

Food Safety Foresights

An interview with Dr. Hilary Thesmar, FMI's Chief Food and Product Safety Officer & Senior Vice President of Food Safety.

What are some of the major food safety issues that retailers and product suppliers need to be thinking about now that might be new to them?

We have seen many changes in the food safety regulatory framework over the past five to ten years and its implementation is manifesting itself in the form of recalls, enforcement issues, and public health concerns. Multiple factors have come together, forcing retailers and product suppliers to think differently about food safety. Ultimately, the most important change can be summarized in three words: whole genome sequencing. It's a game changer for food safety across several dimensions: enforcement, public health measures, and managing food safety in preparation areas and throughout the food chain.

To provide some clarity, whole genome sequencing (WGS) in the context of food safety, is the DNA sequence of bacterial pathogens. Significant parts of a microorganism's genome are individually sequenced to provide unprecedented detail about the type of organism, its virulence, what else it is related to, and where it might have come from. Whole genome sequencing is the same technology used in the Human Genome Project, but with respect to food safety, scientists are specifically interested in the genetic make-up of the pathogens related to food safety. For example, we now know the DNA sequences for E. coli, Salmonella, Listeria, Campylobacter and other pathogenic microorganisms and this information is stored in accessible databases. WGS enables scientists to determine exactly which type of Salmonella is in a facility or in a food and what else it is related to, based on similar genetic patterns or even a "match." This new development gives public health officials new tools to identify the sources of outbreaks. Thus, the speed at which they can determine an outbreak's cause and source has gone from the order of weeks and months to days

and even hours. Scientists can identify these strains with a precision that has not been possible before. Just as genetic identification revolutionized criminal detection, it's a game-changing detective tool for the entire food industry. Due to advances in molecular biology, we are seeing more recalls, more reported outbreaks, and links that would have been missed because we would have never known that the illness and the food were linked.

Why is it different? Previously, there would be sporadic illnesses not attributed to foodborne disease. A family may have become ill from a contaminant, but usually not a large swath of people. Now, like matching fingerprints – only at a genetic level – scientists can identify and connect an illness in Iowa with one in Texas. Before, doctors may not have been able to connect those two cases. Now, the matching is done, and the links are made. This gives us the ability to locate the source and determine the cause of an outbreak with very few samples.

The Food Safety Modernization Act (FSMA) passed into law almost 8 years ago with the goal of improved food safety. In 2018, there have been numerous outbreaks and recalls unlike anything seen before. However, there's been this perfect storm of regulation and technological improvement. Scientists are identifying the pathogens sooner, enabling industry leaders, regulators and public health officials to respond quicker. This has led to the perception that food safety is falling apart, but quite the opposite is true, it is actually working better than ever. Consumers may not realize that these are outbreaks that we simply may not have known about five years ago. The risks have not changed but the awareness of foodborne illness has changed. The cost of improved awareness of outbreaks is ultimately borne by the industry because they are the ones who must remove products from the shelf.

It is important to note that the food industry is also adopting these same technologies for compliance and preventative controls. For example, food industry leaders

can use environmental monitoring programs and genome sequencing on samples to determine what resident bacteria exists in facilities. Thus, they can ensure their cleaning and sanitizing programs are effectively removing these pathogens. The industry is working with regulatory officials to better understand what regulators are doing and what types of microorganisms they are looking for. All of this is shared on public databases, one of which is GenomeTrakr, which is used to share genome sequences of pathogens internationally.

We've talked a lot about the technology that is now supporting the food industry and regulation. Do you think there's a role that blockchain can play in all of this?

Blockchain is a powerful tool to share data and can be used for traceability purposes. But, more important is the data that the companies are collecting and then sharing. So, I see blockchain as an important potential conduit for exchanging information, but I think the focus right now needs to be on how retailers and suppliers collect information first.

Consumers are demanding more transparency when it comes to their food. How can retailers and food producers better satisfy this consumer need?

We've known for a long time that consumers want to know where their food is coming from, what ingredients are in the food, and who is making it. The industry has an opportunity to share that information with consumers in innovative ways beyond what is printed on the label. For example, a growing number of food and consumer goods companies are using the digital tool SmartLabel™ to go beyond the limitations of the physical label and share information on how and where the food is made. I have a personal passion for teaching people about agriculture and farming and helping consumers fulfill their desire to get connected to the true source of their food. Many people have the perception that food just comes from grocery stores and don't realize the involvement of farmers and family farms.



I had an opportunity to share information on the SmartLabel™ system with some food experts. They were amazed by it and enjoyed seeing the in-depth information available and this audience was interested in the details on certifications. There is certainly even more that can be done to bring this information to consumers. Advances in technology will make this information accessible but more than simply having it available, making consumers aware of how to access the information will be important.

How can retailers and product suppliers more actively engage consumers in food safety?

There is always an opportunity to do more to engage consumers. Every retailer has a different relationship with their shoppers based on company style and profile, demographics, or the region that their customer base resides. But regardless of style, size, or locale each retailer can add value by listening to the specific needs of their customers.

What we've seen consistently over time is that consumers expect the food sold at retail to be safe. They trust their local store to carry products that are safe for their families to consume. There might be some level of distrust of the food industry, but shoppers trust their neighborhood supermarket and local grocer. People recognize it as "my store," and they trust their store. But as we know, trust is hard won, but easily lost, so we must carefully nurture that trust and potentially utilize it from a food safety, nutrition, and wellness standpoint.

The food value chain is evolving more than ever. Where does food safety fit into the equation?

Food safety fits everywhere along the food value chain. Broadly speaking, there are two strategies with food safety: prevent contamination and introduce interventions along the way. By interventions I mean a step to kill pathogens. So, we either prevent the problem from happening or take steps along the way to get rid of pathogens. For example, the working assumption is that there are likely active bacteria in milk. Here, contamination is prevented through the pasteurization

process. For other products, such as fresh produce, measures must be taken to prevent pathogens from reaching consumers. If each link in the value chain takes responsibility for food safety, then we would have a very safe global food supply. As the last link in the value chain prior to food products reaching the consumer, I think retailers have a significant responsibility for ensuring food safety measures are maintained along the value chain. After all, they have the purchasing power that enables them to define the specifications upstream.

If retailers have the largest responsibility because they are the ones interacting with consumers, how do some of the newer roles in the food value chain, such as delivery specialists, fit in?

Consideration is given to where they sit in the regulatory framework and what regulations apply. Typically, these newer companies are covered by some part of the compliance piece, depending on where they have control of the food. For example, food delivery services would need to be trained in maintaining food temperature if they are delivering to a customer. Even if the regulatory framework is not comprehensive in covering them, then they still have a responsibility to the consumer to not contaminate food. That is the bare minimum: to do no harm. There is work underway to make sure that there are fewer regulatory gaps, thereby ensuring that companies that transcend the historical food value chain are covered under local, state, or federal regulations.

How do you think food safety will evolve over the next five years as the pace of change within the food industry continues to accelerate?

There certainly have been shifts. We used to see stand-alone temperature monitors in food trucks transporting food only measure the temperature as the truck was leaving the facility. Now, many companies have wireless temperature monitoring. Just consider how technological advancements have revolutionized our mobile phones; that same portable technology is at play in the food industry as well, improving our information

sharing and technological efficiency. We've been able to justify to the government to have more flexibility on regulations related to sophisticated refrigeration systems with alarms set to monitor changes. These measures were put in place for inventory control to protect companies from loss but also have a food safety benefit. If a freezer loses temperature control, alarms notify people within minutes, allowing for instant action to be taken, instead of the food being out of a controlled environment for hours.

Technology will continue to be utilized by retailers and the food industry more broadly. As technology becomes more available and costs go down, it will only make it easier to do our jobs. Technology is changing the way food is grown, produced, harvested, transported, and stored. From farmer to producer, from trucker to wholesaler, every link in the food chain is realizing the benefits of using technology.

From a regulatory standpoint, how is food safety impacted by differences in policies between the two major parties?

Food safety has always been bipartisan. I mean, who wants to go down in history as being opposed to food safety? Consequently, it is difficult to argue with food safety regulations. We do see fluctuations in the volume of regulations, but generally speaking, food safety is bipartisan, suffering less fluctuation when there is a transition between the party in power.

Retailers and product suppliers are always under more pressure to reduce costs. What's the case for investing in food safety?

In the FMI US Grocery Shopper Trends reports, consumers report preferring to shop and return to stores that are clean, well-lit, and have nice prepared food departments. Shoppers want to see that stores are investing in sanitization and that they are clean and are pleasant to shop in. It is clear from years of FMI Trends research, that stores with a reputation of being well kept are the stores that consumers return to. We also know that stores that tout food safety as a corporate

value and communicate with their consumers about food safety receive positive feedback from their customers.

When stores have issues with food safety, it can be very costly. This includes recalls or food safety problems involving contamination by the retailer. For example, an employee that causes a foodborne illness or scare from not washing his or her hands can financially devastate a retailer, costing them hundreds of thousands or even millions of dollars. Consequently, retailers recognize investments in food safety to be a wise use of money and these investments do not always have to be major capital projects in innovative technology. Even smaller investment, such as having a proper training program and

awareness is important. Creating a food safety culture starts at the top, with management playing a large role in how food safety is valued. Sometimes, it might be as simple as communicating that employees should be comfortable staying at home when they are sick. It can save a company a lot of money.

Are there any other trends you would want to call out to close?

Recent years have seen more communication taking place between supply-chain partners, and we see this trend only growing. It will be increasingly important for food retailers of

all sizes to communicate with suppliers and with farmers, so they have the information at hand that their customers are requesting. Communication is key and as we know, it is only successful when everyone is fully engaged in the process.

Much of this information sharing can now be done through technology. That said, there is also a strong relationship component of people talking face to face and knowing who they are working with. With technology, we become increasingly detached. The companies that will succeed are those recognizing that consumers are still just people and their food industry partners are still just people.

