band together to reduce costs and increase the efficiency and scope of supplier audits. For example, instead of each company conducting multiple short audits of one supplier, the industry can pool its resources to conduct one extensive audit that can be shared among all industry participants. This is similar to a model used by the U.S. Better Business Bureau. A shared audit reduces the cost to each participant as everyone shares the cost of one extensive audit. It is estimated that if just 100 companies use 50 shared audits, the industry could save $50 to $80 million a year. Furthermore, one audit can provide more and better information, since participants can pool their time to conduct a more thorough audit. A shared program also allows suppliers to reduce the overall time spent as they consolidate multiple customer audits into one single audit.

3. Create Basic Ingredient Standards through Collaboration

Ingredient standards provide a solid basis for identifying and classifying raw materials. The pharmaceutical and dietary supplement industries are known for their well-established ingredient standards. Rather than looking for potential adulterants, these industries use monographs or product fingerprints to provide a full analytical profile of individual products that can be verified for authenticity. Such authenticity testing can more easily confirm the purity of a product, and is considered to be the most practical way to detect "unknown" adulterants. Additionally, once a product fingerprint or monograph has been developed, product authenticity testing can become easier and less expensive.

The food and consumer goods sector has been slow to create product fingerprints and ingredient monographs due to the large initial cost to develop the spectral images and the extensive library of samples required for each product monograph. Yet through collaboration, the industry could keep costs down while developing product fingerprints or monographs for the most commonly used or highest risk industry commodities. There are numerous organizations that can help the industry define its monograph standards.

4. Develop Shared Library of Ingredient Reference Samples

Leading companies have their own internal libraries of samples from existing ingredients sources. However, when a company needs to use a new ingredient, it must go through a long process of authenticating the new ingredient. An opportunity exists for industry players to contribute to a shared library of ingredient data. Although different manufacturers may be interested in different quality attributes, industry samples can be pooled to create a database of authentic samples. Doing so could reduce analytical costs and improve quality across the industry.

5. Partner with Academia to Forecast Risk

Many industry participants would like to have a model to forecast the next large target for economic adulteration. This type of model has yet to be developed and given the complexities of fraud and the diversity within a company's product portfolio it will be difficult to construct. At this time, academia is in the theoretical stages of developing forecast risk models. There are two approaches underway that look at the issue from different perspectives. Researchers at the University of Minnesota's National Center for Food Protection and Defense, are in the early stages of developing a framework for forecasting economic adulteration risk from commodity prices. Researchers at Michigan State University's Anti-Counterfeiting and Product Protection Program developed a framework to analyze counterfeit risk drivers based on a product's characteristics. To help advance these efforts, the food, beverage and consumer product industry can throw its support behind a single approach.

6. Establish Partnerships with Federal and State Governments

Food safety and quality is a top priority for the government as it pledges more resources to protect the country's food supply and appoints new leaders to spearhead the challenge. It is important for all partners across the supply chain—from farm to fork—to do their part to support new initiatives to protect the food supply. In particular, food, beverage and consumer product companies can partner with both federal and state governments, independently or through the help of trade

associations and support organizations, to facilitate the flow of relevant information, support government actions to enforce current laws and regulations, and collaborate with government to create or modify them.

The industry can bolster its partnerships with local and national governments while also establishing similar partnerships in as many high-risk countries as possible. An integrated approach is the best way to address issues within countries whose value systems do not actively dissuade economic adulteration. Industry collaboration provides the power to drive change and influence a country's response. Together, companies can share costs, minimize the effort expended by each company, and shorten the time to realize the benefits *(see sidebar: Cost of Fraud versus Cost of Prevention)*.

In summary, refining existing product safety programs and teams can jumpstart collaboration. Although some food, beverage and consumer product

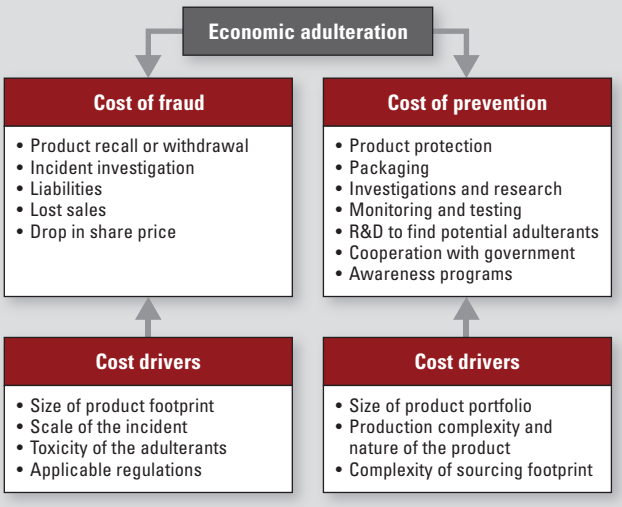
COST OF FRAUD VERSUS COST OF PREVENTION

There are two sides to every coin, which is true even when discussing the costs associated with economic adulteration. The costs can be put into two categories: reactive and "proactive." Reactive costs are those that result from the occurrence of an incident; proactive costs are those that support an anti-economic adulteration program *(see figure)*. Essentially, they are the cost of fraud versus the cost of prevention.

Cost of fraud. In this category, are all costs associated with product recalls and withdrawals, incident investigations, liabilities in connection with consumers or other parties affected by an incident, lost sales, and drop in shareholder value. According to a study released by the American Society for Quality (August 2003), every product recall costs an organization, on average, more than $8 million. Although not considered "hard" costs, lost sales and a drop in shareholder value can be significant in extreme situations. For example, in the 1982 Tylenol adulteration case, this best selling pharmaceutical product saw its market share drop from about 37 percent to 7 percent. In a more recent example, the Menu Foods pet food melamine scandal in 2006-2007, resulted in a 45 percent drop in shareholder value within four days. After the recall, Menu Foods traded at just under 19 percent of its equity value.

Cost of prevention. The cost of prevention will vary by company size, nature of products, breadth of operations, complexity of supply chain, and ability to adapt to changing regulations. Given these parameters, companies must assess their operations and risks, particularly focused on their risk tolerance levels, to determine how much to invest in prevention programs. Investment in prevention can generate a wide range of benefits. For example, it improves brand image and consumer confidence, can help lower insurance costs and boost investor confidence. Although prevention is crucial, there is no "one size fits all" strategy. Companies are already beginning to spend more on deterrence and detection because of the latest trends in adulteration. A typical risk budgeting framework can help identify an appropriate "risk optimization" level.

Figure: Cost of fraud versus cost of prevention



Source: A.T. Kearney analysis

companies hesitate to share data for fear of revealing a competitive advantage, food quality and safety standards should not be viewed as a competitive advantage. When an incident occurs, the impact can be felt across the entire global industry. There are practical ways for companies to collaborate legally and reduce the threat of incidents and potential legal consequences. Those that identify "strategic champions" can take this issue to the next level.

RAISING THE BAR ON PRODUCT SAFETY AND QUALITY

New programs developed through industry collaboration are not the only ways to improve food and quality standards. "Raising the bar" on consumer product safety and quality programs can also be accomplished by integrating additional fraud prevention strategies into existing programs. Even as most companies have made great strides in their quality and safety programs over the past decade, there is still room for improvement.

Anti-fraud measures can be incorporated into existing food safety and quality programs through the following five-step approach *(see figure 5).*

Understand Product Portfolio Vulnerabilities

The first step to incorporating economic adulteration into an existing quality and safety program is to understand all vulnerabilities in the product portfolio. This requires creating a data repository to gather more and better information and intelligence and using models to forecast potential risks. The following offers more details on both.

Figure 5

Five steps to manage risk of economic adulteration

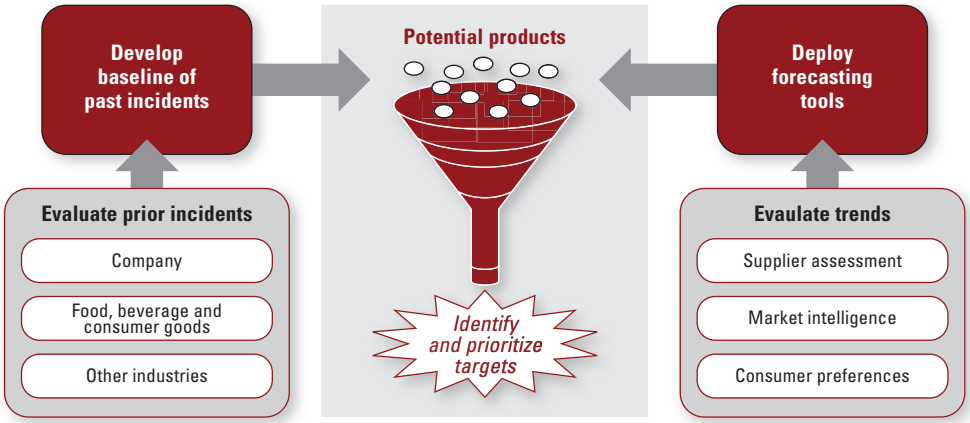
Source: A.T. Kearney analysis

Create a perpetual repository of information. A repository of information consolidates all relevant historical information about internal fraudulent incidents and external industry insights. The repository can harbor information on internal adulteration incidents—including specific details such as ingredient, adulterant, source, date of incidence, cost to the firm, and actions taken. Information from external incidents can be gathered through participation in structured industry clearinghouses, informal communication networks, and alert tools. Such a repository can be useful in spotting trends and identifying themes *(see sidebar: Exploring the Past to Inform the Future on page 12).* For example, it can answer questions such as what types of products or ingredient characteristics are most frequently targeted? What are the issues within the supply chain? What methods are used? This kind of information will help identify where the risk of economic adulteration lies.

Use market intelligence and models to forecast risks. A good way to predict potential risks is through a risk-forecast model. Because a single industry-wide model has not been identified, companies use a variety of sources to forecast and prevent threats internally. Figure 6 demonstrates a potential framework for identifying and prioritizing product risk. First, information captured in the repository

When economic adulteration occurs, it is not just manufacturers that get hurt, the impact is felt across the entire value chain—from raw ingredient suppliers to consumers.

Figure 6
Framework for identifying and prioritizing product risk



Source: A.T. Kearney analysis

can be used to develop key criteria to identify targeted products and develop scorecards to prioritize targeted products. Next, emerging market intelligence on supply and demand distortions is embedded into the risk assessment, and scientists and industry experts are engaged to perform simulations to predict future threats. Finally, the assessment is adjusted depending on the riskiness of a supplier. This is not a one-time procedure, but rather something that should be reviewed and reprioritized periodically to remain relevant. This process will not only help identify current risks but also predict emerging risks.

Enhance Detection Programs

Most leading companies already use a number of sophisticated testing methods for detecting common day-to-day, *known* quality and safety concerns. Yet due to the inherent variability within natural raw materials, it is difficult to test for every *unknown* threat. Verifying the authenticity of an ingredient, rather than verifying the absence of every possible adulterant, provides the best way to detect adulteration. At this time, companies are challenged in the area of authentication testing due to the variability in farming conditions and the limited availability of suitable ingredient reference standards. Given these challenges, the following are ways to improve existing detection programs:

Determine where testing occurs. Ingredients should be tested as close to the original source as possible, since ingredient adulterants are easier to detect before an ingredient has been diluted or combined with other ingredients. Testing ingredients prior to receipt can also prevent contamination within a company's own supply chain.

Establish how often testing is performed. A testing frequency schedule should be executed based on the risk of adulteration for each ingredient and supplier. The higher the risk, the more random the testing should be.

Define ingredient standards. When possible, define specific ingredient standards and require supply chain partners to also conduct necessary testing. This can help reduce the incentive for suppliers to compromise ingredient quality.

Identify testing methods used. Given the volume of ingredients and desire to maintain product affordability for customers, companies can consider both

inexpensive testing methods—such as simple microscopy and other routine methods that test for viscosity, coloration changes, solubility levels, and temperature reactions—and more advanced analytical technologies. The advanced tests include infrared and mass spectrometry, chromatography and other scientific methods. Employing a full range of tests will provide an extra layer of protection.

EXPLORING THE PAST TO INFORM THE FUTURE

The common adage that "hindsight is 20-20" is relevant in addressing consumer product fraud. Looking back at recent fraudulent incidents, similar products of competitors, and different products with similar ingredients, a few common themes can be extrapolated to predict likely targets. For example, the melamine incident in milk products and pet food highlights an adulteration trend of enhancing protein content; it should raise certain questions: Does my product portfolio contain protein-rich ingredients? How can proteins be further altered in the future?

An incident repository that tracks consumer product fraud occurrences and key product characteristics can help identify common themes. The broader the scope of the repository, the more informative it can be. A global repository with incidents affecting multiple companies, across similar sectors can provide better insights. For example, a food manufacturer with milk protein as a key ingredient can draw on a repository containing adulteration of pet foods, beef products, animal feed and other protein rich foods *(see figure)*.

Spotting trends in consumer preferences can also help identify potential products for adulteration as these are often attractive targets. For example, the growing demand for organic and natural healthy foods should alert manufacturers of foods in this segment to be more vigilant and to employ more deterrence strategies.

Figure: Exploring the past to inform the future

Common themes	Current products affected[1]		Potential product targets[1]
Enhance protein content	• Milk (melamine, hydrolyzed proteins) • Pet food (melamine, hydrolyzed proteins) • Beef (soy protein) • Animal feed (potato proteins)		• Beef, poultry, pork • Egg products • Animal feed • Protein-rich product derivatives
Misrepresent premium and short-supply products	• Olive oil • Exotic fruit • Exotic juices • High-grade fish	• Honey, maple syrup • Alcohol and wine • Detergent • Shampoo	• Condiments, spreads, jams • Organic foods • All new natural products including non-food items
Dilute high-volume products	• Spices and seasonings • Orange juice	• Apple juice • Milk and dairy • Laundry detergent	• Starch-based • Cocoa-based • Personal care
Enhance fat content	• Dairy • Seasonings • Oil		• Confectionery • Pasta
Improve natural sweetness via artificial means	• Honey, maple syrup • Juice concentrate	• Fruit • Sugarcane	• Milk, dairy and derivatives • Starch-based • Other syrups
Dilute or substitute blended products	• Blended juice concentrate • Seasonings, condiments • Teas		• Milk and dairy • Starch-based • Blended color additives
Increase nutritional value	• Juices • Milk, dairy and product derivatives • Water • Teas		• Milk, dairy, formulas • Starch-based • Blended color additives • Vitamins

[1] *"Products" refer to both intermediate and finished products.*
Sources: U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition (CFSAN), Food Safety Agency, United Nations Interregional Crime and Justice Research Institute (UNICRI) and various media reports; A.T. Kearney analysis

And in preparing for what might be on the horizon, companies might look in their rear view mirrors to obtain a better understanding of what risks reside within their current portfolios. There can be some interesting insights gleaned, especially as objects in rear view mirrors "are closer than they appear."

Employ a Comprehensive Set of Deterrence Strategies

Many companies have implemented a variety of deterrence programs because, as the melamine incident so aptly highlights, the industry currently has an opportunity to leverage and optimize technologies to detect the endless possibilities of unknown adulterants. Yet testing alone for adulteration is ineffective due to the enormous costs associated with testing for all known and unknown contaminants. The best way a company can protect its brands and its consumers is to apply a comprehensive set of deterrence strategies to prevent adulteration before it enters the supply chain. For example, most manufacturers already have strategies in place to manage complexity within their supply chains, including streamlining product quality and safety and reducing costs. They also already enforce the highest manufacturing standards using tools such as Hazard Analysis and Critical Control Points (HACCP), International Organization for Standardization (ISO) and accredited third party certification schemes like the British Retail Consortium (BRC), Safe Quality Food (SQF), Dutch HACCP and International Food Safety (IFS). These tools help reduce the risk of an issue and provide added security within the supply chain. That said, there are additional strategies that can enhance existing deterrence programs. They include:

Develop appropriate ingredient specifications. Procuring safe and quality raw ingredients requires working with suppliers to develop adequate ingredient specifications. Industry leaders do not just accept standard supplier ingredient specifications, rather they take the time to define the highest quality material specifications. For newer and niche ingredients, it is also important to develop monographs, reference materials and methodologies that maintain the potential substitutes or adulterations to a product.

Establish an efficient supplier audit program. A supplier audit program is one of the single best strategies for deterring economic adulteration. To use Ronald Reagan's frequently quoted statement—"trust, but verify." Companies should always try to work with legitimate suppliers, and verify that these trustworthy suppliers are meeting the required specifications. Top companies spend the time up-front qualifying each supplier through in-depth interviews and assessments. Some companies have redefined the supplier qualification process to include behavioral assessments similar to criminal investigations, detailed verification of record keeping, and comprehensive site audits. In addition, they invest in supplier development programs that strengthen relationships and educate suppliers, resulting in higher compliance to standards. Suppliers that are treated as true partners will regularly collaborate with their upstream and downstream partners when challenges arise.

Employ current intelligence networks. Leading companies continually monitor issues that suppliers may be facing. A good way to do this is to get input from "boots on the ground" employees, ingredient brokers, and customer complaint trend analysis. Existing employees within a country can offer valuable insights, while reaching out to brokers that deal with day-to-day issues can provide an informal way to gather timely local information. Finally, monitoring customer complaints can identify issues early and allow for a timely reaction.

Increase traceability within the supply chain. Because the amount of risk in the supply chain decreases as transparency increases, it is important to instill mechanisms that allow full supply chain visibility—down to the individual farmer,

where possible. Packaging and product identification, such as serialization, RFID tags, or other inside-the-product markers can facilitate traceability throughout the supply chain, both upstream and downstream. Recognizing that the costs of these technologies may be prohibitive, at minimum, companies can develop a "line of sight," where the buyer has an obligation to understand the supply chain path and the various touch points along the path back to origination. As more companies become sensitive to using the spot market or brokers due to less transparency in the supply chain, they can simply reduce the number of steps and increase transparency with verification and validation at each step.

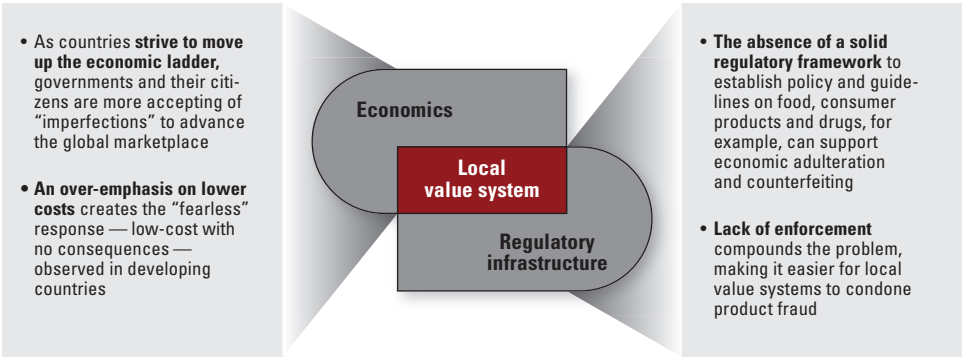
Understand Implications of Local Value Systems

The risks of economic adulteration, which increase as companies engage in global sourcing and send more operations offshore, can be ascertained by developing a formal process to understand the implications that "local" value systems may have on a company's operations. As discussed earlier, the implications are driven primary by the interplay between economics and infrastructure *(see figure 7)*. A company can expand its understanding of each local value system where it sources materials or produces products by partnering with federal regulatory agencies, such as the United States Foreign Agricultural Service, the United States Commerce Department and State Department, academia and research institutions, developing local relationships, and monitoring reports on the region.

There are practical ways to collaborate legally and reduce the threat of incidents and potential legal consequences. Those that identify "strategic champions" can take this issue to the next level.

Figure 7

The interplay between economics and infrastructure on local value systems

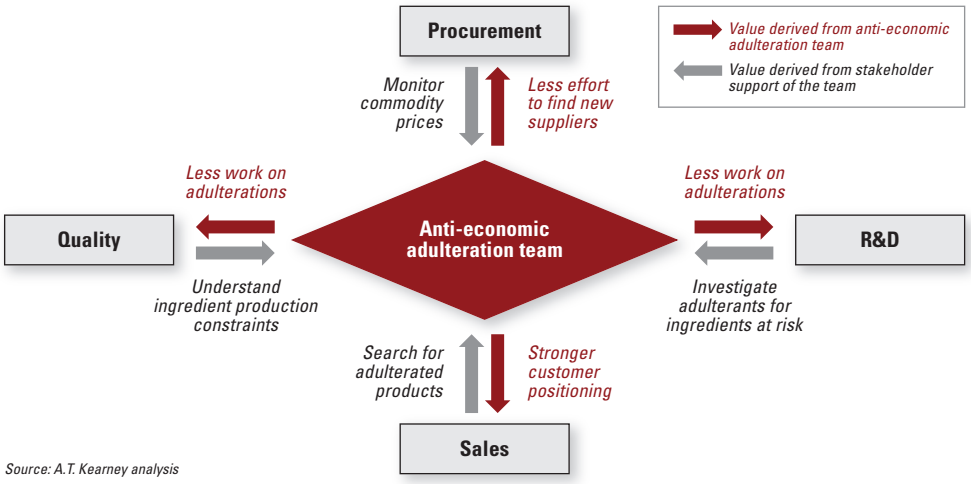


Source: A.T. Kearney analysis

Armed with a good understanding of the local value system and where further support is needed, there are ways to influence change within the local community. For example, change can be influenced by working with local governments, establishing open communication channels with local industries, developing deterrence strategies jointly with local companies to form a "united front" against economic adulteration, and by creating the right incentives to drive change.

In Asia-Pacific, for example, concern about food safety is forging a high level, collective mandate to restore consumer confidence. There is a recognized need to improve regulators and manufacturers' technical competence and understanding of food safety management. The Asia-Pacific Economic Cooperation

Figure 8
Value derived from an anti-economic adulteration team and stakeholder support



Source: A.T. Kearney analysis

(APEC), a forum for member economies to enhance economic growth and prosperity in the region, has created a Partnership Training Institute Network (PTIN) through its Food Safety Forum to bring together public and private sector representatives, including scientists, to promote the use of international food safety standards. PTIN was endorsed by APEC leaders in 2008 and has now entered the implementation phase.

Deploy a Holistic Program Across the Organization

An anti-fraud program should not consist of separate independent efforts led by multiple stakeholders across the organization. Instead, the program should take a holistic approach to increase awareness and vigilance and facilitate cross-departmental collaboration throughout the organization.

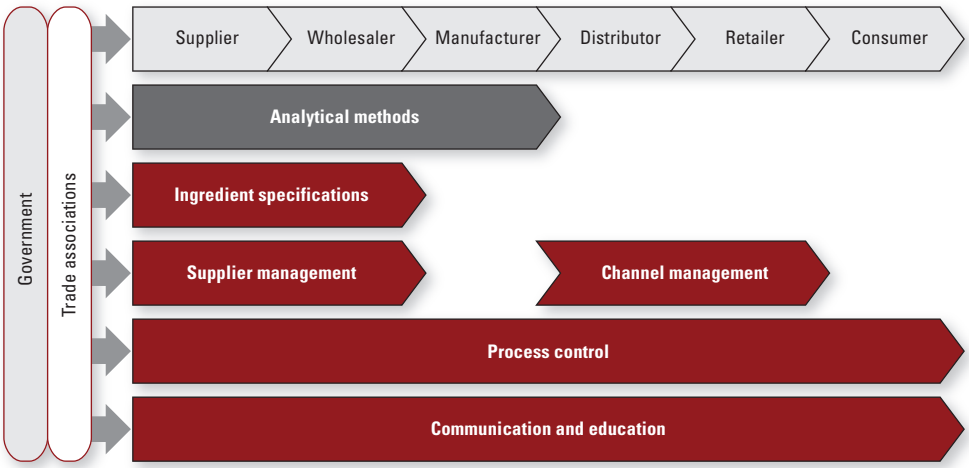
A best-practice holistic anti-fraud program identifies strategic champions and assigns working teams made up of stakeholders from various departments. It also engages external resources, such as industry associations, governments and regulators. The value derived from an anti-economic adulteration team and stakeholder support is illustrated in figure 8. The program may also include managing intelligence on economic adulteration and counterfeiting trends by tracking sub-standard suppliers, local cultural and behavioral norms, and predictive market elements. Additionally, it should encourage innovative strategies to combat current and emerging threats, an internal communication plan to convey all aspects of the company's counterfeiting and anti-economic adulteration program, and track effectiveness so strategies can be adjusted quickly to improve results when appropriate. Finally, an anti-fraud program can establish consistent ingredient purchasing specifications, and develop training programs for staff to ensure everyone knows what to look for in fraudulent activities or risks.

ROLE OF THE ENTIRE VALUE CHAIN

When economic adulteration occurs, it is not just manufacturers that get hurt, the impact is felt across the entire value chain—from raw ingredient suppliers to consumers. Therefore, manufacturers, suppliers, retailers, government agencies, and consumers all have a vital role to play in addressing this threat *(see figure 9)*. The following discusses the role of each value chain participant.

Figure 9

Everyone has a role in addressing the threat



Sources: Interviews with key executives, U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition (CFSAN), Food Safety Agency and United Nations Interregional Crime and Justice Research Institute (UNICRI); A.T. Kearney analysis

Role of the supplier or broker. Suppliers play a crucial role in deterrence and detection of economic adulteration. In addition to implementing many of the same strategies as manufacturers, suppliers can also consider ways to facilitate appropriate testing procedures, provide increased transparency and timely information, and partner with manufacturers in their downstream efforts to reduce fraud. One way suppliers can improve transparency is to partner with manufacturers to improve information flow. An example a company may want to use is a standard supplier qualification questionnaire, such as the Standardized Information on Dietary Ingredients (SIDI) protocol developed by the Council for Responsible Nutrition (CRN) in October 2006. This method provides standard supplier qualification questionnaires that are tied to a database of readily accessible pertinent information. This database provides a process for suppliers to simultaneously make updates relating to any material changes that will affect manufacturers. For suppliers, the SIDI protocol includes a confidentiality agreement to protect them from the release of proprietary information. The real benefit is a faster turnaround time in making information available to manufacturers and improved quality control.

Role of the retailer. For the retailer, it is very important to partner with reputable suppliers and manufacturers that utilize the highest standards in deterrence and detection programs. Retailers should confirm their suppliers are providing them with genuine and safe products that have not been counterfeit. In addition, they can work with supply chain partners to minimize the impact when incidents do occur through timely communication and an efficient product recall process.

Recent incidents call for improved safety programs. This does not necessarily mean spending more money on food and consumer product safety, but it does mean redefining actions and rethinking resource investments.

In today's environment, many retailers are not only purchasers and resellers of another company's products, but also producers and sellers of their own private label products. Therefore retailers must also attempt to follow the highest manufacturing standards by developing robust deterrence and detection programs that consider the risk of economic adulteration to their own branded products.

Role of the consumer. In order for standards in food and product safety to rise to the next level, consumers need to demand a higher standard in food safety. Companies have already implemented significant measures to safeguard their products. Once consumers demonstrate a willingness to pay a premium for a product attribute, such as with organic products, large players will find a way to serve this market. To achieve the next level of quality and safety, consumers must demonstrate their willingness to support the latest technology for industry to apply to food, beverage and consumer products.

While the consumer's role is to demand that products they purchase are authentic and safe, manufacturers can support this effort by helping consumers identify issues and giving them the skills to spot fraudulent products. Case in point: An aftermarket braking system manufacturer was experiencing a rise in counterfeiting because retailers were unknowingly stocking counterfeit parts, often mixed with authentic parts. Since distinguishing marks used to trace parts are easily copied and anti-counterfeit packaging was often discarded before it got to the customer, the manufacturer launched a *customer awareness campaign* that included detailed marketing materials on how to identify counterfeit parts. The company also carried out extensive sales force training. On all site visits, the sales force would educate retailers on the differences between genuine and counterfeit parts—giving them the necessary tools to spot a fake and the information to demand authentic products. The method not only improved detection of counterfeit products but also highlighted the safety risks of vehicle failures that counterfeit parts cause.

Role of the government. Consistent with its public safety mandate, the role of the government is to ensure certain rights and safeguards—such as safe and secure food and consumer products—are in place. Governments can support legitimate businesses through the protection of property rights and by reducing the number of illegal businesses. In addition, they can increasingly leverage their customs and border protection organizations to prevent illegal and potentially unsafe products from entering their country. Customs and border protection agencies play an important role in ensuring safe and legitimate products particularly at the critical points of entry into the country. Incorporating detection practices in existing sampling programs and sharing results could potentially be an effective role for government. However, this overwhelming task must be addressed through a coordinated effort involving all stakeholders throughout the supply chain. A public-private partnership aimed at mitigating food fraud risks is essential.

In addition to setting the laws, governments need to more effectively execute existing laws and regulations to deter fraud and protect consumers and increase penalties for violators. For example, China announced in September of 2009 that it plans to launch a long-term campaign to crack down on making, selling, and using illegal food additives. In this effort, it also vows to name violators.

Furthermore, local government and national governments should identify international issues arising with trading partners and provide support and collaboration to reduce fraudulent activity. All of these measures will help to ensure safer

supply of food, beverage, and consumer products and enhance consumer confidence in the government's ability to provide the necessary safeguards. To do this, governments may consider establishing a center of expertise for food fraud similar to current efforts on food safety and defense.

Finally, governments can help lead the dialogue on aligning global food standards in order to alleviate some of the complexities created by inconsistent standards that companies need to abide by.

THE NEW BASELINE FOR FOOD AND PRODUCT SAFETY

The rapidly evolving and increasingly complex global marketplace and the recent adulteration incidents have created a "new baseline" for expectations around product safety. New sourcing locations, new suppliers and vendors, new and emerging distribution channels, increasing consumer activism and government regulations are a call to improve how the industry detects and deters fraud.

Recent incidents of economic adulteration call for enhanced safety programs and increased collaboration. This does not necessarily require the industry to spend more money on food and consumer product safety, but it does require redefining actions and rethinking resource investments. The following are three fundamental guidelines for improving existing safety and quality programs.

Become more proactive in addressing economic adulteration. While many companies have already begun to transform their organizations to respond to recent fraud threats and their globally challenged supply chains, more is needed. It is necessary to shore up strategies and bolster investments already committed to supply chains, such as in brand protection and safety. A good approach involves integrating anti-fraud approaches explicitly in food safety and quality programs, and educating procurement and supply chain personnel to become more sensitive to these increasing threats. For example, these professionals can question unrealistic bargain pricing, reevaluate the use of brokers for sourcing ingredients, and make changes where possible to minimize exposure. Also, procurement and supply chain professionals can leverage their industry networks to ensure brand protection and maintain consumer confidence in branded products, and build true partnerships with companies within their supply chains; this is especially important during times of significant economic pressures. As a next step, companies might consider an orchestrated intra-company program with a designated project leader and top management support. In such programs, industry experts lead workshops and engage in real-world risk assessments to identify threats and develop a more comprehensive strategy to address economic adulteration.

Find new ways to share information and promote collaboration. Going forward, the industry should operate more collaboratively and intelligently, but in a secure environment to avoid exposing strategies and tactics to those seeking ways to produce fraudulent products and cheat the system. A collaborative industry culture as observed in the pharmaceutical industry can be tailored to fit the food, beverage and consumer product industry and must pass the legal test to ensure anti-trust laws are not compromised. The driver for collaboration must not be misconstrued as benefitting select industry participants but rather as a way to minimize risks to product safety and ultimately consumer health and welfare. This understanding requires a fundamental shift in mindset and leaders to mobilize the industry on

a collaborative journey. Key next steps: identify a formal approach to collaboration that includes the industry, government, academia, and non-governmental organizations; and increase global engagement through industry groups, such as the Consumer Goods Forum. The industry has already begun taking steps toward collaboration through GMA and other forums, evident in this study and ongoing discussions to explore development of a standard forecasting tool to help identify emerging fraud risks.

Engage government as facilitator. Governments can establish global standards and share intelligence on emerging threats. This role is critical to resolve a threat that is further magnified by globalization, more integrated supply chains, and a global consumer base with similar requirements, particularly in terms of product safety. Additionally, governments can elevate their response to product safety by enforcing policies and regulations, and working with small- and medium-sized companies that may need funding to implement deterrence and detection programs. Governments are beginning to put a stake in the ground to ensure safe products for global consumers. The next step is to continue this momentum through collaboration with the industry, trade associations, consumers, and other international trading partners.

Minimizing risks to consumers, the industry, and the global marketplace requires "all hands on deck." As the food, beverage and consumer product industry continues to demonstrate its commitment to protecting consumers and product brands, now is the time to harness the tools outlined in this study to reduce consumer product fraud through effective deterrence and detection programs.

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Disclaimer: As part of this overall project, A.T. Kearney worked with the steering committee to review current procedures to understand opportunities for the industry. Because of the size and diversity of the food, beverage and consumer product industry, these recommendations are not intended to represent a "one-size-fits-all" approach. Thus, some of the recommendations will be appropriate for some companies and segments of the industry but not for all. Implementing some or all of these strategic recommendations and tactical options may help minimize risks associated with economic adulteration.

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