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# Safer Fresh Food for Asia's Shoppers

A call to action



A study conducted for  
The Coca-Cola Retailing Research Council Asia  
by McKinsey & Company



## The Coca-Cola Retailing Research Council Asia

The CRRCA is sponsored and facilitated by The Coca-Cola Company, and is populated with senior executives of Asian food retailing companies. The membership of this Council is as follows:

Mr. Long Chen  
China Resources Vanguard Co., Ltd., China

Mr. Peng Chee Choo  
Cold Storage Supermarket, Singapore

Ms. Jenny Lee  
7-Eleven South China, China

Mr. Lou Jardin  
IGA Distribution, Australia

Mr. Jeong Gy Baek  
Bokwang FamilyMart, Korea

Mr. Lawrence Koh  
Consumer Goods Forum Pty Ltd., Singapore

Mr. Sadashiv Nayak  
Pantaloon Retail India Ltd., India

Mr. Chuan Nimkittikul  
CP All Public Company Ltd., Thailand

Mr. Kian Peng Seah  
NTUC Fairprice Co-Operative Ltd.,  
Singapore

Mr. Pudjianto  
Alfamart, Indonesia

Mr. Carmelito Regalado  
Matahari Food Business, Indonesia

Mr. Paul Sheldrake  
Wellcome, Hong Kong

Mr. Gwyn Sundhagul  
Tesco Lotus, Thailand

Mr. Yoshitomo Suzuki  
AEON Global Merchandising Co., Ltd.,  
Japan

Mr. Bienvenido V. "Donnie" Tantoco III  
Rustan Supercenters, Inc., Philippines

Mr. Tony Taylor  
Wal-Mart Asia, Hong Kong

Mr. Ron Virta  
Trust-Mart Capital Management (Shanghai) Ltd.,  
China

The Coca-Cola Retailing Research Council Asia is facilitated by Council Research Director  
Thomas W. Vadeboncoeur, Goodheart Resource, Inc., USA

# about

## The Coca-Cola Retailing Research Councils

Through The Coca-Cola Retailing Research Council, The Coca-Cola Company has supported independent research on the topical, important and pressing issues facing food retailers for more than thirty years. Launched in the US in 1978, then in Europe, Latin America and Asia, the Coca-Cola Retailing Research Councils have developed and published thirty-eight studies investigating the most pressing issues facing food retailers.

These studies are directed by retailers, for retailers, and for the benefit of the entire industry.

These focused research projects, undertaken in collaboration with major consulting firms under the direction of a dedicated Research Director together with the Council members, provide invaluable insights for immediate action and longer-term strategic planning for all retailers. Taken together, the body of knowledge produced by the Councils is unrivalled in the food retail industry, and provides an important guide for any journey into the rich landscape of future food retail.

In August 2008, Coca-Cola invited past and present Council members from around the world to Beijing to participate in a forum to address perhaps the most significant issue of the twenty-first century: environmental sustainability. The event engaged the collective expertise of over 150 of the world's leading food retailers. The result, known as the Global Retail Perspective, was titled *Sustainability in Retailing*.

All past and present studies conducted by the Coca-Cola Retailing Research Councils can be found on [www.ccrcc.org](http://www.ccrcc.org).



## The Coca-Cola Retailing Research Council Asia

Asia is home to many of the world's most dynamic retailers operating in a rapidly evolving environment. The Coca-Cola Retailing Research Council Asia is one of the region's significant research bodies dedicated to in-depth investigation of food retailing issues in a cooperative, non-competitive environment.

Since its formation in 2004, The Coca-Cola Retailing Research Council Asia has conducted and published two major studies and has played a critical role in providing blueprints for Asia's food retailer development and improved shopper satisfaction:

- The Fresh Imperative: Creating excellence in Asian Fresh Food Retailing, researched by Accenture; and
- Food Retail Formats in Asia: Understanding Format Success, undertaken by IBM.

"Membership of the Council has given me a unique perspective on the critical issues facing our industry" says Paul Sheldrake, Operations Director, Wellcome Hong Kong, member and current Chairman of The Coca-Cola Retailing Research Council Asia. "It has been extremely valuable to be part of this team of high performing retailers working together to address issues important to the future of the industry. Our objective has been to improve the way in which we serve all Asian consumers by putting shopper insights at the centre of our research, insights that we can all use in our businesses. It is a privilege to serve on the Council. A big thanks to The Coca-Cola Company for their creation and continued support of this important initiative."

Glenn Jordan, Pacific Group President of The Coca-Cola Company adds "We are extremely proud of the legacy contribution that the Coca-Cola Retailing Research Councils have made to the industry globally over the last 30 years. The food retailing industry is developing at a rapid pace within Asia. We are very committed to sponsoring and supporting the Coca-Cola Retailing Research Council for Asia as we feel it has a huge contribution to make to providing thought leadership in critical areas that will facilitate the advancement of the industry. Food safety is one such topic. I would like to thank the members of the current Council for their hard work, insight, and commitment to producing this excellent study."

## Food Safety: Safer Fresh Food for Asia Shoppers

Food Safety issues have been top of mind for the industry over the past several years. Recent food safety breaches have emphasized the critical nature of food safety to the ongoing integrity and financial success of retailers both in Asia and globally.

This study, undertaken by McKinsey & Company under the direction of The Coca-Cola Retailing Research Council Asia membership, was commissioned in order to provide retail leaders with a road map for ensuring enhanced food safety and product quality in fresh food, from source to consumption.

"This study provides detailed insight into the strengths and weaknesses of food safety systems across different Asian countries and food categories," notes Long Chen, CEO of China Resources Vanguard, China and a member of the Coca-Cola Retailing Research Council Asia. "In particular, it reveals food safety as the single biggest risk issue for fresh food retailers across Asia. Food Safety strategy and execution must be a major focus for Retailer Leadership and their senior management."

## The Coca-Cola Retailing Research Council Asia and McKinsey & Company

When undertaking a study of this magnitude the members of the Coca-Cola Retailing Research Council Asia seek the collaboration of a relevant management consulting firm. After an extensive review of options the Council members chose McKinsey & Company, whom they believed to be uniquely qualified to work with them on this study.

“We were delighted and honored to be selected by the Coca-Cola Retailing Research Council Asia to work with the members on this high traction issue, which is so pivotal to the advancement of food retailing in Asia,” said Todd Guild, a McKinsey director based in Asia. “We applauded the desire to create a simple road map that retail leaders could adopt within their operations to identify any potential food safety issues and rectify them accordingly. We were enormously impressed with the multitude of best practice initiatives undertaken by the Council member companies, which provide a rich resource to all food retailers as they seek to develop their practices in this area. I want to thank the Council members for giving us this opportunity and providing such rich input to the completion of this study.”

In Asia, McKinsey & Company has approximately 1,400 consultants deployed from 16 offices. McKinsey has worked with a large number of retailers in Asia, and has completed over 1,000 retailer engagements globally.









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# overview

The 2009 report from the Coca-Cola Retailing Research Council Asia (the Council) summarizes the results of extensive research on fresh food and fresh food safety in Asia. Our hope is that this report encourages retailers to strengthen the trust consumers place in their brands through leadership on improving fresh food quality, supply chains, and safety across Asia. We hope this work by the Council marks the beginning of an era of regional retailer collaboration and collective goal setting aimed at enhancing fresh food safety in the areas that matter most.

The research for this report was commissioned by the Council and conducted by McKinsey & Company over a period of nine months. The work incorporates extensive contributions from leading retailers who sit on the Council, as well as our discussions with a broad set of experts from industry, government, and academia. Our findings are based, in part, on a detailed survey of senior management and food safety experts from 17 participating retailers across the region. The findings were further supported by extensive on-the-ground research throughout operations across the entire fresh food supply chain in four countries and nine Asian cities.

References made throughout this report regarding specific retailers, their activities, and proven practices were obtained through McKinsey market visits and interviews.

# executive summary



Amid the rich diversity of Asia's cultures and people, one common attribute stands out: a passion for fresh food. Think of the delicate taste of sashimi or the subtle variations of seasonal fruit in Japan, the tang of bibimbap in Korea, the robust flavors of wok-fried pork or stir-fried vegetable dishes in China and Southeast Asia, the glories of mangoes from India and the Philippines. For many Asian cuisines, the quality of the final dish hinges on the freshness of the original ingredients.

Asian shoppers go to extraordinary lengths to seek out freshness in the marketplace. Their devotion to fresh food creates enormous opportunities for retailers who understand that passion to build loyalty among their customers and equity in their brands. That same yearning for freshness, however, also creates big risks: the business consequences of spoilage or even a single food safety incident can be catastrophic. Thus, for retail leaders in Asia, food freshness and safety is both critically important to the brand and a constant challenge.

This report lays out how Asia's retail leaders can—and indeed must—play a more active role in setting and improving standards for food freshness and fresh food safety in the region. We set forth specific proposed steps Asia's retail leaders can take to establish an active leadership role in improving fresh food safety. We highlight food safety “hot spot” priorities for markets, define how markets across Asia develop in a common evolutionary pattern, encourage greater retailer leadership and regional sharing of proven practices, and encourage retailers to adopt a mindset, both in-store and through the supply chain, to ensure fresh food practices keep up with Asian consumers' expectations for the world's best fresh food.

Our report offers a practical, prioritized set of actions that retail leaders can begin to adapt and apply within their Asian markets to reduce the risk of food safety incidents. We discuss how retailers can lead the charge and personally drive initiatives to improve freshness and food safety by adopting a more influential stance, not just with their employees, but across their supply chains, and with regulators and consumers.



## Building loyalty and brand equity through the fresh offer

**Fresh has always been at the top of the agenda for grocery retailers.** Consumers in markets across the globe consistently rank good fresh offerings as central to their store selection.<sup>1</sup> Retailers know intuitively that the category drives traffic and enhances consumer loyalty. Retailers strive to differentiate retail formats through their fresh offer, delivering higher quality or better pricing for fresh items, emphasizing healthier fresher choices, and adding more in-store theater to the fresh aisle. Retailers throughout Asia understand the linkage between fresh categories and customer loyalty, and that expanding their customer base and building brand equity start with delivering the best fresh offer possible.

Yet a single failure along the food supply chain can create safety problems that can spread unpredictably and lead to catastrophic food safety breaches. One major incident can generate recalls and tragic results—including incalculable damage to a retailer's brand and reputation, with no guarantee of recovery. Long-term food safety improvement demands systemic change across a wide swath of industry participants—change that demands a level of influence only retail leaders can deliver. Encouragingly, our findings suggest that proactive, right-minded leadership more often drives the sweeping change required than do costly investments.

## Three primary threats to fresh food safety

**Our work identified three primary food safety threats that retailers should work to contain across their supply chains.** Residual chemicals, microbe contamination and spoilage, and veterinary diseases are the common enemies Asian markets face in the battle for fresh food safety [see exhibit 2-1 on page 24]. While the dangers these primary threats pose can never be eliminated, they can be contained by managing risk and improving incident response. Just one failure across the entire supply chain is enough to compromise fresh food safety. To effectively manage and continually improve fresh food safety, retail leaders need a management framework that covers the entire supply chain from farm to checkout. In this report, we introduce a Fresh Food Safety Management Framework retail leaders can use to assess current performance both in-store and across their supply chain, compare what they are doing against key competitors or retailers in other markets, and identify and prioritize the steps needed to achieve the highest food safety levels.

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<sup>1</sup> McKinsey's Global Retail Practice.

## The common evolution of Asian countries and markets

**Importantly, we found that all markets in Asia evolve in a common predictable way, relative to improvements in fresh food safety, based on evolutionary elements such as basic water and sanitation infrastructure.** Retail leaders have a central role to play in advancing government policies that accelerate this evolutionary development. Australia, Japan, and Korea, for instance, have successfully achieved higher levels of food safety than other Asian countries by leveraging active retail leader support. Less developed countries, by contrast, lack some or all of these requirements, and, as a consequence, their ability to ensure food safety is more limited. Retail leaders can do far more to engage with and learn from other markets. Reaching across markets, they can learn and adopt the proven practices of retailers in neighboring countries at similar stages of development, and configure their fresh food safety practices to fit their own market context.

## Focus on the “hot spots”

**Retail leaders can drive rapid improvement in freshness and food safety by prioritizing and addressing the biggest risks, what we call the “hot spots.”** They should clarify and rigorously focus on these priorities—this is about leadership, not cost. In countries at each stage of development, different failure points generate the greatest food safety risk. We encourage retailers to be proactive in devising a plan of action to manage these food safety hot spots. Retailers should focus on these priority hot spots, since doing so will lead to the most rapid food safety improvements.

Retail leaders in countries at each stage of evolution need to set priorities among the various hot spots and adopt, revise, and implement the practices of leading retailers [see exhibit 4-2, page 42]. But there is a larger message: the retail leaders driving change are embedding more than best practices—they are instilling a new mindset and culture around food safety in their stores and throughout their supply chains.

## Shaping the future of fresh food

**By exercising their influence, retail leaders can generate significant change in their store operations, in their supply chains, and in their country’s level of freshness and food safety.** Retail leaders in markets at each stage of development can encourage producers, processors, and transporters to adopt proven practices and improve fresh food safety throughout their supply chains. And because regional interdependence is on the rise, retailers in developed markets can also lead cross-border initiatives to enhance food safety throughout the region. We encourage retail leaders to take this more active role, and guide and influence other participants in the fresh food supply chain to shape the future of food safety in Asia.



## A call to action

**Retail leaders can protect and strengthen their brand and reputation for freshness and trust by making an immediate, sustained shift from a defensive to proactive stance in their leadership on fresh food and food safety.** Leaders must instill a mindset and culture that recognizes how crucial freshness and food safety are to reputation and trust. They must develop action plans that go beyond their own employees to include upstream supply chain partners, regulatory agencies, and consumers. We recommend deliberate steps retail leaders can take to embed fresh food safety practices in stores and accelerate the adoption of proven practices throughout their supply chains [see exhibit 6-2, page 70].

## How to use this material

We encourage you to treat our collected research as a thought starter, to generate full and thorough examination and analysis of your own situation; refer to the report repeatedly, jot observations and ideas in the margins, fold pages that seem helpful to your unique situation.

The examples within are given to provide helpful illustration of problems that can be encountered, but should not be considered a guide to steps to be taken by any retailer without conducting a complete and detailed review with specialist assistance.





# chapter 1



# Building loyalty and brand equity through the fresh offer

***Fresh has always been at the top of the agenda for grocery retailers.*** Consumers in markets across the globe consistently rank good fresh offerings as central to their store selection. Retailers know intuitively that the category drives traffic and enhances consumer loyalty. Retailers strive to differentiate retail formats through their fresh offer, delivering higher quality or better pricing for fresh items, emphasizing healthier fresher choices, and adding more in-store theater to the fresh aisle. Retailers throughout Asia understand the linkage between fresh categories and customer loyalty, and that expanding their customer base and building brand equity start with delivering the best fresh offer possible.

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In 2008, powdered milk brands in China were found to be tainted with melamine, which caused kidney failure in babies [Box 1-A]. Thousands of families were affected. The incident serves to illustrate, not merely the health hazards, but also the risk to retailers from poor food safety practices. Sales losses from a similar scandal could hit a large Asian retailer for up to nearly \$40 million,<sup>2</sup> with compensatory damages and product recalls costing nearly another \$10 million.

#### Box 1-A

### Case study: China's tainted infant formula scandal

The tainted infant formula case started as a series of health problems traced to a single company, Sanlu, but quickly mushroomed into a large-scale disaster brought on by industry-wide contamination.

Tests carried out by AQSIQ\* found the powdered milk products of 22 producers to be tainted with melamine. Manufacturers had used the chemical to misrepresent products as high in protein, and thus, charge higher prices. Kidney failure and other issues caused by the chemical resulted in the deaths of six infants and hospitalization of more than 50,000.\*\*

The damage done to consumer confidence is hard to quantify, but some indicators hint at the severity. Domestic powdered milk sales on September 20, 2008 were about half those of September 1, and domestic liquid milk sales also plummeted nearly 70 percent.\*\*\*

Companies whose products were found to be tainted agreed to contribute to a fund of \$30 million to cover future medical costs, and a one-time cash compensation package estimated at \$130 million. The reparations will not be enough to save some companies' reputations, however; the Sanlu name became synonymous with the scandal nearly overnight, and the 50 year-old dairy filed for bankruptcy.\*\*\*\*

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\* General Administration of Quality Supervision, Inspection and Quarantine, China.

\*\* Infengnews, February 27, 2009.

\*\*\* McKinsey analysis.

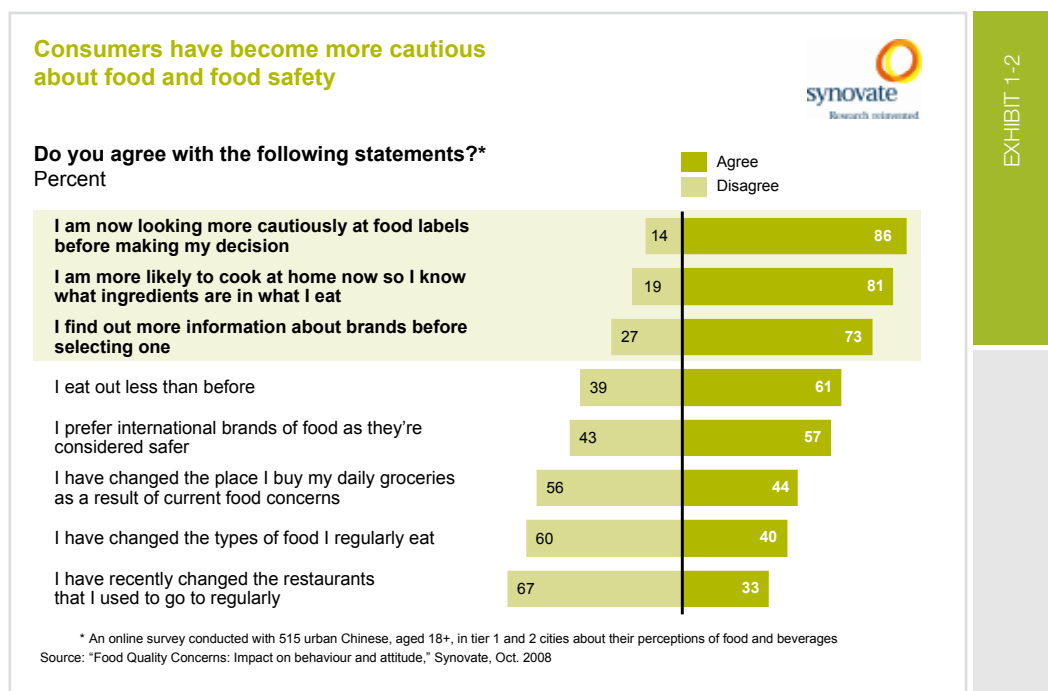
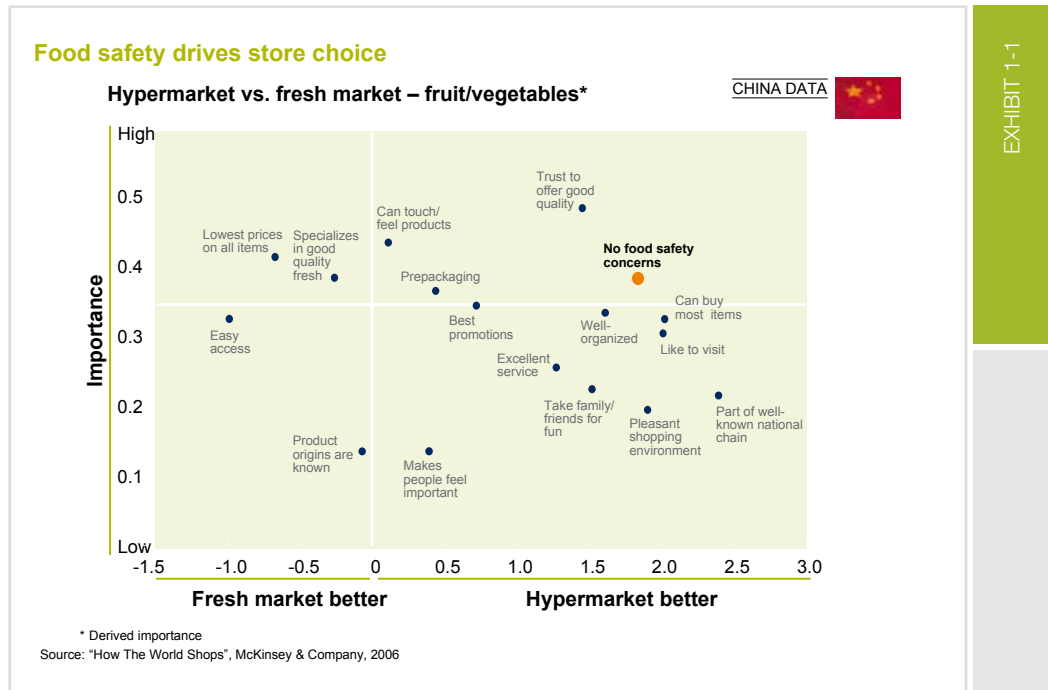
\*\*\*\* CCnews, December 29, 2008.

**Consumer expectations and behaviors compound the impact of fresh food safety incidents. Findings from McKinsey's "How The World Shops" survey indicate that food safety is already a crucial factor in how consumers select retailers [exhibit 1-1].**

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<sup>2</sup> Assumptions based on a sanitized case of private-label food contamination. A major Asian retailer with 200 hypermarkets quickly reacts to the incident by recalling product from all stores, but not before 10 customers report experiencing diarrhea, dizziness, and numbness. The incident also negatively affects the store's private-label food sales by 25% for 2 months, with 10% projected for the following year, and 5% for two years on. Assumed annual food sales per store of roughly \$32 million, with private-label food representing about 3% of the store's food sales.

Research conducted after the tainted infant formula incident shows a major shift in attitudes [exhibit 1-2]. Such shifts are not uncommon: in Italy, the percentage of respondents who said they were “very concerned” about food safety jumped from 22 in September 2006 to 56 by October 2008 following the incident and, closer to home, abuse of cheese expiry dates.<sup>3</sup> Incidents such as these tend to reveal similar patterns of consumer trust being hit hard, and the globally networked nature of today’s media and communications only serves to hasten and intensify this dynamic.



3 Demos & Pi data, N = 1,300 interviews (Italy).

Incidents such as the tainted infant formula scandal, and the swift consumer response which followed, underscore the importance of ensuring food safety. And getting safety right in fresh categories, the focus of this report, is especially important. Retailers understand fresh categories are critical—they help sway customers' choice of store—but they are important for other reasons, too. Retailer brands dominate the fresh category, which exposes them to the highest risk of damage from food safety incidents. Also, supply chains are complex, fast, and dynamic, creating more opportunities for things to go wrong.

## The case for action is especially strong in Asia

Even in developed markets, fresh food safety is a major issue. In recent years, Europe and the U.S. have both incurred food incidents, such as E. coli contamination, BSE, and foot-and-mouth disease. From spinach in the U.S. to beef in Britain, food-borne disease has led to billions of dollars in losses and shaken consumer confidence.

The situation in Asia presents even greater risks. The scale and severity of the issue is difficult to fathom, since many incidents in less developed economies are never recorded or monitored. The World Health Organization (WHO) estimates that over 700,000 people die in the region and many more are debilitated annually from single outbreaks of food- and water-borne disease—many of which are never documented.<sup>4</sup>

The frequency and severity of food safety incidents in Asia is an ever-present danger, especially in countries at earlier stages of development. Although the tainted infant formula scandal covered above is the most infamous of recent times, as extreme food safety incidents go, it is hardly alone [exhibit 1-3].

EXHIBIT 1-3

Major food safety incidents in Asia, 2005–2008

Type of incident	Period of incidence	Product category	Affected geography	Description	Casualties
1 Microbe contamination – enterobacter sakazaki (a type of microbe that can cause severe diseases and even death of infants)	2005, 2009	Dairy	Thailand, China	FDA Secretary-General Pakdee Pothisiri disclosed that the FDA had studied the risk of Enterobacter sakazaki from 62 samples of powdered infant milk, and found contamination of the bacteria in 3 brands: Meiji F-M-T, Nan 1, and Similac DHA+ARA. The companies denied contamination, but agreed to pull lots off the market in 2005. In China, Weichuan powdered milk was found to be contaminated in early 2009	No human casualties
2 Spoilage – expired products founded in food donated to flood victims	2009	Canned fish products	Thailand	The Food and Drug Administration (FDA) has issued a nationwide ban on the sale of Chao Doi canned fish products, which had been donated to flood victims in the south but caused hundreds to become sick from apparent food poisoning. The incident caused nausea and vomiting in over 100 flood victims in Phatthalung	Numerous reported illnesses
3 Spoilage/residual chemicals – aflatoxin (a cancer-causing chemical) was detected, its presence likely the result of poor storage environment	2009	Product (rice)	Japan (from imported Thai product)	Japan tightened inspections on imported rice for use as food when the grain is in storage, following the country's first aflatoxin contamination case since stiffening import rules on the staple food. The product was tainted with a toxic fungus, B1 aflatoxin, most likely resulting from high humidity in the storage environment	No human casualties
4 Intentional food poisoning – poisoned frozen dumplings found in Japan	2009	Frozen food	Japan (from imported Chinese product)	High concentration of methamidophos was detected in frozen dumplings imported from China. A series of investigations suggested adulteration using insecticide	10 reported illnesses
5 Residual chemicals – melamine cyanurate contaminated powdered milk	2008	Dairy	China, and other countries importing product from China	Melamine cyanurate was tested in 22 powdered milk producers, including major producers such as Sanlu, Bright, Mengniu, and Yili	6 reported deaths and over 50,000 reported hospitalized

4 World Health Organization, "Food safety regulators from more than 100 countries meet in global effort to reduce the more than 2 billion cases of foodborne illness," news release, Oct. 11, 2004, <http://www.who.int/mediacentre/news/releases/2004/pr71/en/index.html>.



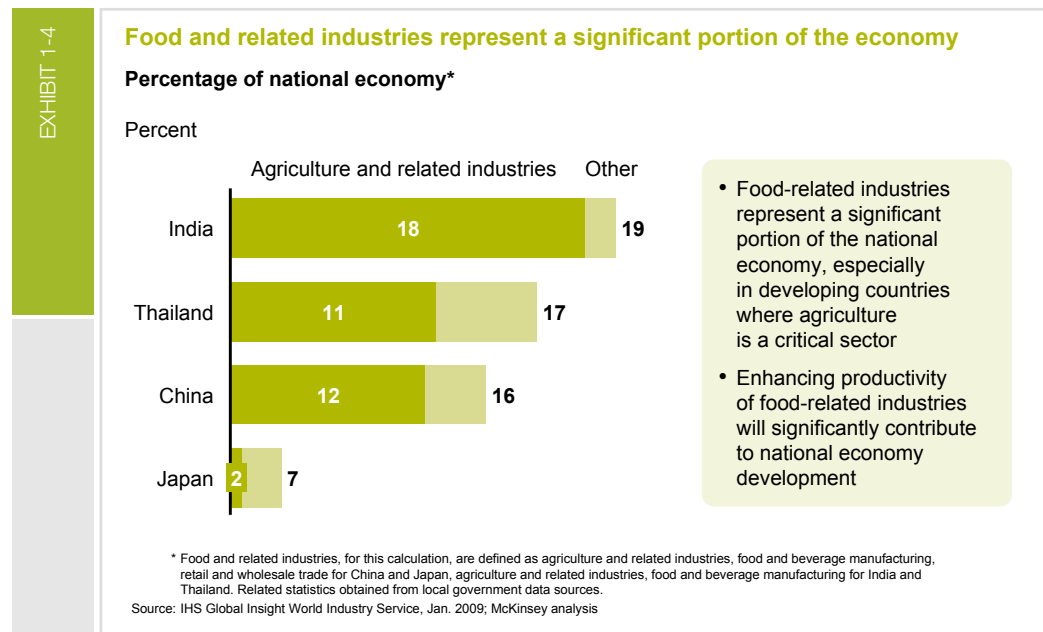
6	Microbe contamination – histamine	2008	Seafood	Hong Kong	Three men and two women aged from 24 to 38, developed symptoms of scombroid fish poisoning including flushing, palpitations, dizziness, vomiting, and diarrhea after consuming lunch supplied by a caterer in Central. Results of laboratory testing showed that a sample of chilled butterfish fillet contained histamine at a level of 1,700 ppm. Potential cause is malpractice in temperature control of fish product	5 reported illnesses
7	Residual chemicals – dioxin (cancer causing) tainted pigs	2008	Meat	Europe, and Asia caused by import from Europe	Products of a feed producer in Ireland which uses recycled materials were found to be contaminated with dioxin, the chemical went on to exist in the pigs that consumed the feed product. In December 2008, Portugal reported tainted pork from Ireland. The Irish government ordered a recall of all pork products, Asian countries, such as China and Japan also banned meat imports from Ireland	No human casualties
8	Residual chemicals – Methamidophos (Excessive residual pesticides) founded in rice products	2008	Produce	Japan	Mikasa Foods, from Osaka, was found to be selling 1,400 tons of low-grade inedible rice intended for use in fertilizer, animal feed, and glue as high-grade grain to 390 companies across Japan, including schools and hospitals. The rice was found to be contaminated with methamidophos, a toxic pesticide, or aflatoxin, a type of mold	No human casualties
9	Residual chemicals – Dichlorvos (a type of pesticide) founded in frozen peas	2008	Vegetable	Japan (from imported Chinese product)	High concentrations of Dichlorvos (a type of insecticide) detected in frozen peas imported from China. One man reported feeling numbness and illness	1 reported illnesses
10	Toxic ingredient – toxic puffer fish	2008	Deli	Thailand	Some 300 villagers in Nan province suffered acute diarrhea, numb tongues, and breathing difficulty after eating fish balls in a soup. Of the group, 90 were sent to two hospitals for treatment. It was later determined that producers had used toxic puffer fish to produce fish balls	300 reported illnesses
11	Microbe contamination – mishandling	2007	Deli	Hong Kong	Five women and six men aged between 12 and 50 developed vomiting, diarrhea, and fever about 13 to 41 hours after consuming "Poon Choi" during lunch at home in Tuen Mun on February 25. Initial investigations showed bacterial or viral contamination to be the likely cause of the outbreak, possibly the fault of the restaurant or the consumer	11 reported illnesses
12	Intentional mislabeling of products	2007	Meat/poultry	Japan	A meat processing company had been selling mixed minced beef and pork as pure ground beef, imported chicken as domestic, and expired products by re-labeling them	No human casualties
13	Microbe contamination – angiostrongylus (a type of parasite) found in fu-shou snail	2006	Seafood	China, and Taiwan (caused by imported Chinese product)	160 people were confirmed to be infected by a parasite after eating raw aquatic fu-shou snail in Beijing	160 reported illnesses
14	Microbe contamination – oysters infected with norovirus	2006	Seafood	Japan	Norovirus primarily contaminated oysters and spread to other foods	27,616 reported illnesses
15	Microbe contamination – clostridium botulinum bacteria found in canned food	2006	Canned food	Thailand	Villagers from Nan province were admitted to the provincial hospital after eating canned bamboo shoots (a popular ingredient in many local dishes) and developing botulism, a form of food poisoning caused by the clostridium botulinum bacteria	209 reported illnesses
16	Dilution/tampering – oil	2005-2008	Oil	India	Dilution of groundnut oil is normally high when festivals such as Deepavali approach. Sweets and savories are prepared with this oil. Dilution is observed particularly when product is in high demand. In 2006, the police and FDA carried out raids and seized five lakh litres of diluted cooking oil and arrested 17	Numerous reported illnesses
17	Dilution/tampering – milk	2005-2008	Diary	India	In 2004-05, numerous milk dilution cases were recorded. FDA officials collected samples from 866 dairies across the state between April 1, 2006 and May 31, 2007, a total of 151 samples were found to be diluted	6 reported deaths and numerous reported illnesses
18	Dilution/tampering – alcohol	2005-2008	Alcohol	India	Cases of illicit liquor occur frequently, and have a severe impact on consumer health. In rural areas, consumption of illicit liquor often results in death	Numerous reported illnesses
19	Residual chemicals – malachite green	2005-2007	Seafood	China, HK	A Chinese media exposé reported that malachite green is used in seafood breeding and transport in Henan and Hubei, especially for freshwater fish. Japan, HK, and Korea banned seafood imports from China after detecting malachite green in imported products	No human casualties
20	Residual chemicals – Sudan red dye	2005-2007	Multiple categories	China and other Asian countries	Sudan red dye was tested in products of well-known brands such as KFC and Heinz in 2005, and later found in various meat, egg, and pepper products	No human casualties
21	Veterinary disease – swine streptococcosis detected in pigs	2005-2006	Meat	China, HK	In July 2005, Swine Streptococcosis was discovered in Sichuan, and the Ministry of Agriculture listed it as one of the top priorities in its "2005 major animal disease control" publication. In early August, several cases suspected of Swine Streptococcosis were discovered in Hong Kong, 1 case was confirmed. Hong Kong stopped importing pigs from mainland from June to August	204 reported illnesses
22	Veterinary disease – avian flu	2003-today	Poultry	Pan-Asian	Since the initial December 2003 outbreak in Asia, the disease has had a huge impact on many countries, primarily in East Asia	115 reported deaths in Indonesia – the highest number of casualties for any country to date
23	Material made of heavy metal inserted in prawns to add to the weight	2002-2003	Seafood	Thailand (in imported product from Myanmar)	Imported freshwater prawns from Myanmar were found to contain lead pellets inserted in their heads to increase the weight. Testing found that four out of six prawns contained lead. Each was about 2.5 cm long and weighed 13 grams	No human casualties
24	Residual chemicals – sodium formaldehyde sulfoxylate used in flour, bean curd and sugar products	2001-2008	Multiple categories	China	A cancer-causing chemical was frequently detected in food products, where it was used as a "whitening" additive. Producers used it to enhance color and texture and boost sales at the cost of consumer health. A wide range of "white products" were "whitened" in this way, including sugar, flour, noodles, and bean curd	No human casualties
25	Veterinary disease – mad cow disease (BSE), which causes deterioration of the nervous system	2000s	Meat	Europe, Asia (caused by European imports)	Starting in early 2000, mad cow disease spread from Europe to Asia and North America. Some countries stopped importing beef from the U.S., including Japan, Korea, Russia, and Thailand. In Asia, reported cases of mad cow disease in Japan reached 36 by Feb 2007	No human casualties
26	Residual chemicals – ractopamine contaminated pork	1998-today	Meat	China	Excessive use of ractopamine as a feed additive to promote lean growth in pigs is a common problem in China	From 1998, 1,800 reported illnesses and 1 death

Source: Press search (see Appendix 2 for source details on selected items)



## Food safety is about more than risk management

The potential downside risk alone justifies a focus on fresh food safety. But there are positives, too. Actions to improve food safety provide dramatic benefits to an economy because they drive improvement along the entire supply chain. Food and related industries represent a significant portion of GDP, especially in developing economies. Together, the various components of what we call the food sector represent 16, 17, and 19 percent of the Chinese, Thai, and Indian economies respectively, and even 7 percent of Japan's economy [exhibit 1-4].



We also find that many fresh food safety practices also promote overall industry productivity. In India for example, Suguna Poultry pioneered the contract farming model, which captured the benefits of distributed farming and economies of scale. Distributed farming prevented the risk of massive outbreaks of animal disease, while consistent and high-quality day-old chicks and centralized veterinary support enabled small poultry farmers to breed quality birds at lower cost. The approach has translated into higher incomes for farmers and higher productivity in the animal husbandry industry. Farmers participating in the Suguna program have seen their per-bird income grow by an estimated 20 rupees.<sup>5</sup>

<sup>5</sup> "The 'Bird of Gold': The Rise of India's Consumer Market," May 2007, McKinsey Global Institute.

## Top management must take the lead

Recent incidents have awakened retailers to the importance of fresh food safety. In a 2008 CIES survey of retail executives, 40 percent of retailers selected food safety as one of their top three issues for the year ahead, compared to just 28 percent in 2007.<sup>6</sup>

Retailers represent only a part of the food safety equation, however. Fresh food safety is a comprehensive topic that covers the entire end-to-end supply chain, and ensuring food safety demands broad participation from government, consumers, and the food processing and distribution industries. Food safety experts can provide guidance, but it is up to top management to provide leadership. Retailers form the last line of defense before products reach consumers, putting them in the best position to assume responsibility for driving the entire supply chain to the next level of fresh food safety practices.

The commitment of retail leaders is justified by the size of the challenge, and underscores the importance of getting food safety right. By improving practices over the next 5 to 10 years, those leading the charge will build their brands and be able to take enormous pride in their determination, foresight, and commitment to ensuring fresh food safety for younger generations.

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6 CIES Top of Mind survey, 2007 and 2008.

## chapter 2



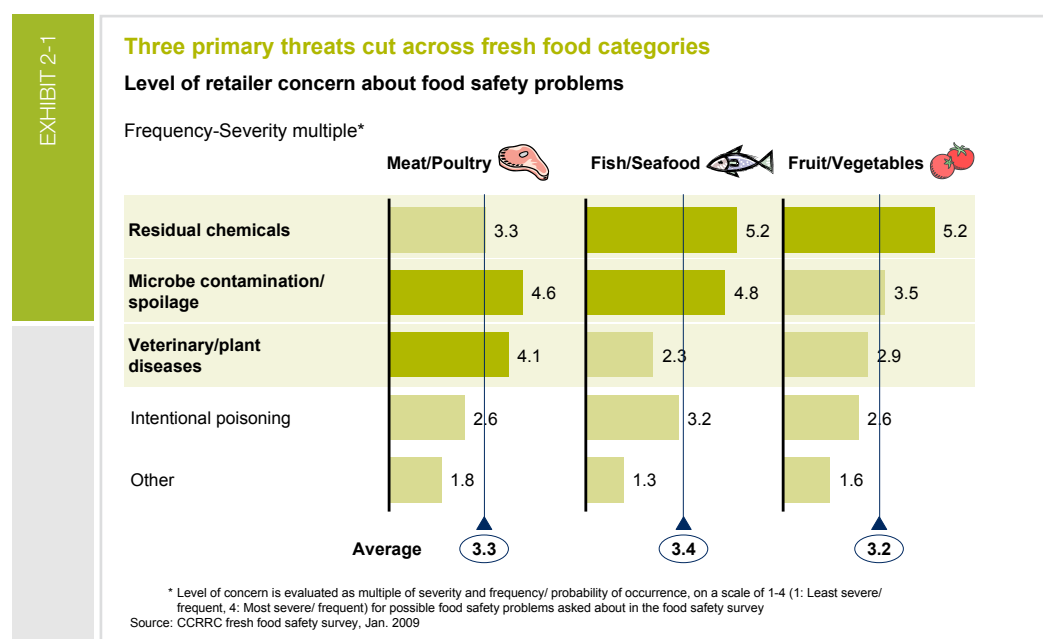
# Three primary threats to fresh food safety

***Our work identified three primary food safety threats that retailers should work to contain across their supply chains.*** Residual chemicals, microbe contamination and spoilage, and veterinary diseases are the common enemies Asian markets face in the battle for fresh food safety [see exhibit 2-1 on page 24]. While the dangers these primary threats pose can never be eliminated, they can be contained by managing risk and improving incident response. Just one failure across the entire supply chain is enough to compromise fresh food safety. To effectively manage and continually improve fresh food safety, retail leaders need a management framework that covers the entire supply chain from farm to checkout. In this report, we introduce a Fresh Food Safety Management Framework retail leaders can use to assess current performance both in-store and across their supply chain, compare what they are doing against key competitors or retailers in other markets, and identify and prioritize the steps needed to achieve the highest food safety levels.

Our research included a survey conducted to gather responses on fresh food safety concerns from 40 managers across 17 leading retailers in 11 Asian countries and markets. The survey, combined with field visits and interviews in five markets, helped us to identify the primary concerns, parts of the food system representing the greatest risks, and practices being employed to manage the risks.

## There are three “enemies”

The damage done, not only to consumers’ health but also to retailer reputations (along with their bottom lines), makes it easy to understand why **residual chemicals** are a top concern across fresh categories and markets. Health hazards caused either by harmful chemical compounds, as in the tainted infant formula scandal, or by the overuse of approved insecticides, are a retailer’s worst nightmare [exhibit 2-1]. Retailer concerns include the frequent use of harmful drugs, such as growth stimulants and antibiotics for fish/seafood, and pesticides and fertilizers for fruit/vegetables, all of which may cause serious health problems. In some emerging countries, for instance, malachite green is commonly used as an antiseptic or to treat for parasites on farmed fish/seafood, despite being prohibited as a probable carcinogen.<sup>7</sup>



**Microbe contamination and spoilage** is a recurring issue for meat/poultry and fish/seafood.<sup>8</sup> Such products often contain microorganisms at levels that can cause a host of illnesses. As an example, oysters infected with norovirus in Japan sickened more than 27,000 people in 2006.<sup>9</sup> Problems here are less severe than those caused by residual chemicals, but the frequency alone is cause for concern [exhibit 2-2].

<sup>7</sup> McKinsey market visits and interviews.

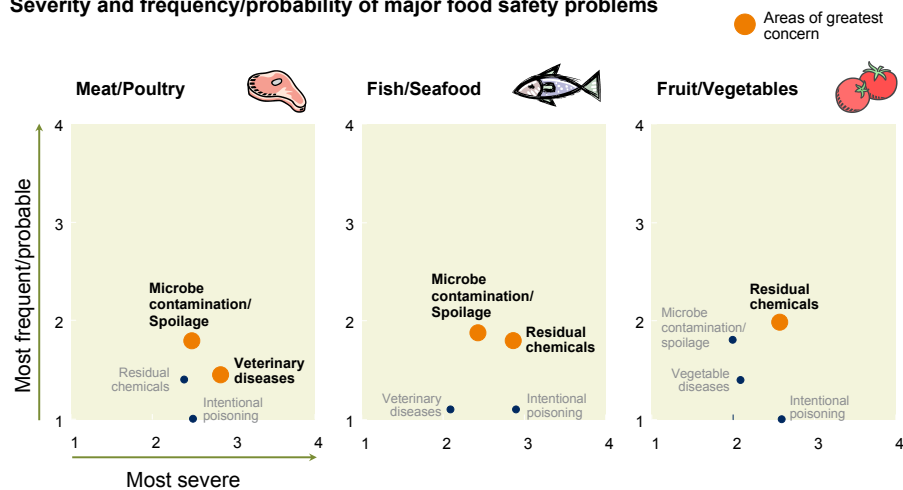
<sup>8</sup> Average of scores for microbe contamination and spoilage.

<sup>9</sup> “Norovirus Shoku Chudoku Taisaku ni tsuite (Teigenan),” The Ministry of Health, Labour, and Welfare of Japan, Sep. 2007, <http://www.mhlw.go.jp/shingi/2007/09/dl/s0921-7b.pdf>.



### Severity and frequency vary by category and type of problem

#### Severity and frequency/probability of major food safety problems

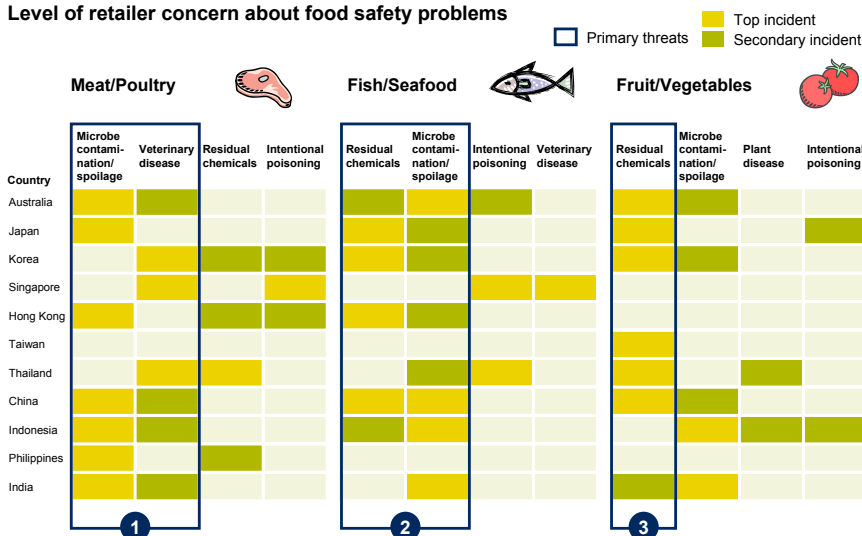


Incidence of **veterinary disease** for meat/poultry is infrequent, but even single cases of such virulent diseases as BSE, bird flu, and foot and mouth disease are severe, and the risk is high. Recent, widespread media coverage indicates that consumers are worried, too. Panics arising from outbreaks are not uncommon.

The survey also shows that these three fresh food safety concerns are relatively uniform across Asian countries, enabling retailers to focus on the same problems despite differences in eating habits and stages of economic development [exhibit 2-3].

### The primary threats are common across Asia

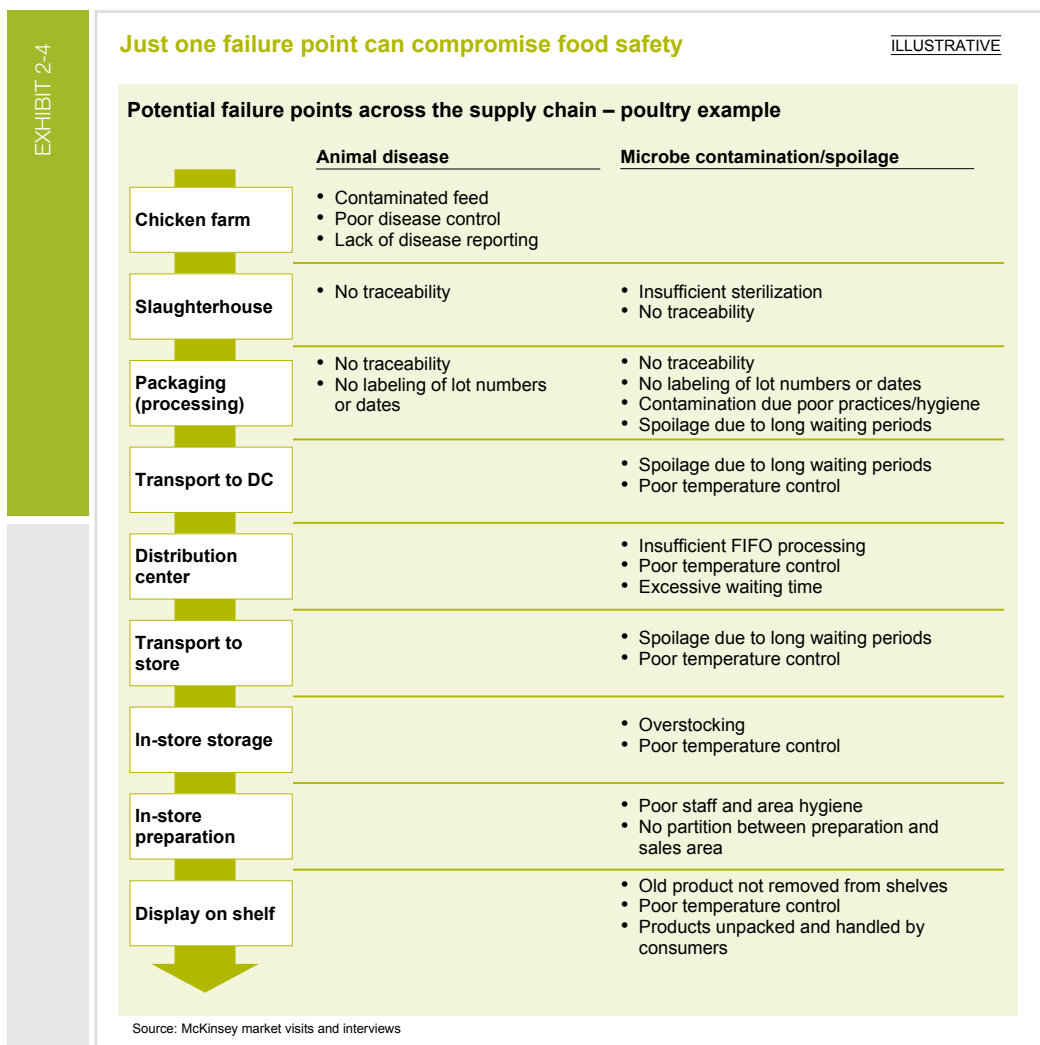
#### Level of retailer concern about food safety problems



## Ensuring food safety requires an end-to-end approach

Best practices should cover the entire supply chain. The natural tendency is to worry about problems that can be seen with the naked eye, but many hazards, such as heavy metals in seafood, lurk unseen. Visual inspection is clearly insufficient, so retailers must take particular care to act on all possible failure points along the supply chain. In the meat/poultry category, for example, many potential failure points appear at different steps along the supply chain: farms may engage in improper feeding or lack proper disease control, product mishandling or poor hygiene may be rampant at the packing house, or product spoilage may occur due to long waits or insufficient temperature control during transport.

With so many potential dangers to food safety at every point from producer to consumer, the need for comprehensive control is strikingly apparent [exhibit 2-4]. There are three broad implications for retailers. First, all critical failure points must be controlled, since it only takes one failure to create a food safety incident. Second, retailers must extend their influence over all participants in the supply chain, even where direct control is impossible. Third, along with preventative measures, pragmatic “rapid response” and monitoring guidelines must be in place.



## We propose a simple, unified management framework

In response to the need for a comprehensive end-to-end approach, we offer a simple and unified Food Safety Management Framework [exhibit 2-5]. The framework contains seven reinforcing practices that are relevant across the supply chain.

Prioritize actions using the Food Safety Management Framework		✓ Where retailers set standards and ensure compliance ○ Responsible for executing against standards			
What to manage	Description	Producer	Supplier	Logistics	In store
<b>A Upstream management</b>	• Selection and management of producers and suppliers; enforcement of certification standards	✓	✓		○
<b>B Growth control</b>	• Management of producer practices, including use of chemicals, quality of feed, and disease control	✓			
<b>C Product environment</b>	• Management of product storage environment, including temperature, humidity, and hygiene	✓	✓	✓	○
<b>D Product flow</b>	• Management of supply chain speed and efficiency	✓	✓	✓	○
<b>E Monitoring and inspection</b>	• Review of measures to avoid contamination, and monitoring	✓	✓	✓	○
<b>F System integrity</b>	• Embedding of fundamental food safety culture and management	✓	✓	✓	○
<b>G Issue management</b>	• Actions taken once issues are reported, and efficiency of those actions	✓	✓	✓	○

Source: McKinsey analysis

EXHIBIT 2-5

The Food Safety Management Framework enables retailers to cover not only the practices approached by existing universal standards, such as HACCP, ISO 22000, and GLOBALGAP,<sup>10</sup> but also to keep fresh food safety issues firmly on retailer top management agendas [Box 2-A, page 28]. In developing the framework, we purposely avoided the technical manual so often reserved for the sole use (and understanding) of professional experts, and set out instead to design a simple, logical, one-page tool that could be easily understood and applied.

By beginning with the goal in mind, retailers can begin to implement a comprehensive approach and focus on the most critical priorities for making a difference in fresh food safety today.

Using this framework, retailers can assess current performance, compare against other players, and identify and prioritize the steps needed to achieve the highest level of food safety. We define “highest level of food safety” as follows:

### A. Upstream management

- Producers and suppliers are selected under high food safety standards
- Food safety standards are documented and cover quality requirements in addition to processes and procedures that suppliers and producers need to take

10 The Global Partnership for Good Agricultural Practice.



- A qualified team conducts regular audits and works together with suppliers and producers to improve audit results and enhance relationships
- A “no excuses” policy is in place

## B. Growth control

- Soil, water, air, and other surrounding elements are kept clean to avoid risk of pollution or contamination
- Use of drugs, feed, preservatives, fertilizers, and other chemicals meets appropriate standards
- Diseases are prevented and well controlled. Product is kept healthy
- Sufficient product management records are kept and product is traceable

### Box 2-A

Global standards, such as HACCP, ISO 22000, and GLOBALGAP, should guide practices

#### HACCP

- Hazard Analysis and Critical Control Points – an internationally recognized methodology for preventing food safety hazards
- **System for monitoring critical control points** in a food production process where a potential hazard to food safety has been identified
- Used at **all stages of food production and preparation processes**

[http://www.who.int/foodsafety/fs\\_management/haccp/en/](http://www.who.int/foodsafety/fs_management/haccp/en/)

#### ISO 22000

- Specifies **the requirements for a food safety management system** to ensure **food safety along the food chain, up to consumption**:
  - Interactive communication
  - System management
  - Prerequisite programs
  - HACCP principles

<http://www.iso.org/iso/home.htm>

#### GLOBALGAP

- A global reference for **good agricultural practices**, managed by the GLOBALGAP (EUREPGAP) Secretariat
- Integrated Farm Assurance standard is a pre-farm gate standard that covers the **whole agricultural production process of the certified product** from before the plant is in the ground

<http://www.globalgap.org/>

### C. Product environment

- Products are consistently kept at the right temperature and humidity
- Facilities, equipment, and staff handling the product maintain appropriate hygiene and sanitation standards and exercise caution against contamination
- Product information is properly communicated to consumers
- Retailers work closely with other industry participants to achieve an agreed set of standards

### D. Product flow

- Product growth, production, and processing volumes, along with inventory and shelf size, are managed and optimized to meet downstream demand
- Supply chain cycle times are sufficiently short to maintain freshness. Product arrives and is shipped in proper sequence (first in, first out)
- Products with short remaining shelf life are removed

### E. Monitoring and inspection

- Inspections for product diseases and impurities are conducted in sufficient units or volumes based on clear guidelines when receiving, processing, and shipping
- Corrective action is taken when products fail to meet requirements as defined and documented

### F. System integrity

- Importance of safety issues is clearly communicated on a regular basis. All staff understand the importance
- Safety performance is managed against tangible metrics
- Capabilities and skills are developed at all levels of the organization to understand food safety and act accordingly

### G. Issue management

- Channeling customer opinions and comments back to store management
- Whenever there is an issue, relevant functions or staff members are informed in a timely manner
- When problems arise, actions to be taken are clearly defined (e.g., product is removed from shelves immediately, local authorities are contacted to further coordinate necessary actions)
- Past incidents are recorded and investigated to examine the cause, and reported back to customers as necessary

While all retailers need to adopt such an end-to-end framework and strive to control the whole food system, the reality in many parts of Asia is that this will be a long journey. By beginning with the goal in mind, however, retailers can begin to implement a comprehensive approach and focus on the most critical priorities for making a difference in fresh food safety today. The next chapter outlines the affect a market's developmental context can have on food safety, and prefaces a clear call to action for Asian retailers to better adapt to their current context while also taking immediate steps toward shaping the context for tomorrow.



# chapter 3

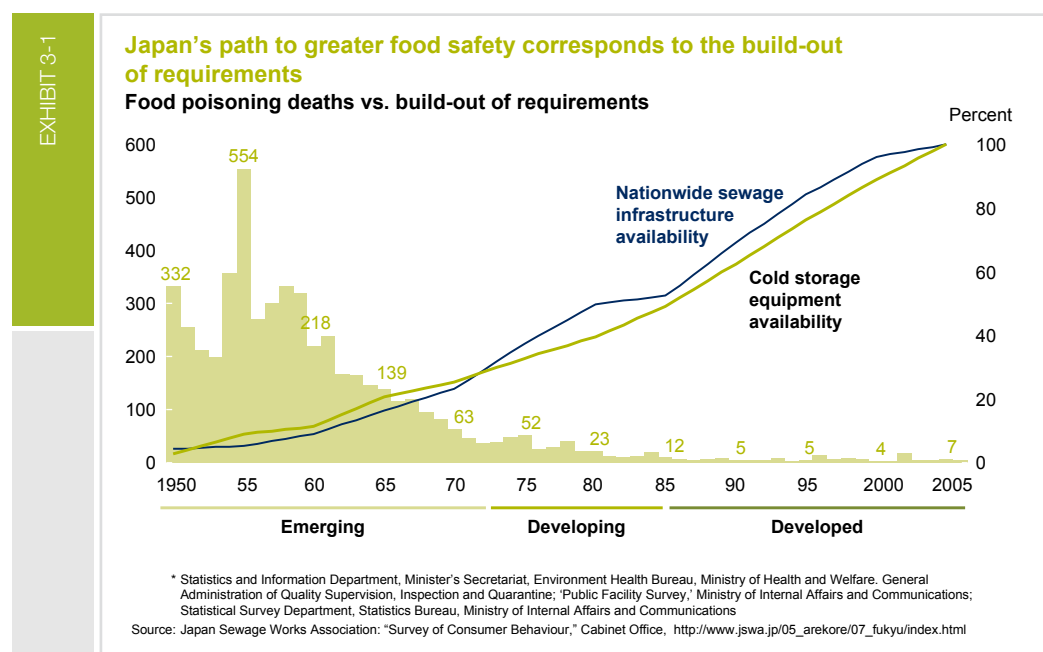




# The common evolution of Asian countries and markets

***Importantly, we found that all markets in Asia evolve in a common predictable way, relative to improvements in fresh food safety, based on evolutionary elements such as basic water and sanitation infrastructure.*** Retail leaders have a central role to play in advancing government policies that accelerate this evolutionary development. Australia, Japan, and Korea, for instance, have successfully achieved higher levels of food safety than other Asian countries by leveraging active retail leader support. Less developed countries, by contrast, lack some or all of these requirements, and, as a consequence, their ability to ensure food safety is more limited. Retail leaders can do far more to engage with and learn from other markets. Reaching across markets, they can learn and adopt the proven practices of retailers in neighboring countries at similar stages of development, and configure their fresh food safety practices to fit their own market context.

Japan's evident success in taming food-safety risk can be correlated with the build-out of these requirements during its rapid development from the 1950s to 1970s [exhibit 3-1].<sup>11</sup>



## Basic water and sanitation infrastructure

A lack of basic water and sanitation infrastructure seriously hampers fresh food safety. A recent study noted that microbes proliferate at higher than normal rates in areas with sewage irrigation.<sup>12</sup> Dr. Lee Jong-wook, former Director-General of WHO, similarly noted that "water and sanitation is one of the primary drivers of public health. I often refer to it as 'Health 101,'

Unsanitary conditions observed in an emerging country



Source: McKinsey market visit

- 11 Nationwide sewage system availability and cold storage equipment availability are indicated by percent of rural population with access to improved sanitation facilities (indexed) and capacity taken up with refrigeration warehousing per thousands of people (indexed), respectively.
- 12 Y.L. Zhang, J.L. Dai, R.Q. Wang, and J. Zhang. "Effects of long-term sewage irrigation on agricultural soil microbial, structural and functional characterizations in Shandong, China," *European Journal of Soil Biology*, Vol. 44, Issue 1, Jan.-Feb. 2008, pp 84-91.

which means that once we can secure access to clean water and adequate sanitation facilities for all people, irrespective of the difference in their living conditions, a huge battle against all kinds of diseases will be won.”<sup>13</sup>

In India, for example, sewage infrastructure operates in just 28 percent of the country, and mortality due to food poisoning accounts for 2.7 percent of all deaths. In Japan, by contrast, where running water and sewage infrastructure are present in nearly 100 percent of households, the food poisoning mortality rate is 0.6 percent.<sup>14</sup>

Japanese long-term approaches to dealing with unsanitary water and sewage can be instructive. The Revised New Sewage Law of 1970, triggered by a rash of major disease outbreaks, added, for the first time, the objective of preventing water contamination by improving the quality of both industrial sewage and residential drainage. Coordinated implementation of national sewage development projects, over time, ensured nationwide sewage availability.<sup>15</sup>

## Standards, regulations, and enforcement

Even with standards and regulations in place, lack of an enforcement mechanism can endanger fresh food safety. Strong and inexpensive pesticides are still widely used, irrespective of the danger to consumers, even in emerging countries with pesticide standards in place. The logistical difficulties in enforcement allow producers, especially small-scale growers, to prioritize efficiency and commercial gain over safety.<sup>16</sup>

Two areas where emerging country governments could take action to strengthen regulatory enforcement are in offering thorough follow-up and monitoring, and introducing third-party validation. Japanese and European practices provide guidance in these areas.

Japan has reduced violations by establishing localized regulatory enforcement. Following enactment of the Food Safety Basic Law in 2003, a series of detailed regulations were implemented to further ensure food safety. Once a standard is enacted, local government farming experts visit farmers individually to introduce the new standard and offer advice. When a standard is violated, the government first polices the situation by publicly naming offenders, which is highly damaging to reputation. The government may follow up by taking direct control where needed.<sup>17</sup>

The European Commission has formalized a third-party validation process through the European Food Safety Authority (EFSA) as its core enforcement mechanism. The EFSA independently advises the European Commission and member states' governments on legislative actions needed to manage existing and emerging risks.

13 World Health Organization, “Water, sanitation, and hygiene links to health,” publications on water, sanitation, and health, Nov. 2004, [http://www.who.int/water\\_sanitation\\_health/publications/facts2004/en/index.html](http://www.who.int/water_sanitation_health/publications/facts2004/en/index.html).

14 “State/Sex-wise Number of Persons Injured and Killed by Un-Natural Causes,” Indiatat 2007; Statistics Bureau, Ministry of Internal Affairs and Communications of Japan, <http://www.stat.go.jp/data/chouki/zuhyou/24-10.xls>.

15 “Annual Report on the Environment in Japan 1970”, Ministry of the Environment of Japan.

16 McKinsey market visits and interviews.

17 Ministry of Agriculture, Forestry, and Fisheries of Japan interview.

## Cold chain infrastructure and capability

Without a cold chain—a process for ensuring monitored refrigeration and freezing throughout the supply chain—rates of food deterioration and microbe proliferation accelerate, posing a serious threat to fresh food safety. In markets at earlier stages of development, however, chilled storage and transport are uncommon or even scarce.

In China, for instance, some older refrigerated vehicles have two engines, one for the car and the other for the cooling facilities. Turning on both engines consumes more gasoline and reduces speed, so drivers tend to turn off the cooling engine, especially when driving on highways, which interrupts the cold chain.<sup>18</sup>

As may be inferred from the above example, a cold chain is enormously expensive and takes time to put in place, so it only makes sense for retailers to band together in this effort. In China alone, the national government would need to allocate an estimated \$75 billion annually over the next 10 years to meet the country's cold storage and refrigerated shipping demand.<sup>19</sup>

To improve cold chain development, governments must implement standards that have a sweeping effect on temperature control, thereby triggering seamless cold chain development along the supply chain and improving retailer-driven methods.

In Japan, a seamless cold chain was rapidly introduced in the late 1960s following legislation that used preferential treatment to motivate change. In 1965, the Ministry of Science and Technology released the Cold Chain Act, which recommended accelerated use of cold storage facilities, originally for the purpose of reducing intake of salt-cured products. Tax incentives and subsidies followed, which accelerated development. Refrigerator manufacturers, food companies, and retailers, all of whom intended to introduce frozen products into the Japan market, are believed to have heavily influenced government action.<sup>20</sup>

## A sophisticated base of producers and suppliers

A lack of sophistication among the upstream participants in a supply chain opens the door to a host of fresh food safety risks that no amount of infrastructure or regulatory enforcement can prevent. A sophisticated base of producers and suppliers requires two main “ingredients”: a) market price stability and b) an integrated supply chain configuration.

### **a) Market price stability**

Producers facing heavy market price volatility are especially eager to cut costs while maximizing profit. Under such circumstances, they may knowingly break regulations or sell “grey zone” product, and seriously impair fresh food safety in the process.

<sup>18</sup> McKinsey market visits and interviews.

<sup>19</sup> Estimate assumptions: about \$48 billion would be needed to construct additional cold storage capacity of 4,750 cubic feet by 2017, at \$10 per cubic foot; about \$27 billion would be needed to build another 335,000 refrigerated trucks by 2017, at \$80,000 per truck.

<sup>20</sup> Yoshitaka Murai, “Shrimps and Japanese,” 1988.

Common in some Asian countries is the practice of concentrated fisheries, where tanks contain several times the recommended number of fish, for the sake of productivity.<sup>21</sup> This practice frequently results in disease due to fungus from rotting food at the bottom of the tanks. To reduce the risk of disease, cheaper drugs, such as malachite green, are widely used, despite evidence that such drugs cause cancer and other illnesses.<sup>22</sup>

To counter illicit practices, some players in Hong Kong and Japan have used contracted growth allotments, whereby retailers contract with farmers for a regular supply of a fixed volume. This practice not only stabilizes prices and provides producers with more security, but also helps eliminate producer control over supply.<sup>23</sup>

## **b) Integrated supply chain configuration**

A structured supply chain achieves two components crucial for fostering a sophisticated base of producers and suppliers. First, it facilitates traceability of product back to source. In some emerging and developing countries, for instance, retailers rely on many small-scale producers located across vast areas, rendering product traceability virtually impossible. Second, a well-integrated supply chain provides retailers and government officials with a means of monitoring and educating upstream participants in the supply chain. In our market visits, we have learned of producers who used excessive levels of pesticides simply because they did not know to dilute the chemicals, or used harmful pesticides based solely on recommendations from other farmers. And because information about pesticide usage or disease risk is often insufficiently disseminated, it is difficult to monitor for proper practice. Broker-dominated situations can further distance retailers from producers, and prevent traceability and monitoring.

Europe's Traceability of Fish Project, which ran between 2000 and 2002, shows how enterprises can bond to make inroads toward improved supply chain structure. The Norwegian Institute of Fisheries and Aquaculture reached agreement across nearly 100 players, including major European fish exporters, processors, and importers, on the information needed to provide a traceability system. The "TraceFish," project arrived at a set of standards for recording and exchanging traceable information along the supply chain, and formed the basis of a pan-European traceability system.<sup>24</sup>

Much can also be learned from the Japan Agricultural Cooperatives (JA), which devised a unique structuring mechanism. By promoting grower registries and pesticide use documentation to achieve consistent traceability across Japan, from producers to government oversight bodies, JA also facilitated support to producers that included training and equipment sharing. Achieving this linkage took decades, but has greatly contributed to an integrated supply chain configuration that promotes higher levels of traceability and productivity, and, ultimately, a more sophisticated upstream base.<sup>25</sup> Box 3-A on the following page offers examples of the extent to which supply chains can vary across Asia for a given fresh food category.

21 NRIFS News no. 23, 1999, National Research Institute of Fisheries Science, Fishery Research Agency, Japan

22 "Shoku no ran dai-ichibu nani wo tabeteruno? Fushin no seisanchi," Tokyo Shimbun, Dec. 30, 2007.

23 McKinsey market visits and interviews.

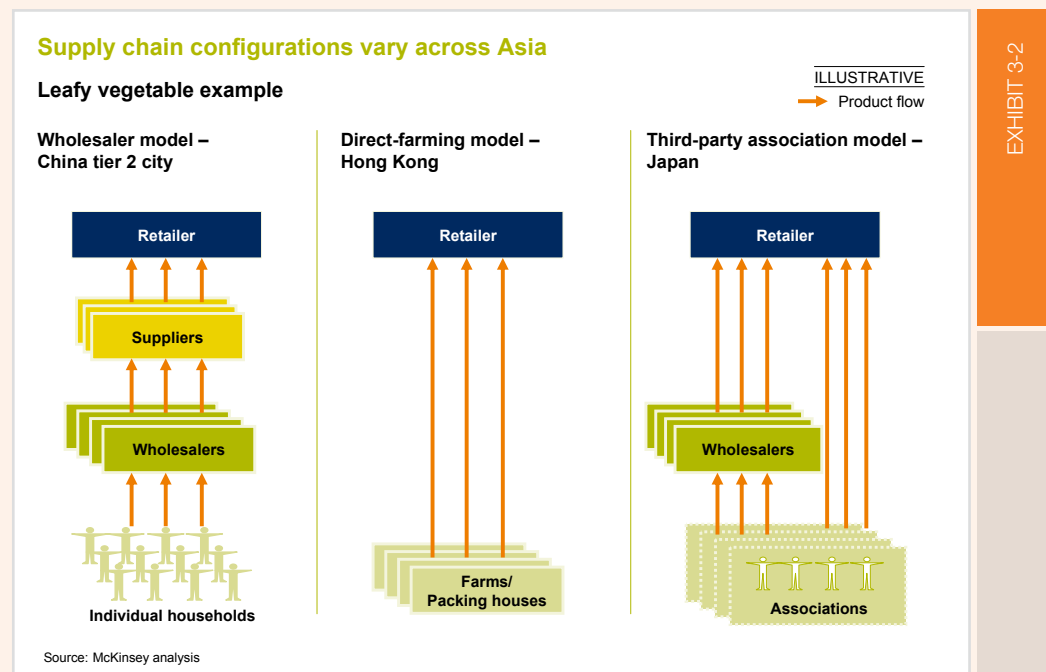
24 <http://www.tracefish.org>, "The project" (accessed August 3, 2009).

25 Ministry of Agriculture, Forestry, and Fisheries of Japan interview; McKinsey market visits and interviews.

## Supply chain configurations vary across Asia

Asian markets rely on many supply chain configurations, which implies different types of challenges in achieving full product traceability. The sourcing model for leafy vegetables offers a good example:\*

- In some Chinese cities, retailers largely depend on a few suppliers, who source from wholesale markets, where product is gathered from thousands of local farmers. The supply chain is clearly not ready for traceability.
- In Hong Kong, retailers work with midsized to large farms in mainland China, which are usually integrated with packing houses. This system gives retailers direct access to growers to provide coaching and monitoring.
- In Japan where farmers also produce as individuals and retailers also source from wholesalers, JA plays an important role in ensuring traceability and grower education. Farmers are registered with local associations, through which they can be traced by wholesalers or retailers. Some retailers also source directly from producers.



\* McKinsey market visits and interviews

## Aware and active consumers

Poor consumer knowledge poses serious dangers to fresh food safety. Meat, poultry, and fish at many Chinese retailers are often displayed uncovered. Consumers commonly handle meat, poultry, and fish, despite the hazards of microbe generation and negating any benefits achieved through temperature control.<sup>26</sup>

To some extent, this behavior is cultural in nature. In India, for example, consumers prefer fresh products sold warm rather than cold—retailers could end up losing money by employing cold chain practices. While such attitudes can only be changed over the long term, they can be changed. Japanese consumers used to select product much as Chinese consumers often do today, by handling loose product. Cold chain build-out and improved hygiene standards gradually changed consumer perceptions, however, and today, direct handling of meat before purchase is unheard of. The lesson for retailers is to give adequate care to consumers' current perceptions while setting direction for both short- and long-term actions.<sup>27</sup>

Organized consumer groups can raise issues that are known nationwide but not yet “on the agenda” and function as hubs for filing petitions and lobbying governments. A typical example would be the Japan Housewives' Association, or JHA. Established in 1948, the organization campaigns for consumers' rights and serves as a safety advocate. JHA recently held large-scale events to discuss BSE, or mad-cow disease, and officially asked the government to prioritize the issue.<sup>28</sup>

According to Japan's Ministry of Agriculture, Forestry, and Fisheries, most food safety regulations were enacted in response to major food safety incidents followed by intense outcry from consumer groups and mass media.<sup>29</sup> JHA activities certainly had a hand in pushing the government to enact BSE regulations.

The media also plays a key role in informing consumers and keeping them up to date on food safety issues. Research conducted by the Institute of Future Technology, Japan, reveals that consumers rely heavily on TV news programs and newspaper articles on food safety-related information over doctor recommendations and word-of-mouth. Consequently, retailers should examine how they leverage mass media to provide accurate and prompt information.<sup>30</sup>

## Asian countries are at different stages of development

All Asian countries are evolving along a common trajectory in building their infrastructural and other requirements. The exhibit below shows a range of indicators against each of the five requirements. These indicators were used to categorize each country into one of the three stages [exhibit 3-3].<sup>31</sup>

<sup>26</sup> McKinsey market visits and interviews.

<sup>27</sup> McKinsey market visits and interviews.

<sup>28</sup> Listing of JHA annual events, 1948-2008, “Shufuren no Ayumi,” <http://shufuren.net/modules/tinyd4/> (accessed August 3, 2009).

<sup>29</sup> McKinsey market visits and interviews.

<sup>30</sup> “Risk Communication on Food Safety and the Role of Mass Media,” The Institute of Future Technology, 2006.

<sup>31</sup> India values reflect only tier 1 cities. China tier 2/3 cities are grouped in “emerging”; China tier 1 cities in “developing.” Australia has limited rice production, but productivity of other types of crops is medium to high compared to other countries.



### Asian countries can be grouped by stage of market evolution

		Emerging				Developing				Developed		
		India	Philippines	Indonesia	China	Thailand	Taiwan	Hong Kong	Singapore	Korea	Japan	Australia
1 Basic water and sanitation	Sewage system availability (%)	28	72	37	59	96	29	95	99	74*	100	100
2 Standards, regulations, enforcement	Standards sufficiency Regulatory body clarity Enforcement	L	L/M	L	L/M	M	M	M/H	M/H	M/H	H	H
3 Cold chain infrastructure	Refrigerator availability (%) Sophistication of cold chain	34	45	24	56	86	99	99	99	99	98	100
		L	M	L	M	M	M	M/H	M/H	H	H	H
4 Producer and supplier sophistication	Rice productivity (000 HG/hectare) Concentration/configuration	32	38	47	63	27	n/a	n/a	n/a	62	62	82
		L	L/M	L	L/M	M	M	n/a	n/a	M/H	M/H	H
5 Aware and active consumers	Literacy rate (%) Income per capita (USD, 000)	66.6	93.0	91.8	94.0	94.0	98.7	95.4	94.7	98.6	99.9	99.9
		0.7	0.7	0.8	1.1	1.8	9.8	21.8	18.1	11.0	19.8	25.1

\* Average of sewage availability across Korea's nine provinces in 2007.

Source: "Data & Statistics in Water Supply & Sanitation", The World Bank; Euromonitor International from UNESCO/national statistics; "World Economic Outlook Database", Oct. 2008, IMF; FAO stat, "Retail and Shopper Trends", Nielsen report; DOA of Malaysia; FSIS; AVA; Economist Intelligence; Ministry of Environment, Korea

In developed countries such as Korea, Japan, and Australia, the five foundational requirements noted earlier in this chapter are in place, and global best practices are regularly sought, adopted and, in some cases, innovated. Retailers tend to employ common standards and certification regimes such as HACCP or ISO 22000, and seek to learn from incidents as they occur. Several retailers in these countries, such as Aeon in Japan, are on the global cutting edge in traceability and assurance programs.

Developing countries, including Thailand, Taiwan, Hong Kong, and Singapore (and some of China's largest cities and markets), are midway through the journey. Typically, they have achieved development on some, but not all, requirements. Retailers in these countries can benefit from global standards, but they still face enormous constraints in regulatory enforcement, product tracing, and seamless cold chain development.

Retailers in emerging countries—India, the Philippines, Indonesia, and most regions in China—face more fundamental constraints. They are lacking in most of the requirements for food safety. Global standards, while a useful aspiration, are impossible to achieve in the near term. Significant constraints hinder advances in providing universal access to running water and

The varying contexts in East Asian countries and markets represent different points on a single evolutionary path. The implication is that countries and markets across Asia can learn from each other, not just in the present, but by understanding the history of development and what it took to advance.



sewage, developing a seamless cold chain, offering primary education, passing and enforcing regulations, building consumer awareness about the importance of food safety, and consumer knowledge.<sup>32</sup>

China and India, due to their large populations and areas, are broken down into tiers by market size and share of income. For example, China's four largest cities, Shanghai, Beijing, Guangzhou, and Shenzhen, which also have the highest incomes, largest population bases, and largest GDP scales in the country, are considered tier 1. These areas boast more advanced infrastructures and are most appropriately categorized as developing markets; China also has 37 tier 2 cities, however, where the foundational requirements are at a much earlier stage of development, and these should be classified as emerging markets.<sup>33</sup>

The varying contexts in East Asian countries and markets represent different points on a single evolutionary path. That is, developed countries have already worked through the first two stages, Japan and Korea just in the last generation.<sup>34</sup> The implication is that countries and markets across Asia can learn from each other, not just in the present, but by understanding the history of development and what it took to advance.

## Retailers must adapt to today's context while shaping tomorrow's

Context indeed matters. Fresh food safety plans that aspire to lofty goals while willfully disregarding the on-the-ground realities are doomed to fail. The call to action is twofold: retailers must adapt to today's context—and seek to shape tomorrow's.

### Adapting to the current context

Retail leaders can drive the most rapid improvement by fixing the “hot spot” issues relevant to their markets (these are defined in greater depth in the following chapter). Our research findings suggest that the biggest issues are generally based on the stage of market evolution, so the imperative for retail leaders today is to set priorities and adopt practices already proven to be feasible and effective.

### Shaping tomorrow's context

Retailers in countries at all developmental stages can and must actively drive progress on the five foundational requirements outlined in the early part of this chapter to ensure better long-term food safety and promote industry productivity. To do so, they must exercise their influence over a diverse set of industry participants, including governments.

The next two chapters offer pragmatic approaches for retailers to pursue along each of these two contextual fronts.

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<sup>32</sup> McKinsey market visits, interviews, and analysis.

<sup>33</sup> McKinsey Global Institute analysis.

<sup>34</sup> McKinsey analysis.

# chapter 4



# Focus on the “hot spots”

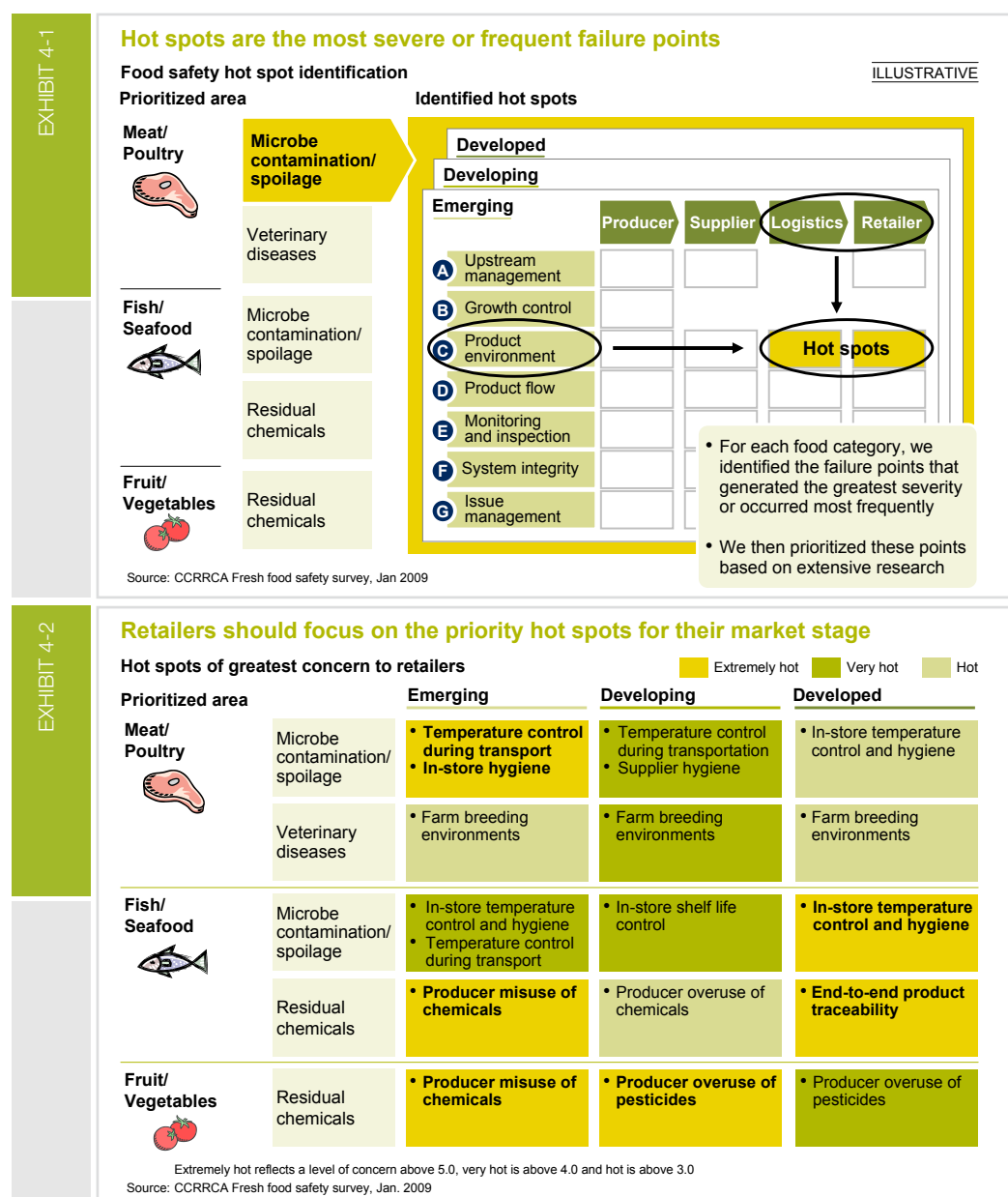
***Retail leaders can drive rapid improvement in freshness and food safety by prioritizing and addressing the biggest risks, what we call the “hot spots.” They should clarify and rigorously focus on these priorities—this is about leadership, not cost. In countries at each stage of development, different failure points generate the greatest food safety risk. We encourage retailers to be proactive in devising a plan of action to manage these food safety hot spots. Retailers should focus on these priority hot spots, since doing so will lead to the most rapid food safety improvements.***

*Retail leaders in countries at each stage of evolution need to set priorities among the various hot spots and adopt, revise, and implement the practices of leading retailers [see exhibit 4-2, page 42]. But there is a larger message: the retail leaders driving change are embedding more than best practices—they are instilling a new mindset and culture around food safety in their stores and throughout their supply chains.*

## The food safety “hot spots”

In countries at each stage of development, different failure points generate the greatest food safety risk with respect to the common prevalent threats shown in Chapter 2. Retailers should focus on fixing these priority hot spots since doing so will lead to the most rapid food safety improvement. We identified and confirmed each of these hot spots through our food safety survey, expert interviews, and in-market visits to cities across Asia [exhibit 4-1]. For emerging countries, one invariable hot spot is producer usage of harmful chemicals; developing countries need to focus on producers and suppliers meeting standards; and developed countries should prioritize end-to-end traceability.<sup>35</sup>

Retailers in countries at each stage need to set priorities among the various hot spots and adopt, revise, and implement practices of leading retailers [exhibit 4-2].



35 Hot spots are prioritized according to retailer level of concern about food safety problems. Level of concern is evaluated as multiple of severity and frequency/probability of occurrence, on a scale of 1-4 (1: Least severe/frequent, 4: Most severe/frequent).

## Part I. Addressing hot spots in emerging markets

Overall, the top priority for emerging markets is to stop the use of harmful chemicals, especially in the fish/seafood and vegetable/fruit categories, where residual chemical issues are prevalent. For meat/poultry, the focus is on ensuring temperature control during transport to prevent microbe contamination and spoilage [exhibit 4-3; please refer to Appendix 1 for more proven practices].




<b>Stop producers using harmful chemicals:</b> <b>China tier 2 cities, India, Indonesia, Philippines</b>		
<b>Category hot spots and proven practices</b>		
	Major hot spots	Proven practices
<b>Meat/ Poultry</b> 	<ul style="list-style-type: none"> <li>Poor temperature control during transport</li> <li>Poor staff and customer hygiene in stores</li> <li>Poor breeding environment at producers</li> </ul>	<ul style="list-style-type: none"> <li>Conduct temperature testing at receiving gate and reject sub-standard deliveries (Wal-Mart, China)</li> <li>Enforce global infrastructure and procedures to ensure hygiene standards (Wal-Mart)</li> <li>Use large slaughterhouses that source from partner farms and offer traceability and testing (Metro, China; CR Vanguard, China; and Wal-Mart)</li> </ul>
<b>Fish/ Seafood</b> 	<ul style="list-style-type: none"> <li>Producer use of harmful drugs at fish farms</li> <li>Poor in-store temperature control and staff hygiene</li> <li>Poor temperature control during transport</li> </ul>	<ul style="list-style-type: none"> <li>Source directly from producers and conduct on-site audits (Tesco Lotus, Thailand)</li> <li>Use crushed ice for product displays and have product-handling processes in place (Wal-Mart and CR Vanguard). Keep live fish fresh by investing in advanced equipment (Wal-Mart)</li> <li>Use advanced chilled vehicles and temperature control systems to ensure seamless cold chain in transport (Tesco Lotus; Wellcome, Hong Kong)</li> </ul>
<b>Fruit/ Vegetables</b> 	<ul style="list-style-type: none"> <li>Producer use of harmful pesticides</li> </ul>	<ul style="list-style-type: none"> <li>Partner with production bases to maintain higher standards and conduct regular audits (Wal-Mart and CR Vanguard)</li> </ul>
<small>Source: McKinsey market visits and interviews</small>		

EXHIBIT 4-3

### I-1 Meat/poultry

The meat/poultry category in emerging markets is rife with microbe contamination and spoilage issues. The core challenge is to sustain chill temperatures across the supply chain. Refrigeration and freezing facilities are often too costly for suppliers or, if installed, are turned off to save money. In China's tier 2 cities, for instance, refitted trucks are often used instead of purpose-built refrigerated vehicles. Doing so can cut vehicle price by 20 percent, but at a cost of reduced capacity and temperature control. One supplier using such trucks admitted to delivering fresh pork at 10 degrees Celsius (the global standard is 0-4 degrees).<sup>36</sup>



Refitted trucks with simple refrigeration equipment installed (China tier 1 city)

Source: McKinsey market visit

<sup>36</sup> McKinsey market visits and interviews.

Suppliers with refrigeration facilities but weak usage standards might look to Wal-Mart's approach in a tier 2 Chinese city. Wal-Mart enforces its supplier guidelines by conducting temperature tests right at the receiving gate. In refusing product that fails the testing, Wal-Mart understands that it risks temporary stock-outs, but believes that having the highest quality standards will pay off in the long run. The improved consistency in quality has already led to fewer consumer complaints and lower product shrinkage. As one Wal-Mart representative explains, "You cultivate suppliers by pushing them to comply with high standards. Every time we open a new inland store we've had trouble finding qualified suppliers. By insisting on the same quality in all stores, however, we believe suppliers who meet our standards will become more common."

Product mishandling is another major culprit in microbe contamination and spoilage. Even the most basic product handling standards are not yet in place at many retailers, where staff members typically sort through loose cuts of meat without washing their hands or wearing gloves. Retailers should move to swiftly eliminate the problem by introducing fundamental hygiene standards, following the lead of retailers who have already instituted product handling procedures, and educating staff.



Staff and customers handling meat and poultry products

Source: McKinsey market visit

## I-2 Fish/seafood

Producers in this category often use dangerous chemicals, such as growth stimulants, antibiotics, and antiseptics at fish farms. Fish and seafood products are vulnerable to chemicals in general, but farmers tend to use harmful chemicals, which are inexpensive, easily acquired, and more potent than safe chemicals. Many are unaware of how harmful the chemicals are. One Hong Kong retailer noted that, soon after the malachite green scandal broke in China, a producer had told him, "I just picked it up at my local drugstore since other producers told me it can cure diseases."<sup>37</sup> Although use of these chemicals is already prohibited by law in most countries, standards are often not sufficiently enforced to prevent usage. Product testing is costly and time consuming, and tracing product back to source is nearly impossible.

<sup>37</sup> McKinsey market visits and interviews.

The template for addressing the problem exists, however. Tesco Lotus, a leading retailer in Thailand, directly sources fish products to ensure traceability. Under direct sourcing, Tesco Lotus provides producers with clear safety standards and information on residual chemicals, and conducts on-site auditing. Direct sourcing is not a comprehensive solution, however, given the sheer number of producers and limited quantity and variety that each provides.

As a supplemental solution, the Thailand FDA has equipped retailers with “quick test” toolkits, which determine the presence of residual chemicals within two hours, helping retailers to conduct faster, less expensive tests. Another example comes from Hong Kong, where Wellcome contracts with third-party specialists to provide advanced product testing. Wellcome collects about 200 samples at receiving gates, warehouses, and stores for testing.

Both Thailand’s FDA and Wellcome developed testing plans that collect more samples from riskier sub-categories and suppliers with poorer safety records.

### I-3 Fruit/vegetables

Controlling growth at the producer stage is crucial in the fruit/vegetables category. Farmers in emerging markets often operate at subsistence levels, with limited knowledge about modern pesticide practices. As such, they tend to use illegal pesticides, fertilizers, and post-harvest chemicals. Harmful chemicals are also less expensive, a strong lure for many. Pesticides account for a large part of production cost, and farmers are eager to cut expenditure. Use of such chemicals is already prohibited in China and India, but the fragmented producer landscape makes standards hard to enforce.

Wal-Mart and CR Vanguard in China’s tier 2 cities also apply a direct sourcing approach to address this issue. They build partnerships with contaminant-free production bases, provide extensive guidance and training on quality standards, and also conduct testing for residual chemicals either in stores or at distribution centers.

Here, too, direct sourcing is not a total solution. Qualified producers are few, the cost of coaching and educating farmers is high, and, as in the fish/seafood category, producers are too fragmented to make direct sourcing and monitoring of all SKUs feasible, especially when volumes needed from a given producer are quite small.



Box 4-A

## Interview quotes from emerging market visit

Mr. Long Chen, Deputy Chairman & CEO, China  
Resources Vanguard Co., Ltd.



Q: How important do you regard food safety in your business?

A: CR Vanguard aspires to be not only a large brand but also a leading brand in China and across the globe. As a market leader, we see food safety as our top priority in terms of protecting our customers and establishing sustainable success.

Q: Have you taken any innovative approaches to ensuring food safety?

A: Starting in 2007, CR Vanguard set up a dedicated QA team that directly reported to the CEO. They took our infrastructure and operations to the next level by instilling best practices in everything from supplier auditing to store operations.

Q: What obstacles have you faced in this regard? How are you addressing them?

A: Cold chain upgrades and other food safety enhancement measures require heavy investment. Retailers can't shoulder the entire cost alone. Collaboration at all levels of society is absolutely essential for long-term development.



Box 4-B

## Interview quotes from emerging market visit

Mr. Sadashiv Nayak, CEO – Food Bazaar,  
Pantaloon Retail India Ltd., Future Group



Q : How important do you regard food safety in your business?

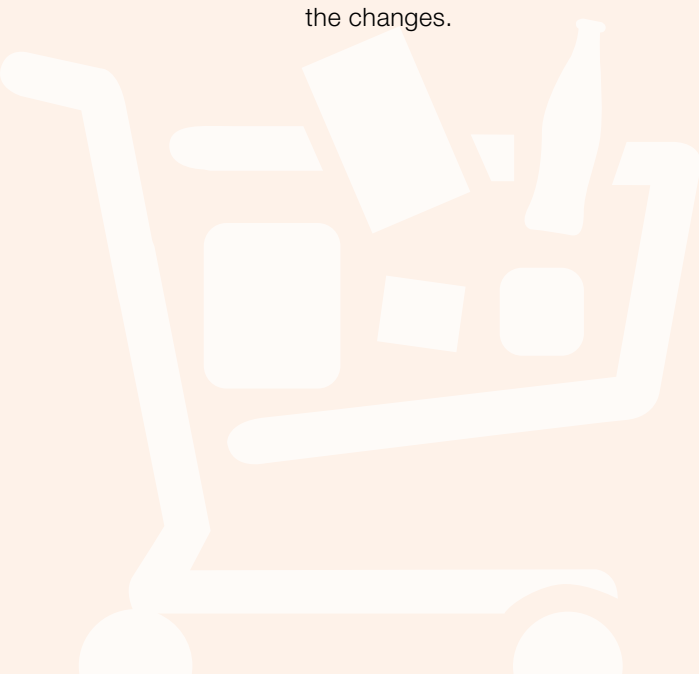
A: Being the pioneer of retailing in the country, Future Group regards food safety as a non-negotiable requirement. We also recognize India is in an evolutionary stage of organized retail, for which Future Group and Food Bazaar intend to serve as a confident incubator of practices that will help retailers take incremental yet positive steps towards food safety.

Q : Have you taken any innovative approaches to ensuring food safety?

A: At the outset it is important to understand that India's population generally perceives products coming from the cold chain as "not fresh," which has led to weak and slow cold chain development. In this context, all practices have to meet Indian conditions such that food safety is not compromised and consumers are not compelled to buy frozen or chilled food. In categories like fruit, vegetables, edible seeds, and rice, vendors have established basic quality check measures that employ significant manual intervention, albeit at a higher cost. Cascading of our expectations to vendors is ongoing across all such categories.




Q : What obstacles have you faced in this regard? How are you addressing them?

A: The challenge, of course, is to meet food safety requirements within the country's prevailing "warm chain." We are evaluating changes in process and design at every stage, and questioning the impact on consumer preferences to build sustainability and integrity into the changes.



## Part II. Addressing hot spots in developing markets

As cold chain development, producer and supplier sophistication, and standards enforcement measures come to fruition in developing markets, food safety problems will become less severe than those in emerging markets. Central issues remain with producers and suppliers failing to meet standards [exhibit 4-4; please refer to Appendix 1 for more proven practices].

EXHIBIT 4-4	<b>Make upstream players adhere to standards: Hong Kong, Singapore, Taiwan, and Thailand</b> <b>Category hot spots and proven practices</b>		
		<b>Major hot spots</b>	<b>Proven practices</b>
	<b>Meat/ Poultry</b>  	<ul style="list-style-type: none"> <li>Poor temperature control during transport</li> <li>Poor breeding environment at producers</li> <li>Poor supplier hygiene and process management</li> </ul>	<ul style="list-style-type: none"> <li>Work with multinational suppliers to ensure sufficient temperature control and conduct quality and temperature testing at DC receiving gate (Tesco Lotus)</li> <li>Ensure main suppliers source only from large certified farms; establish traceability and conduct daily product testing (CR Vanguard, Tesco Lotus)</li> <li>Establish a QA team that conducts product testing at packing houses (Wellcome)</li> </ul>
	<b>Fish/ Seafood</b>  	<ul style="list-style-type: none"> <li>Poor retailer shelf life control or adherence to FIFO system</li> </ul>	<ul style="list-style-type: none"> <li>Develop a comprehensive set of guidelines and manuals to ensure staff handle products strictly according to FIFO (Tesco Lotus)</li> </ul>
	<b>Fruit/ Vegetables</b>  	<ul style="list-style-type: none"> <li>Producer overuse of pesticides or short incubation periods</li> </ul>	<ul style="list-style-type: none"> <li>Use direct sourcing for all products, and conduct extensive training to raise standards (Wellcome)</li> </ul>

Source: McKinsey market visits and interviews

### II-1 Meat/poultry

In developing markets, cold chain facilities are common, but suppliers often fail to meet required temperature control standards. Here, again, retailers may look to Tesco Lotus in Thailand, which selects large, multinational suppliers with advanced temperature control facilities and conducts temperature checks at DC receiving gates.

Insufficient producer control of breeding environments is another problem in developing markets. Many producers raise pigs and chickens in pens with low-quality feed and limited epidemic prevention, resulting in high vulnerability to disease.

The manager of a large slaughterhouse in China recounted the following anecdote: “Back in 2005, we had to source pigs from thousands of farmers, virtually none of whom knew much about advanced breeding standards, or had the means to afford them. Lots of slaughterhouses still do this, driven by cost, but it renders traceability and producer monitoring impossible.”<sup>38</sup>

By contrast, the manager’s slaughterhouse has shifted to best practices, and now sources only from large, certified production farms that produce 10,000 pigs yearly. A plastic chip with a traceability code is inserted in the ear of each pig. The government and slaughterhouse sample three to five percent of product daily for animal diseases and are able to track product back to shipment and producer. Tesco Lotus applies similar sourcing control and traceability systems to private-label products.

<sup>38</sup> McKinsey market visits and interviews.



A chip inserted in a pig's ear  
(slaughterhouse, China  
tier 1 city)



Baskets used to carry pig intestines.  
Disease detected in the body during  
testing can be traced back to the  
intestine. (slaughterhouse, China tier  
1 city)



Manufacturing lot as traceability code (slaughterhouse and processor, Thailand)

Source: McKinsey market visits

## II-2 Fish/seafood

Hot spots in fish/seafood are often caused by inability to move product from storage to sales floors to displays in the order it arrived. Without a proper first in, first out (FIFO) system, some product will be left to spoil on the stockroom or sales floors.

Aeon, a leading retailer in Japan, has a comprehensive guideline and manuals to ensure staff adhere to a strict FIFO system in handling product. Specifically, all fish and seafood products are tagged at time of processing. Each product has a deadline and is checked regularly. For instance, when time since processing exceeds four hours, certain products are marked down. After six hours, they are disposed of. Whole fish displayed on ice is sliced or cut into *sashimi* (bite-sized cuts of raw fish) before the peak evening shopping hours to avoid having whole fish

Box 4-C

## Interview quotes from developing market visit

Mr. Paul Sheldrake, Operations Director,  
Wellcome Hong Kong



Q: How important do you regard food safety in your business?

A: Food safety plays a crucial role in brand equity and consumer trust, and must be viewed as an investment, not a cost.

Q: Have you taken any innovative approaches to ensuring food safety?

A: As with many other food retailers in the Asia Pacific region we have invested in infrastructure to ensure that we have adequate controls over the process from farm to consumer. We have also invested in our own lab at our fresh food centre to ensure we can carry out our own product testing quickly and efficiently.

Q: What obstacles have you faced in this regard? How are you addressing them?

A: We need to continue to promote a culture of food safety in our organization, and never compromise this culture. As an organization, we must continue to invest in new technology and staff training to provide the safest food possible to customers.

deteriorate. Processing schedules correspond to expected foot-traffic. Retailers adopting these practices will maintain shelves filled with fresher products through the day. Strict shrinkage management is crucial—by ensuring shrinkage is reflected in the ordering process, retailers can offer fresher product while “shrinking” the cost of shrinkage.

## II-3 Fruit/vegetables

Residual chemical problems remain severe for developing markets, but for a different reason than in emerging markets. Farmers in developing markets tend to overuse pesticides or cultivate products without maintaining a sufficient incubation period. This is observed especially in regions with rainy climates and crops exposed to heavy pest damage. In such markets, farmers break standards to increase crop volumes.<sup>39</sup>

Many developing countries and markets, such as Hong Kong, Singapore, and Taiwan, rely heavily on imports from neighboring emerging countries, and retailers are constantly concerned that farmers in these countries apply low chemical control standards.<sup>40</sup>

To address these problems, Wellcome Hong Kong meets with producers in China to monitor and provide coaching. This approach has enabled the retailer to achieve almost total direct farming in this category. Mid-sized farms are typically selected since, according to one Wellcome manager, “we can be a dominantly important customer for them, so our orders receive higher priority.” Teams provide training and on-site coaching, and local farmers are even required to take an exam.

CR Vanguard has taken a different approach, and is currently piloting a new type of distribution center that contains an advanced in-house lab. The retailer invited local experts from universities to design the labs, which incorporate advanced testing facilities to ensure stricter and more systematic product testing.

## Part III. Addressing hot spots in developed markets

As developed markets meet most foundational requirements and conduct advanced practices, hot spots are less severe than for markets at earlier stages. Concerns about fish/seafood and fruit/vegetables are higher for Japan and Korea, however, where raw fish and vegetable products are commonly consumed. Overall, however, the highest priority is to improve end-to-end traceability and in-store temperature and hygiene for fish/seafood products [exhibit 4-5; please refer to Appendix 1 for more proven practices].

### III-1 Meat/poultry

Some producers in developed markets still have poor breeding environment controls, which can result in animal disease. Some producers lack growth control and use contaminated feed, while others have inadequate disease control, mainly due to a lack of awareness about the importance of meeting standards.<sup>41</sup>




<sup>39</sup> McKinsey market visits and interviews.

<sup>40</sup> McKinsey market visits and interviews.

<sup>41</sup> McKinsey market visits and interviews.

## Focus on end-to-end traceability and in-store temperature and hygiene standards: Australia, Japan, and Korea

### Category hot spots and proven practices

	Major hot spots	Proven practices
<b>Meat/ Poultry</b> 	<ul style="list-style-type: none"> <li>Poor hygiene standards and disease control at farms</li> <li>Poor in-store temperature control and staff hygiene</li> </ul>	<ul style="list-style-type: none"> <li>Select producers/packers using own standards and conduct regular audits for all producers (Aeon)</li> <li>Install a strict in-store temperature control system and enforce high hygiene standards in processing rooms (Aeon)</li> </ul>
<b>Fish/ Seafood</b> 	<ul style="list-style-type: none"> <li>Low product traceability</li> <li>Poor in-store temperature control and staff hygiene</li> </ul>	<ul style="list-style-type: none"> <li>For private brands, certify suppliers under own standards and require them to keep daily product records; also conduct regular audits (Aeon)</li> <li>Install a strict in-store temperature control system and enforce high hygiene standards in processing rooms (Aeon)</li> </ul>
<b>Fruit/ vegetables</b> 	<ul style="list-style-type: none"> <li>Producer overuse of pesticides</li> </ul>	<ul style="list-style-type: none"> <li>Regularly ask suppliers to provide growth records for domestic products, and conduct self-audits for imports (Aeon)</li> </ul>

Source: McKinsey market visits and interviews

To deal with this problem, Aeon in Japan selects producers and packers using its own standards, conducts regular audits for all producers, and follows HACCP steps to ensure safety. Particularly for U.S. imported beef, Aeon directly visits and screens their producers by checking feed and monitoring growth records.

### III-2 Fish/seafood


Residual chemical problems remain a major concern for developed markets. Despite the lower general risk, when incidents occur, tracing problems back through the supply chain remains difficult. Many farmed fish producers keep spotty product information, and the fragmented producer landscape makes tracing difficult at best.<sup>42</sup>

Developed market retailers can also look to Aeon for a proven-practice example of addressing residual chemicals. For 13 types of farmed fish products, including some imported from Asia, Europe, and South America, Aeon certifies the best supplier under its own standards following


Customers enter codes to find fish growth records (Aeon website)

**おさかな検索システム**

「おさかな牧場」のシールに記載された12ケタの番号を、画面右側の「おさかな検索システム」に入力していただくと、そのおさかなの養殖履歴をご覧いただけます。



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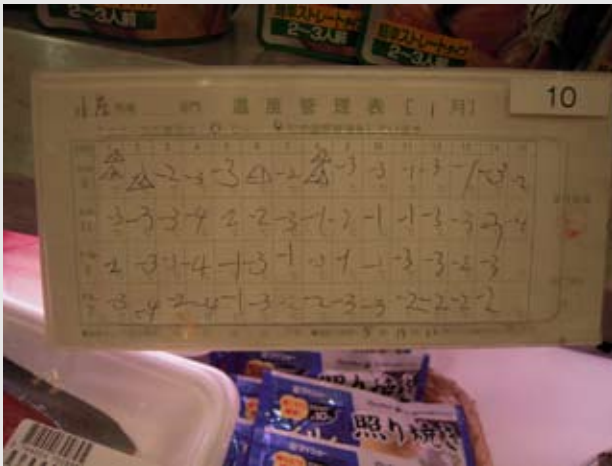
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42 McKinsey market visits and interviews.





Store staff wear sanitized clothes and work in separate rooms (Aeon store, Tokyo)



Staff check and record temperature four times a day to ensure that products are kept at sufficient temperature levels (Aeon store, Tokyo)

Source: McKinsey market visit

third-party investigation. Aeon requires producers to keep daily records on residual chemicals, disease control, and use of chemicals. The records are maintained online so Aeon and even its customers can trace product back directly over the Aeon website by inputting the product code.

Another concern in the fish/seafood category is microbe contamination and spoilage. As in developing markets, the issue lies in retailer environments, where equipment, temperature, and handling controls can be poor due to lax habits and poor awareness.<sup>43</sup>

Aeon has installed product shelves on the shop floor that regulate temperature. Store staff monitor and record temperatures. In processing and storage rooms, each fresh category is kept separate to avoid cross contamination. Staff wear sanitized clothes, and areas are kept clean. Aeon also conducts self-audits to ensure hygiene.

<sup>43</sup> McKinsey market visits and interviews.

### III-3 Fruit/vegetables

Residual chemical concerns persist among developed market retailers, as some products, including imports, still contain higher levels of residual pesticides. Consumer awareness of the issue is increasing, which has its own set of problems. Many consumers stretch the interpretation of restrictions to mean that amounts exceeding the standard pose an immediate health hazard. Retailers are understandably worried that such misinterpretation could lead to unnecessary regulatory pressure.



A farmer selected by a wholesaler for its high food safety standards (city near Tokyo, Japan)

Source: McKinsey market visit

Aeon has dealt with this issue by sourcing domestic product from JA-certified producers, who account for 90 percent of vegetable/fruit products. For non-JA producers, Aeon asks wholesalers to work with producers who adhere to high food safety standards. For such producers, Aeon requests product and management information, which enables high traceability in stores. For imported products, Aeon either asks major food companies to provide information or conducts self-audits after product goes through quarantine.

For private brands, Aeon applies its own strict certification standards, including no child labor, high hygiene level, sanitary working environment, and self-monitoring systems. The certification process is monitored by a subsidiary company that is kept independent from the sourcing team to ensure fairness. Moreover, food safety assurance costs are included in the preliminary budget, so that no process can be circumvented in the interest of cost reduction. Certified product is sample tested randomly. For products imported from some emerging markets, Aeon conducts sample testing on 424 types of different residual chemicals in five different steps along the supply chain.



See Appendix 1 for detailed examples of proven practices

#### Appendix 1-a

### Proven practices – Meat & poultry

#### Appendix 1-b

### Proven practices – Fish & seafood

#### Appendix 1-c

### Proven practices – Vegetable & fruits

#### Appendix 1-d

### Proven practices – All fresh categories

Country/ market	Supply chain	Type of incident	Food safety dimension	Description	Primary actions
India	Logistics	All	Product environment	Safety ideas in warehouses	<ul style="list-style-type: none"> <li>Conduct regular pest control weekly and implement minor changes to prevent contamination from animal moves (e.g., ventilation covered with nets to stop bird movement, ensure products are racked to prevent contamination from insecticides and pesticides, installation of insecticide machines)</li> </ul>
Thailand	Producer Supplier	All	Upstream management	Direct sourcing	<ul style="list-style-type: none"> <li>For private label products, source from leading global producers to ensure advanced standards in food safety</li> <li>Streamline purchasing processes and maximize direct sourcing in major categories to ensure traceability of producers and suppliers</li> <li>Separate field supervisors from procurement and have them focus on supplier/producer education</li> </ul>
Thailand	Supplier	All	Upstream management	Criteria on testing	<ul style="list-style-type: none"> <li>Apply strict testing criteria to products</li> <li>Mark products that fail testing at DC (e.g., "Red card")</li> <li>Procurement department excludes suppliers whose products fail testing on several instances, which puts pressure both on suppliers and procurement to educate and train suppliers and producers</li> </ul>
Thailand	Logistics	Microbe contamination / spillage	Product flow	Ensuring speed of goods transition at DC	<ul style="list-style-type: none"> <li>Enact strict rules not to stock fresh products in DC, and utilize WMS (Warehouse Management System), thereby enabling employees to pick up and load products in a timely manner so that goods must be shipped out within short period of time</li> </ul>
Thailand	Logistics	Microbe contamination / spillage	Product environment	Cold chain operation in DC	<ul style="list-style-type: none"> <li>Partition the entire DC building into areas with different temperature settings (e.g., storage and sorting area: 3 temperature levels, receiving and QC area maintained at 8°C, and loading area that supports 2 temperature levels)</li> </ul>
Thailand	Logistics	Microbe contamination / spillage	Product environment	Transportati on from DC to stores	<ul style="list-style-type: none"> <li>For vehicles with single refrigeration compartments, prepare a special container to hold goods requiring a different temperature level</li> </ul>
Thailand	Retailer	All	System integrity	Educating using notice boards	<ul style="list-style-type: none"> <li>Communicate quick employee educational messages daily, such that employees recognize the current performance indicators on information boards and discuss needed improvements</li> </ul>
Thailand	Retailer	All	System integrity	Regular training program	<ul style="list-style-type: none"> <li>Offer three levels of food safety training to ensure employees have the right skills/knowledge at their level (entry, 30-day follow-up, and manager training)</li> </ul>
Japan	Producer Supplier Consumer	All	Supplier management	Private brands	<ul style="list-style-type: none"> <li>Carefully select suppliers for private brands</li> <li>Maintain own standards, including minimal pesticide and antibiotic usage, and own record keeping</li> </ul>
Japan	Retailer	All	System integrity	Quality control officer	<ul style="list-style-type: none"> <li>Assign 1 dedicated resource inside the store to act as a role model and be responsible for inspecting products, auditing the area, and educating employees on the importance of food safety</li> </ul>
Japan	Retailer	Microbe contamination/ spillage	Product environment	In-store temperature control	<ul style="list-style-type: none"> <li>Display products on different shelves kept at different temperatures (e.g., meat 0-4°C, fish under 10°C)</li> <li>Post temperature cards on each shelf and regularly monitor and record temperatures</li> </ul>
Japan	Retailer Consumer	Microbe contamination / spillage	Product environment	Hygiene in store processing area	<ul style="list-style-type: none"> <li>In the processing and storage areas, separate products by category and maintain sufficient hygiene levels: <ul style="list-style-type: none"> <li>Staff wear sanitized clothes, and standards are strict, especially for entering fresh food processing areas</li> </ul> </li> <li>Supplement random government inspections with self-audits to ensure hygiene</li> </ul>
Japan	Retailer Consumer	Other	Product environment	High traceability	<ul style="list-style-type: none"> <li>Pack and label meat/fish products with product name, origin (country or region), name of processor, temperature guide, expiration date, and ingredients</li> <li>Label beef products with a traceable ID to the cow it was from (in Japan, necessary for compliance with beef traceability law)</li> </ul>
Japan	Retailer Consumer	All	System integrity	Clean time	<ul style="list-style-type: none"> <li>Have employees stop working for 15 minutes at the same time every day to focus on cleaning their designated area, which helps employees stay mindful about the importance of food safety and of keeping the shop floor clean</li> </ul>



## Quick and effective incident response

“Prevention” is certainly the watchword for Asian retailers in addressing the hot spots, but they must also be ready to react quickly when an incident occurs. It is up to retailers, as the “last line of defense,” to avoid the spread of incidents.

Best-practiced retailers have clear incident-response measures. Aeon, for instance, has taken great strides in preventing food safety incidents, but it also takes a pragmatic approach in responding to potential risks and developing post-incident manuals. One such manual contains a flowchart depicting initial measures to be taken within one hour of incident occurrence so that staff can take appropriate action depending on incident severity and potential for spreading. For severe incidents, it directs staff to 1) identify victims, 2) report to area office, 3) report to HQ, 4) inform manufacturer, 5) review measures to prevent further spreading, and 6) determine media communication approach and message—all within one hour of the incident.

Aeon also works with producers to ensure that information is shared quickly, and orderly actions are taken jointly in an emergency. Standardized procedures, information-sharing processes, and a contact sheet are provided to producers to enable independent review of their own operations to assess potential risks. To date, some 700 companies have worked with Aeon to conduct this self-assessment.

Lastly, in the aftermath of an incident, Aeon conducts thorough safety restoration. In one incident where a needle was found in a product, all remaining items were scanned with a portable metal detector to ensure safety. Vigilance at this level is essential to genuinely ensure in-store food safety.

The magnitude of difference retailers can make by fostering a “prevent” mentality is clear when considering recent incidents such as the 2008 tainted infant formula scandal in China. Leading retailers such as CR Vanguard and Wal-Mart immediately withdrew both identified and at-risk dairy products even before the first government announcement. The story of just how much impact this relatively simple preventative measure had cannot be told in numbers, but given the extent of product contamination, it very likely prevented further illnesses. As such positive examples demonstrate, retailers can make a difference by reacting to incidents immediately after they occur, whether in-store or across their supply chains.

## It's about leadership, not deep pockets

The proven practices introduced above for each stage of market development have proved effective and feasible within current market contexts. Clearly, if we were to itemize the actions needed to adopt these practices, most would contain some level of equipment or capital expenditure. But cash outlay is a minor part of the effort required of retailers. Far more critical is the managerial commitment and drive.

As an example, there are two central actions retailers in emerging markets should adopt to eliminate the priority hot spots in the meat/poultry category, microbe contamination and spoilage: 1) establish and implement standard product handling procedures, and 2) upgrade store infrastructure. The first action is overwhelmingly managerial effort, with limited cost [exhibit 4-6].

Adopting proven practices is a leadership issue, not a budgeting issue			
Adopting best practices – emerging market example			
			<ul style="list-style-type: none"> <li>High – Upfront large investment</li> <li>Medium – Continuous enforcement</li> <li>Low – Establish standards</li> </ul>
Objective	Actions	Incremental cost	
<p>Minimize microbe contamination/spoilage in meat/poultry category</p> <p>Proven practice</p> <p>Ensure infrastructure and procedures in product environment and handling</p>	<b>Establish and implement product handling procedures</b> <ul style="list-style-type: none"> <li>Establish systematic procedures with execution plans for personal hygiene, environment sanity and product handling</li> <li>Roll-out to stores and provide trainings</li> <li>Establish auditing and coaching capacity at HQ and stores</li> </ul>	<ul style="list-style-type: none"> <li>Leadership effort</li> <li>Leadership effort</li> <li>Leadership effort</li> </ul>	
	<b>Upgrade store infrastructure</b> <ul style="list-style-type: none"> <li>Build capacity of design and maintenance</li> <li>Standardize design of stores, with food safety requirement embedded</li> <li>Roll-out standards in new store development and gradually upgrade facilities in old stores</li> </ul>	<ul style="list-style-type: none"> <li>Leadership effort</li> <li>Leadership effort</li> <li>Investment in infrastructure and increase in maintenance cost</li> </ul>	
Source: McKinsey analysis			

EXHIBIT 4-6



## Interview quotes from developed market visit

Mr. Yoshitomo Suzuki, CEO, AEON Global  
Merchandising Co., Ltd.



Q: How important do you regard food safety in your business?

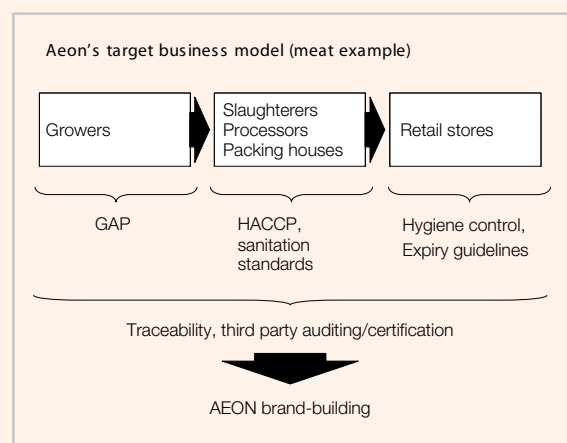
A: President Kennedy talked about “four consumer rights,” including the rights to safety, to be heard, to be informed, and to choose. As a consumer-oriented company, Aeon is a big believer in these rights. We consider food safety a critically important item on the management agenda. We also make every effort to listen to our customers, share product information, and improve their choices.

Q: Have you taken any innovative approaches to ensuring food safety?

A: Aeon adheres to global management and certification systems, including HACCP, BRC, SQF2000, and ISO for our store-branded products. Our buyers, together with technical experts, conduct on-site auditing at suppliers, producers, and factories. We avoid working with those who fail our audit. All products and raw materials used at Aeon must be traceable to origin, even for national brands. We apply a simplified version of these procedures to our private brands.

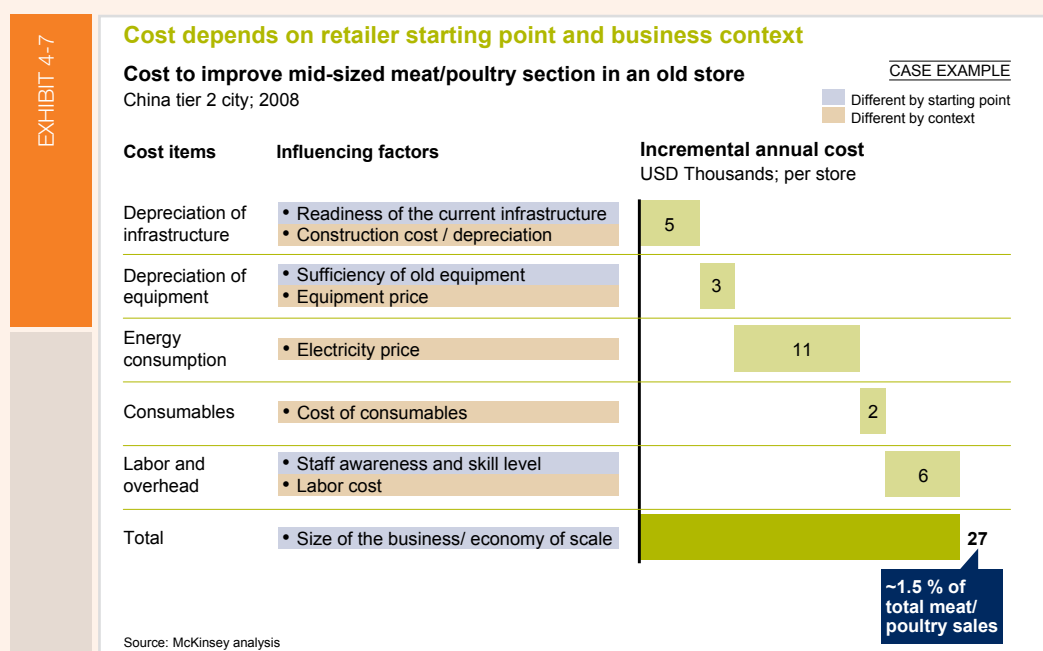
Q: What obstacles have you faced in this regard? How are you addressing them?

A: There are two major challenges, neither of which can be solved overnight, but both of which require collective effort throughout the supply chain. Food terrorism is the first of these issues. An HACCP-based management system is not designed to monitor for crime. We need a new system and hardware to prevent and control this problem. For the time being, we have developed manuals for stores and suppliers to enable rapid, cooperative incident response. The second challenge is increasing costs. Sourcing safer products and materials not only raises our costs, but also those of our suppliers.



## Example of cost estimation to adopt a proven practice

The cost of adopting proven practices is usually low, but varies by market context and current status of individual retailers. Our estimates show, for instance, that the cost of upgrading the meat/poultry category of a retailer in a China tier 2 city would be under 1.5 percent of total category sales\*. This is not the case for all retailers, since the amount is influenced by a retailer's state of equipment and staff readiness.



Clearly, retailers in all stages and of all sizes need to act now to mitigate the many hot spots, but there is an equally forceful imperative to shape overall market development. In the following chapter, we shed light on the pivotal role retailers can play toward this broader target. Both individually and collectively, retailers are the trigger for shaping market evolution, influencing industry participants, and establishing an improved foundation for fresh food safety across Asia.

- \* 1) For a medium to large supermarket chain with annual meat and poultry sales of about \$1.7 million per store
- 2) Depreciation of infrastructure: based on upgrade to meat section for an area of 180 square meters at a cost of \$300 per square meter
- 3) Depreciation of equipment: based on expansion of chilled storage rooms at a cost of \$3,200; purchase of new chilled display counters for \$7,500 and general improvements to other facilities at a cost of \$9,600
- 4) Depreciation calculated at 5-10 years for different items
- 5) Variable costs (e.g., energy consumption, consumables, detergent) resulting from 50% increase in consumption
- 6) Labor cost of \$6,300 for about 0.1 full-time equivalent (FTE) of a manager's time and 1.5 FTE front-line staff time, needed to enhance management and ensure additional training

# chapter 5



# Shaping the future of fresh food

***By exercising their influence, retail leaders can generate significant change in their store operations, in their supply chains, and in their country's level of freshness and food safety.*** Retail leaders in markets at each stage of development can encourage producers, processors, and transporters to adopt proven practices and improve fresh food safety throughout their supply chains. And because regional interdependence is on the rise, retailers in developed markets can also lead cross-border initiatives to enhance food safety throughout the region. We encourage retail leaders to take this more active role, and guide and influence other participants in the fresh food supply chain to shape the future of food safety in Asia.

## Winning in store

The challenge in assuring food safety lies not in designing systems or identifying the best practices to apply, but in how those systems or practices are embedded. Retailers can apply proven practices that still lead to insufficient outcomes if the mindset and behavior of those working on the shop floor remain unchanged.

Many retailers are implementing programs to educate and train employees who are dispersed across multiple locations. At Tesco Lotus, three levels of training programs, together with food safety manuals by category, reinforce employee shifts in mindset and behavior. Upon entering the company, new employees receive a food safety and health orientation. After 30 working days, they join a training program with more detailed knowledge and actions on food safety operation in each fresh food category. Department managers also receive training on what they need to know to manage fresh food departments, which enables them, in turn, to train their staff on a daily basis.

Embedding everyday processes and practices also helps raise employee awareness on food safety. Every day at specified times (e.g., 11 a.m. and 3 p.m.) in Aeon stores, for instance, all employees stop what they are working on and start cleaning the store. It is a strict rule called “clean time,” and it is applied throughout their network. The practice literally forces employees to recognize, at least twice daily, that protecting food safety and cleanliness is a priority.

Establishing leadership role modeling in food safety is yet another factor that drives change in mindsets and behavior. Aeon assigns a dedicated resource, called the “quality keeper” in each store. The mission of the quality keeper is to protect customers by ensuring hygiene, shelf-life, quality, and employee healthcare management in the store. Quality keepers not only audit and check the level of implementation of Aeon food safety standards but also provide education and training on food safety to employees and act as the focal point of food safety in stores.

Some retailers use regular surprise inspections by headquarters teams as another way to raise food safety consciousness. FamilyMart Korea, which owns approximately 4,000 stores, relies heavily on well-trained store owners. FamilyMart’s sales staff conducts regular visits (three times per week for each store) as a way of increasing and maintaining store owner awareness on food safety. Store owners leverage regular re-training opportunities and daily morning courses to ensure strict implementation of store regulations.

As you read through the following steps in our food safety roadmap for retailers, we encourage you to keep these reinforcing approaches top of mind. Implementing the proven practices is crucial to improving and ensuring food safety, to be sure. But the changed mindsets and behaviors you instill in your employees and those of your supply chain partners are just as important for making the changes sustainable.



## Who can help

Aside from retailers, the main participants in the fresh food sector include producers, suppliers, logistics support providers, regulatory and government bodies, and consumers. Deciding who to influence depends largely on where improvement is needed most—where the hot spots are. The questions to ask are, “What is my biggest food safety problem?” “What causes it?” and “Who can help me eliminate that cause?” [Box 5-A]

## Governments and regulators

The hot spots in emerging and developing markets arise from poor standards and enforcement, lack of knowledge, and weak cold chain infrastructure. Retailers can confront these challenges by collectively lobbying governments and regulatory bodies to set or strengthen the standards, penalize violators, incorporate food safety in primary education, and create tax incentives to accelerate cold chain evolution.

Retailers in developed markets can also enlist government support to help them contend with end-to-end product traceability and producer overuse of pesticides. Here, too, the solutions include improved regulations, standards, and enforcement. Specifically, retailers could lobby to the government to ensure end-to-end traceability and promote an enabling mechanism, and establish a means of efficiently disseminating information about proper pesticide usage to farmers.

## Producers, suppliers, and logistics support providers

In addition to actively pushing the government, retailers in emerging and developing markets also have the means to directly influence upstream players. Retailers can jointly hold information-sharing events or send experts into the field to offer education on proper use of chemicals and pesticides. Incentives, such as global certification or regularly paying a premium for safer products, can also motivate producers and suppliers to change their ways. Similarly, retailers could restrict contracts to suppliers and distributors equipped with refrigeration and other cold storage units.

In developed markets, retailers could promote traceability by cooperating with producers, suppliers, and distributors to sell traceable product at a higher price, offer incentives when traceability is guaranteed, and also limit contracts to players who can trace product back to its source. Direct education may prove effective in ensuring producers understand how to properly handle pesticides, but promoting a collaborative information infrastructure could also prove useful.

## Retailers can influence industry participants to achieve better long-term food safety

Interview comments gathered during market visits

“We are seeking local government support to **accelerate change in producer configuration** by encouraging the formation of agriculture associations or farming companies, and by providing technical and financial support”

– QA Manager in China tier 2 city

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“It is **expensive for individual retailers to educate suppliers about temperature control standards**. We want to work with other industry participants to reach industry-wide consensus, advocate advanced standards, and encourage cold chain investment”

– Merchandising Director in China

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“In Japan, consumers know about fish/seafood handling and can judge whether products are fresh enough to eat, so clearly, **consumer education** can also help prevent food safety incidents”

– Perishables Procuring Manager in Japan

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“Modern retailer **investment in food safety isn’t sustainable without consumer appreciation**. In Hong Kong, consumers still buy many products from wet markets despite the much higher risks of contamination. Consumers must be continuously educated”

– Merchandising Manager in Hong Kong

Source: McKinsey market visits and interviews.



## Consumers

Consumers matter. Their opinions can and do drive change at the government level, and their misperceptions can be disastrous. Retailers in developed markets could take great strides in further promoting traceability and improving producer knowledge by directly influencing consumers. A campaign to eliminate consumer misperceptions about food safety could also encourage consumer groups to “make some noise” and further drive change, particularly among regulators [exhibits 5-1, 5-2].<sup>44</sup>

### Increase retail leadership with producers, suppliers, transporters and regulators

#### Key actions to be taken by retailers—emerging and developing markets

Who to influence	Major hot spots	
	Producer misuse of chemicals/pesticides	Temperature control during transport
Regulators	<ul style="list-style-type: none"> <li>• Lobby to enact regulations/penalties</li> <li>• Lobby to incorporate food safety curricula in primary education</li> </ul>	<ul style="list-style-type: none"> <li>• Lobby to launch regulations and boost tax incentives</li> </ul>
Producers	<ul style="list-style-type: none"> <li>• Educate on proper methods for using chemicals and pesticides</li> <li>• Promote proper chemical/pesticide usage                             <ul style="list-style-type: none"> <li>– Help with global standard certification</li> <li>– Purchase safe product at higher prices</li> </ul> </li> </ul>	
Suppliers		<ul style="list-style-type: none"> <li>• Promote sense of urgency for introducing cold chain infrastructure</li> <li>• Offer incentives to install cold chain</li> </ul>
Logistics		
Consumers		

Source: McKinsey analysis

EXHIBIT 5-1

### Strengthen your influence as retail leaders

#### Key actions to be taken by retailers—developed markets

Who to influence	Major hot spots	
	End-to-end product traceability	Producer overuse of pesticides
Regulators	<ul style="list-style-type: none"> <li>• Lobby to enact regulations</li> <li>• Promote a launch mechanism to enable end-to-end traceability</li> </ul>	<ul style="list-style-type: none"> <li>• Lobby to establish information infrastructure about proper pesticide use</li> <li>• Lobby to enact international standards</li> </ul>
Producers	<ul style="list-style-type: none"> <li>• Offer incentives to ensure traceability</li> <li>• Stimulate sense of urgency for introducing traceability system</li> </ul>	<ul style="list-style-type: none"> <li>• Educate on proper pesticide use</li> </ul>
Suppliers		<ul style="list-style-type: none"> <li>• Promote to establish information infrastructure about proper pesticide use</li> </ul>
Logistics		
Consumers	<ul style="list-style-type: none"> <li>• Educate on the importance of traceability and the risks of its absence</li> </ul>	<ul style="list-style-type: none"> <li>• Educate to eliminate misperceptions</li> </ul>

Source: McKinsey analysis

EXHIBIT 5-2

44 The Ministry of Agriculture, Forestry, and Fisheries of Japan interview; McKinsey market visits and interviews.

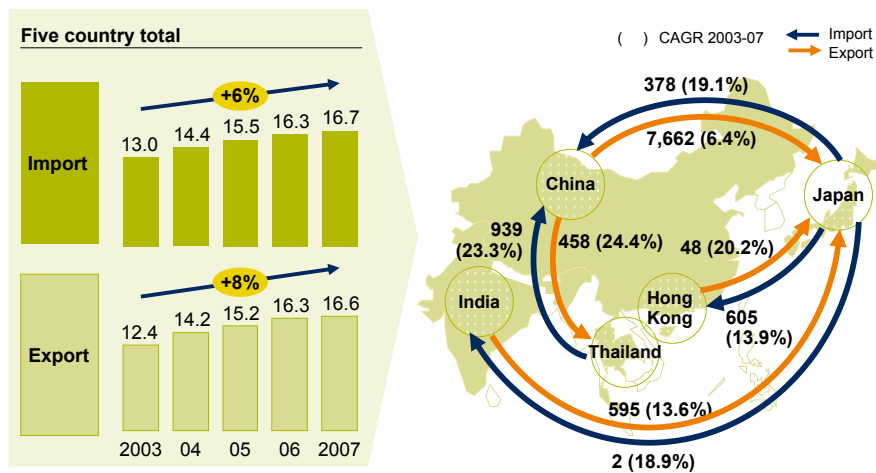


## Asian retailers can lead the way

Countries are becoming more dependent on one another, not less. In 2007, total import and export of food and live animals for five major Asian countries was \$33 billion, with nearly seven percent CAGR for the five years prior. At this scale of cross-border trading, there is an urgent need for food safety to improve regionally. Retailers, especially in developed markets, can support and lead initiatives that shape the course of fresh food safety improvement across Asia [exhibit 5-3].

### Retail leaders in developed markets have much to gain by promoting regional food safety

Value of trade in food and live animals in Asia  
USD Millions; 2007



Source: Personal Trade Analysis System (PC-TAS), International Trade Centre (ITC)

EXHIBIT 5-3



# chapter 6

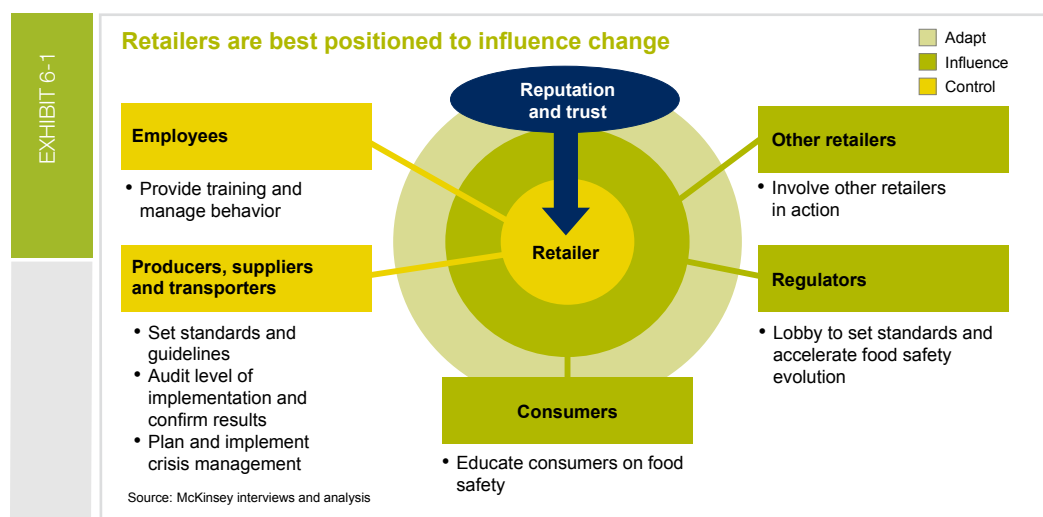


# A call to action

***Retail leaders can protect and strengthen their brand and reputation for freshness and trust by making an immediate, sustained shift from a defensive to proactive stance in their leadership on fresh food and food safety. Leaders must instill a mindset and culture that recognizes how crucial freshness and food safety are to reputation and trust. They must develop action plans that go beyond their own employees to include upstream supply chain partners, regulatory agencies, and consumers. We recommend deliberate steps retail leaders can take to embed fresh food safety practices in stores and accelerate the adoption of proven practices throughout their supply chains [see exhibit 6-2, page 70].***



The risk of damage to brand, trust, and reputation drives retailers to take action on food safety management. When it comes to fresh food, food safety is what differentiates the brand. This requires retailers to shift gears from a largely defensive posture to a more proactive approach. One good example is Aeon, which sets self-developed standards stricter than the global standards, such as for their private label products. By doing so, Aeon drives home to consumers their message of “safe, reliable, and honest.” Retailers need to drive change in the mindsets and behavior of the upstream participants in their supply chain [exhibit 6-1]. There are multiple approaches leadership can take:



- Prioritize proven practices by offering training programs and education on food safety to employees in your own store network
- Ensure supply chain partners (producers, suppliers, and transporters) commit to standards and guidelines. Crisis management should be jointly planned and implemented
- Work continuously to communicate to consumers on food safety and raise awareness of its importance
- Influence regulators to develop and accelerate improvements in the five evolutionary requirements
- Spread the effect of the effort nationwide and across the industry, such that other retailers also get involved

To address the food safety problems, retailers need to demonstrate leadership to drive action inside and outside their networks. We propose a simple roadmap for retailers to follow [exhibit 6-2].



## First: win on freshness and food safety in-store

Taking action on food safety starts at home. Ensuring that employees in your own store network comply with standards and execute proven practices is fundamental to enhancing food safety across your supply chain. This is a process of changing mindset as well as behavior.

Top management needs to clearly commit to making food safety a priority and start communicating its importance both early and often. Clear food safety standards must be codified and in-store leadership should act as role model in executing food safety standards. In addition, establishing food safety training and auditing programs is crucial to promoting food safety standards across the store network.

### Actions to take:

- **Make food safety a priority:** agree among top management that assuring food safety is the highest priority you should have as a modern retailer
- **Codify and communicate food safety standards:** review your own food safety standards and communicate to your employees that compliance with standards is essential
- **Make in-store leadership the role model:** encourage store and department managers to demonstrate compliance with standards by example, and let other employees learn from them
- **Provide training and auditing programs:** establish a systematic training and auditing program that covers all employees in your store network to increase awareness and assure execution of standards

## Second: assess your market stage

To understand the market context with respect to fresh food safety and the general posture of other retailers, the first step must be to identify your market's stage of development. Using measurable indicators can help to objectively assess how far along the market is in each of the foundational requirements. While our report blended market visits and publicly available data, retailers may be able to develop more descriptive indicators to better capture the status of the requirements, continuously monitor progress, and benchmark against other markets.

### Actions to take:

- Set the agenda: define your market stage of development, priorities, and hot spots. Decide on goals, identify proven practices, and share findings with board members, retail leaders, and suppliers.

## Third: prioritize hot spots

Once the stage of development is clear, the next step is to find the “hottest” of the hot spots. Retailers should compare current performance relative to the best in the industry for that stage of development and refine the areas for improvement to those two or three that will have the greatest impact. The Food Safety Management Framework shown in chapter two, together with the proven practice examples for each stage offered in chapter four, can help retailers to narrow the target areas.

### Actions to take:

- Identify the ideal state of fresh food safety, based on the country’s stage of development—near-term pragmatic, long-term aspirational. Set clear goals to achieve targets
- Use the Food Safety Management Framework to assess the gap between the market’s current and ideal states

## Fourth: adopt proven practices

Retailers should seek out and quickly adopt those practices that have proven effective in more advanced markets. Retailers can refer to the proven practices in chapter four, and also ask retailers in more advanced markets to share experiences in dealing with specific hot spots. A word of caution: proven practices are rarely “cookie cutter” solutions. Any practice taken from another context needs to be vetted for applicability, customized to better suit the situation on the ground, and put in place gradually. Tips and tricks from those already operating under the practice could help to avoid common pitfalls.

### Actions to take:

- Contact retailers in more advanced markets for input on what it takes to overcome the hot spots
- Assess the proven practices and test for applicability in your own network
- Establish an action plan and start adapting and adopting proven practices

## Fifth: set ambitious goals

Retailers should set attainable but ambitious goals. In the near term, they can aim to achieve the best food safety performance level within their current stage, and pursue a level of achievement normally found in more advanced markets as a longer-term goal. Performance should be monitored regularly to make sure improvement is on track, and any jumps in improvement can be explored to learn what triggered them and begin applying them universally.

### Actions to take:

- Incorporate into the action plan milestones for achieving “best-in-class” status in your market stage
- Set aspirational targets for accelerating market development
- Establish mechanisms to monitor the targets

## Sixth: push (or pull) stakeholders

After setting goals, retailers should plan communications to move toward improvement. Now is the time to begin shaping the future by accelerating the overall evolution in your market’s stage of development to ensure fresh food safety over the longer term. Retailers should define the requirements that best address the priority hot spots, then identify who to influence and how—whether to “push” through lobbying and education, or “pull” using incentives. The triggers to drive evolution differ by market context, but the path that advanced markets have taken can provide a wealth of ideas.

### Actions to take:

- Convene retail leaders in your market to share and define group aspirational targets
- Develop a collective action plan for influencing regulators, producers, suppliers, and logistics service providers
- Set a routine to continuously communicate with stakeholders

## Seventh: share successes

Finally, retailers should meet to share ideas on the importance of fresh food safety, and work together to improve regional standards by communicating their experiences and proven practices to help less developed markets in the region. This type of information sharing can also benefit advanced markets which, given the increased levels of food imports and procurement from overseas, can be directly affected by the progress of less developed regions.

### Actions to take:

- Convene regional retail leaders to share ideas and experiences on achieving proven practices more broadly and further accelerating market development





# afterword

Our work with a group of leading Asian retailers on fresh food and fresh food safety has revealed a number of opportunities. Retail leaders are well positioned to simplify and communicate a set of priorities—to clarify what really matters in fresh food safety. Prioritization can help in setting a CEO agenda on fresh food safety for Asian retail businesses and determining what to focus on. Establishing a CEO view of the hot-spot priorities in a market can refine the needed actions within that retail business and among, suppliers, producers, and regulators. Communicating with clarity and focus to a broad group of fresh food industry participants should set the stage for significant improvements both in-store and throughout the fresh food supply chain, and reduced food safety risks.

We encourage an approach that includes adopting changes in practices and mindset. For retailers, the long-term benefits from increased focus and leadership on fresh food safety will be nowhere more apparent than in strengthened customer loyalty and brand equity, improved supplier development, and, even longer-term, through ensuring a sustainable fresh food supply.

Food safety and freshness is an area where local and regional collaboration among retail leaders can have a compounding effect. Whether working jointly to highlight food safety priorities in a market, or working regionally to share proven practices, increased collaboration and shared leadership can point the way toward improvements and make a real difference. We hope this report encourages more regional and market level collaboration. We see a meaningful opportunity for retail leaders to step into an active role, sharing ideas and practices that work in Asia.

## Appendix 1 —Proven practices: All fresh categories

Country/ market	Supply chain	Type of incident	Food safety dimension	Description	Primary actions
India	Logistics	All	Product environment	Safety ideas in warehouses	<ul style="list-style-type: none"> <li>Conduct regular pest control weekly and implement minor changes to prevent contamination from animal moves (e.g., ventilation covered with nets to stop bird movement, ensure products are racked to prevent contamination from insecticides and pesticides, installation of insecticide machines)</li> </ul>
Thailand	Producer Supplier	All	Upstream management	Direct sourcing	<ul style="list-style-type: none"> <li>For private label products, source from leading global producers to ensure advanced standards in food safety</li> <li>Streamline purchasing processes and maximize direct sourcing in major categories to ensure traceability of producers and suppliers</li> <li>Separate field supervisors from procurement and have them focus on supplier/producer education</li> </ul>
Thailand	Supplier	All	Upstream management	Criteria on testing	<ul style="list-style-type: none"> <li>Apply strict testing criteria to products</li> <li>Mark products that fail testing at DC (e.g., "Red card")</li> <li>Procurement department excludes suppliers whose products fail testing on several instances, which puts pressure both on suppliers and procurement to educate and train suppliers and producers</li> </ul>
Thailand	Logistics	Microbe contamination / spoilage	Product flow	Ensuring speed of goods transition at DC	<ul style="list-style-type: none"> <li>Enact strict rules not to stock fresh products in DC, and utilize WMS (Warehouse Management System), thereby enabling employees to pick up and load products in a timely manner so that goods must be shipped out within short period of time</li> </ul>
Thailand	Logistics	Microbe contamination / spoilage	Product environment	Cold chain operation in DC	<ul style="list-style-type: none"> <li>Partition the entire DC building into areas with different temperature settings (e.g., storage and sorting area: 3 temperature levels, receiving and QC area maintained at 8°C, and loading area that supports 2 temperature levels)</li> </ul>
Thailand	Logistics	Microbe contamination / spoilage	Product environment	Transportatio n from DC to stores	<ul style="list-style-type: none"> <li>For vehicles with single refrigeration compartments, prepare a special container to hold goods requiring a different temperature level</li> </ul>
Thailand	Retailer	All	System integrity	Educating using notice boards	<ul style="list-style-type: none"> <li>Communicate quick employee educational messages daily, such that employees recognize the current performance indicators on information boards and discuss needed improvements</li> </ul>
Thailand	Retailer	All	System integrity	Regular training program	<ul style="list-style-type: none"> <li>Offer three levels of food safety training to ensure employees have the right skills/knowledge at their level (entry, 30-day follow-up, and manager training)</li> </ul>
Japan	Producer Supplier Consumer	All	Supplier management	Private brands	<ul style="list-style-type: none"> <li>Carefully select suppliers for private brands</li> <li>Maintain own standards, including minimal pesticide and antibiotic usage, and own record keeping</li> </ul>
Japan	Retailer	All	System integrity	Quality control officer	<ul style="list-style-type: none"> <li>Assign 1 dedicated resource inside the store to act as a role model and be responsible for inspecting products, auditing the area, and educating employees on the importance of food safety</li> </ul>
Japan	Retailer	Microbe contamination/ spoilage	Product environment	In-store temperature control	<ul style="list-style-type: none"> <li>Display products on different shelves kept at different temperatures (e.g., meat 0-4°C, fish under 10°C)</li> <li>Post temperature cards on each shelf and regularly monitor and record temperatures</li> </ul>
Japan	Retailer Consumer	Microbe contamination / spoilage	Product environment	Hygiene in store processing area	<ul style="list-style-type: none"> <li>In the processing and storage areas, separate products by category and maintain sufficient hygiene levels: <ul style="list-style-type: none"> <li>Staff wear sanitized clothes, and standards are strict, especially for entering fresh food processing areas</li> </ul> </li> <li>Supplement random government inspections with self-audits to ensure hygiene</li> </ul>
Japan	Retailer Consumer	Other	Product environment	High traceability	<ul style="list-style-type: none"> <li>Pack and label meat/fish products with product name, origin (country or region), name of processor, temperature guide, expiration date, and ingredients</li> <li>Label beef products with a traceable ID to the cow it was from (in Japan, necessary for compliance with beef traceability law)</li> </ul>
Japan	Retailer Consumer	All	System integrity	Clean time	<ul style="list-style-type: none"> <li>Have employees stop working for 15 minutes at the same time every day to focus on cleaning their designated area, which helps employees stay mindful about the importance of food safety and of keeping the shop floor clean</li> </ul>

Source: McKinsey market visits and interviews.



## Appendix 1 — Proven practices: Meat and poultry

Country/ market	Supply chain	Type of incident	Food safety dimension	Description	Primary actions
India	Producer Supplier	Microbe contamination / spoilage	Product environment	Temperature control using ice boxes	<ul style="list-style-type: none"> <li>Require contracted suppliers to deliver meat and poultry products pre-packed in a box filled with crushed ice made from potable water to maintain a sufficient temperature long enough to transport product to stores</li> </ul>
China	Producer	Animal disease	Monitoring & inspection	Cooperating with large, government-certified slaughterhouses	<ul style="list-style-type: none"> <li>Work with large slaughterhouses under government monitoring, usually large national (e.g., Yurun or Shineway in China) and regional vendors; which typically have integrated farms or source from large production bases</li> <li>Check for government certification and display certificates in stores where customers can see them</li> </ul>
China	Producer	Animal disease	Growth control	Direct farming programs for pork and traceability system	<ul style="list-style-type: none"> <li>Establish direct farms in nearby locales for private label products</li> <li>Launch a technical consulting firm to provide technical support and audit direct farms</li> <li>Innovate traceability systems to trace product back to individual animals</li> </ul>
China	Producer	Microbe contamination / spoilage	Product environment	Sending QA team	<ul style="list-style-type: none"> <li>Establish QA team that conducts product testing at packing house</li> </ul>
China	Logistics Retailer	Microbe contamination / spoilage	Product environment	Temperature checking	<ul style="list-style-type: none"> <li>Mandate that vendors deliver products with strict temperature control</li> <li>Ensure temperature checking at store receiving areas using a quick test device</li> <li>Check refrigerator temperatures</li> </ul>
China	Retailer	Microbe contamination/ spoilage	Product environment	High standard infrastructure to ensure excellent temperature control and sanitary environment	<ul style="list-style-type: none"> <li>Use separate gates for different fresh categories to avoid cross-contamination</li> <li>Ensure seamless cold chain by placing the gate, warehouse, processing rooms and display rooms adjacent to one another</li> <li>Equip ceiling with seamless rail connections to hang meat products and thereby avoid contact with the floor</li> <li>Ensure display counters and entire selling areas are temperature controlled</li> <li>Process all meat away from consumers and only sell packaged product</li> <li>Focus on design details (e.g., all room corners are rounded for easy cleaning)</li> </ul>
China	Retailer	Microbe contamination/ spoilage	Product environment	Ensure sanitary environment and proper temperature control	<ul style="list-style-type: none"> <li>Use a standardized store design with large chilled warehouses for meat products equipped in meat processing rooms, also under temperature control: <ul style="list-style-type: none"> <li>Ensures regulated temperatures from storage to processing</li> <li>Prevents breakdown of cold chain when moving products from warehouse to processing rooms</li> <li>Helps avoid cross-contamination with other products</li> </ul> </li> <li>Cover meat (especially ready-to-cook products, like minced meat and meatballs) to avoid contamination from consumers</li> <li>Ensure third party environment assessment and training for front counter staff</li> </ul>
Japan	Producer Supplier	Animal disease	Upstream manage- ment	Supplier certification	<ul style="list-style-type: none"> <li>Select producers and packers using own standards</li> <li>Conduct regular audits for domestic and foreign producers</li> <li>Follow HACCP steps to ensure safety</li> </ul>
Japan	Retailer	Microbe contamination/ spoilage	Product environment	Proper handling, packaging	<ul style="list-style-type: none"> <li>Pack products in a seamless package to prevent customers and staff from directly touching products</li> </ul>
Japan	Consumer	All	Product environment	Traceability system	<ul style="list-style-type: none"> <li>Ensure consumers can find product information on the company website by inputting the product code</li> </ul>

Source: McKinsey market visits and interviews.



## Appendix 1 — Proven practices: Fish and seafood

Country/ market	Supply chain	Type of incident	Food safety dimension	Description	Primary actions
China	Retailer	Microbe contamination/spoilage	Product environment	Temperature control and staff hygiene	<ul style="list-style-type: none"> <li>• Use crushed ice for product displays and have product-handling processes in place</li> <li>• Keep live fish fresh by investing in advanced equipment</li> </ul>
Hong Kong	Producer Supplier	Residual chemicals	Upstream management	Product checking	<ul style="list-style-type: none"> <li>• Send samples to third-party labs for advanced product checks</li> </ul>
Hong Kong	Retailer	Microbe contamination/spoilage	Product environment	Advanced facilities to keep live fish	<ul style="list-style-type: none"> <li>• Operate highly sophisticated equipment to control temperature, oxygen level, and water sanitation</li> <li>• Regularly check product facilities, maintain detailed store operation guidelines on sanitation standards, and conduct regular/ad-hoc inspections</li> </ul>
Thailand	Producer Supplier	Residual chemicals	Upstream management	Direct sourcing	<ul style="list-style-type: none"> <li>• Source directly from producers. Even when using suppliers, make sure retailer has direct access to producers.</li> <li>• Provide clear safety standards and information on residual chemicals</li> <li>• Conduct on-site audits regularly</li> </ul>
Thailand	Retailer	Microbe contamination/spoilage	Product flow	Application of FIFO rule	<ul style="list-style-type: none"> <li>• Develop a comprehensive set of guidelines and manuals to ensure staff handle products according to FIFO (First In First Out)</li> </ul>
Japan	Producer Supplier	All	Upstream management	Supplier selection, monitoring	<ul style="list-style-type: none"> <li>• Certify farmed fish product suppliers under own standards, maintain records, and conduct regular audits</li> <li>• Ensure consumers can find product information on the company website by inputting the product code</li> </ul>
Japan	Retailer	Microbe contamination/spoilage	Product environment	Applying deadline in selling fish	<ul style="list-style-type: none"> <li>• Set clear guideline on deadline of products which are good for sales</li> <li>• Tag products with the time of processing</li> <li>• Mark down or eliminate products which exceed the deadline</li> <li>• Order raw material and products to match with customer traffic</li> </ul>

Source: McKinsey market visits and interviews.

## Appendix 1 — Proven practices: Fruit and vegetables

Country/ market	Supply chain	Type of incident	Food safety dimension	Description	Primary actions
India	Supplier Retailer	All	Monitoring & inspection	Regular checking	<ul style="list-style-type: none"> <li>• Applies product checks at two levels: <ul style="list-style-type: none"> <li>– Have category teams visit markets and purchase products subject to sample inspection approval</li> <li>– Conduct product quality check at store receiving areas</li> </ul> </li> </ul>
China	Producer	Residual chemicals	Growth control	Direct farming programs and pesticide tests	<ul style="list-style-type: none"> <li>• Aggressively develop direct farming programs <ul style="list-style-type: none"> <li>– Wal-Mart case: direct farming and purchasing represents 80% of total procurement</li> <li>– Vanguard case: purchases 75% of leafy vegetables directly from farms</li> </ul> </li> </ul>
China	Producer	Residual chemicals	Growth control	Centralized DC with lab for pesticide testing	<ul style="list-style-type: none"> <li>• Establish a central distribution center with sophisticated testing facilities <ul style="list-style-type: none"> <li>– Vanguard case: built centralized DCs in Shenzhen and Nanjing to ensure all fruit &amp; vegetables go through testing; also works with leading academic institutes to ensure more advanced testing at its Nanjing lab</li> </ul> </li> </ul>
Hong Kong	Producer	Residual chemicals	Growth control	Hands-on coaching and monitoring of producers	<ul style="list-style-type: none"> <li>• Provide detailed coaching to farmers, including education on standards for the level of chemicals allowed</li> </ul>
Japan	Producer Supplier	Residual chemicals	Monitoring & inspection	Regular reviews of product management information	<ul style="list-style-type: none"> <li>• After securing producers with high standards, regularly check status by asking producers to provide product and management data (e.g., pesticide usage). <ul style="list-style-type: none"> <li>– Aeon case: <ol style="list-style-type: none"> <li>1. Retailer asks JA to provide member information twice a year</li> <li>2. For non-JA domestic products, retailer asks wholesalers and producers to provide information twice a year, some of which is maintained online by a third-party or local government agency</li> <li>3. For imported products, retailer either asks regional food companies to provide information (especially for branded products) or conducts self-audit after products go through quarantine</li> </ol> </li> </ul> </li> </ul>
Japan	Producer Supplier	All	Upstream management	Supplier certification	<ul style="list-style-type: none"> <li>• Certify suppliers through a sophisticated and exhaustive process: <ul style="list-style-type: none"> <li>– Use the company's code of conduct to screen suppliers. Code of conduct includes requirements such as no child labor, hygiene and working environment specifications, and self monitoring systems</li> <li>– A subsidiary independent from the sourcing team conducts supplier certification</li> </ul> </li> </ul>
Japan	Producer Supplier	Residual chemicals	Upstream management	Supplier selection	<ul style="list-style-type: none"> <li>• Carefully select producers by sourcing from an agricultural cooperative (e.g., JA), which certifies producers</li> <li>• For non-certified producers (e.g., for overseas product), ask wholesalers to secure producers with high food safety standards</li> </ul>
Japan	Producer Supplier Logistics Retailer	Residual chemicals	Upstream management	Residual chemical testing	<ul style="list-style-type: none"> <li>• For agricultural products imported from emerging and developing countries, conduct residual chemical testing at five different stages in the supply chain, covering 424 types of different pesticides</li> </ul>
Japan	Logistics	Microbe contamination / spoilage	Product contamination / environment	Temperature control at DC	<ul style="list-style-type: none"> <li>• At the DC level, store products under sufficient temperature control with low inventories, and have staff randomly check product quality</li> <li>• Store products that need temperature control separately from those that do not, and maintain chilled storage temperature of 13°C</li> </ul>
Japan	Logistics	Microbe contamination / spoilage	Product flow	Inventory level set to minimum at DC	<ul style="list-style-type: none"> <li>• Minimize DC inventory levels by categorizing products in one of two ways: <ul style="list-style-type: none"> <li>– "Running stock" products vary greatly in product volume, mostly ordered by regional merchandizing department</li> <li>– "Direct to store" products are directly ordered by stores and transported to the stores shortly after arriving</li> </ul> </li> </ul>

Source: McKinsey market visits and interviews.



## Appendix 2—Sources of major food safety incidents in Asia, 2005-2008

	Type of incident	Publication	Date	Website information
1	Microbe contamination – enterobacter sakazakii	Thai News Service	7-Apr-05	
2	Spoilage – expired products found in food donated to flood victims	Nation Multimedia Group Public Co., Ltd	22-Jan-09	
4	Intentional food poisoning – poisoned frozen dumplings found in Japan	Ministry of Health, Labour and Welfare, Japan	Jul-08	<a href="http://www.mhlw.go.jp/topics/bukyoku/iyaku/syoku-anzen/china-gyoza/dl/02.pdf">www.mhlw.go.jp/topics/bukyoku/iyaku/syoku-anzen/china-gyoza/dl/02.pdf</a>
5	Residual chemicals – melamine cyanurate contaminated powdered milk	National Food Safety Information Center, China	27-Feb-09	<a href="http://news.ifeng.com/mainland/200902/0227_17_1036798.shtml">http://news.ifeng.com/mainland/200902/0227_17_1036798.shtml</a>
6	Microbe contamination – histamine	Department of Health, Hong Kong S.A.R.	25-Jan-08	<a href="http://www.dh.gov.hk/english/press/2008/080125.html">http://www.dh.gov.hk/english/press/2008/080125.html</a>
8	Residual chemicals – methamidophos	Tokyo Yomiuri Shimbun	23-Sep-08	
9	Residual chemicals – dichlorvos (a type of pesticide) founded in frozen peas	Ministry of Health, Labour and Welfare, Japan	15-Oct-08	<a href="http://www.mhlw.go.jp/houdou/2008/10/h1015-1.html">http://www.mhlw.go.jp/houdou/2008/10/h1015-1.html</a>
10	Toxic ingredient – toxic puffer fish	2008 Asia Pulse Pty Limited	8-Apr-08	
11	Microbe contamination – mishandling	Center for Health Protection, Department of Health, Hong Kong S.A.R.	2-Mar-07	<a href="http://sc.chp.gov.hk/gb/www.chp.gov.hk/content.asp?lang=en&amp;id=116&amp;info_id=9034&amp;pid=14">http://sc.chp.gov.hk/gb/www.chp.gov.hk/content.asp?lang=en&amp;id=116&amp;info_id=9034&amp;pid=14</a>
13	Microbe contamination – angiostrongylus	China Daily, Xinhua News Agency	21-Aug-06	
14	Microbe contamination – oysters infected with norovirus	Ministry of Health, Labour and Welfare, Japan	20-Dec-07	<a href="http://www.mhlw.go.jp/topics/syokuchu/kanren/yobou/040204-1.html#04">http://www.mhlw.go.jp/topics/syokuchu/kanren/yobou/040204-1.html#04</a>
15	Microbe contamination – clostridium botulinum bacteria found in canned food	Nation Multimedia Group Public Co., Ltd	8-Apr-06	
17	Dilution/tampering – milk	DNA - Daily News & Analysis	17-Nov-08	
20	Residual chemicals – Sudan red dye	Xinhua News Agency	20-Nov-06	
21	Veterinary disease – swine streptococcosis detected in pigs	BBC Monitoring Newsfile	25-Jul-05	<a href="http://www.redorbit.com/news/health/185348/china_mystery_illness_identified_as_streptococcosis_ii/">http://www.redorbit.com/news/health/185348/china_mystery_illness_identified_as_streptococcosis_ii/</a>
22	Veterinary disease – avian flu	World Health Organization	22-Jan-09	<a href="http://www.who.int/csr/don/2009_01_22/en/index.html">http://www.who.int/csr/don/2009_01_22/en/index.html</a>
25	Veterinary disease – mad cow disease	Ministry of Agriculture, Forestry and Fisheries, Japan	Feb-07	<a href="http://www.maff.go.jp/j/syouan/douei/bse/b_kantiku/index.html">http://www.maff.go.jp/j/syouan/douei/bse/b_kantiku/index.html</a>
26	Residual chemicals – ractopamine contaminated pork	Reuters	18-Mar-09	<a href="http://www.reuters.com/article/latestCrisis/idUSPEK175515">http://www.reuters.com/article/latestCrisis/idUSPEK175515</a>



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