

Remaining Questions from 'Food Safety in the Supply Chain: The Web You Can't Escape'

May 12, 2022

Below are the questions from the Q&A session that were not answered due to time. Identifying information has been removed and grammatical or spelling errors corrected (expressed in brackets), but the content of each question has not been changed from how it was submitted.

Distribution Centers

1. Laurel, you described a part of your recent research efforts in commercial distribution centers. To actually conduct your research, it was necessary to forge relationships with retailers to gain access for sampling. A decade ago, that would have been virtually impossible. Yet, from observations of research funded by the Center for Produce Safety, more and more of the most meaningful research is being conducted cooperatively. What has changed from your perspective and what do you see as the keys to developing good working relationships with industry members to permit future research efforts?

I think a few things have contributed to this change. The Center for Produce Safety has done an incredible job of not only linking industry with researchers, but they've also invested time in training both parties to communicate with each other. I believe this emphasis on relationship building has had a pervasive impact throughout the industry as companies are becoming more aware of the value of bringing in an outside perspective to help address issues. As far as fostering those collaborative relationships, the same values in daily relationships are critical. Transparency up front, including outlining the expectations of both parties, will do wonders in preventing disappointment later in the project.

-LD

2. Have there been any studies or plans to study the presence of [*Listeria*] at retail? People are touching and moving produce without gloves all the time at [retail], but we as shippers are held to such high standards. It doesn't seem fair?

There is a bit of work going on at the retail level. When we proposed this project, we heavily relied on data collected by Drs. Strawn, Chapman, and Danyluk in retail environments ([here](#)) as justification for our study, but additional studies include: Qi *et. al.* (2020; [here](#)) and Burnett *et. al.* (2020; [here](#)).

-LD

3. Do we know what cleaning practices these facilities had in place prior to the swabs?

The examined facilities used either dry (dusting), wet (sanitizer and water), or a combination of wet and dry cleaning. Detergents were not commonly used. Surfaces that were cleaned more frequently tended to have higher levels of *Listeria* spp. present; this could be because these surfaces tended to have more contact with soil, which supported microbial persistence.

-LD

4. Quick questions about the [*Listeria*] sampling on the distribution center study. [Were] there designated/consistent sampling points (i.e., truck floor, truck door)? What was the inside warehouse sampling location justification?

Our group focused on known harborage sites throughout the facility, since our primary goal was to determine if the microbial hazard was present. Then, with each subsequent facility, we focused on the same location types so we had comparable samples and could start to elucidate patterns and potentially areas of higher prevalence.

-LD

Economics

1. Robert, you discussed the economic costs of illness outbreaks on the produce industry. Indeed, cost is always a subtext of produce safety discussions – the cost of developing produce safety programs (people, audits, microbial testing, equipment, data, unused products, etc.) versus the costs of getting caught up in an outbreak or recall versus the very real and perhaps most important cost to public health and personal suffering of people who become ill, do you see a crossover point or a mechanism where preventive costs are balanced positively to reactive costs?

In economic parlance, food safety is a credence good. This means that the typical customer cannot ascertain the value of the good, even after consumption. As a result, consumers look for signals of safety, such as whether a food has been involved in an outbreak or a recall. When surveillance and traceability systems are weak, unscrupulous firms can bet on being less safe and will likely get away with it. Non-mandated preventative investments are less likely to be made in this case. Over the last 3 decades, however, we have seen tremendous improvements to surveillance systems (e.g. through increased testing and adoption of PulseNet and, now, whole genome sequencing). As a result, the private incentive to invest in safety is higher than ever before and will continue to grow into the future.

-RS

2. How can [farmers] feel confident about recouping costs around certification when they aren't getting more [money] for their products? It's a tough sell out there to these guys that are already losing everything.

Yes, that has been the problem. If the certification actually reflects a lower risk, there should be a premium for foods with that certification, but that might not be the case if the buyer doesn't know whether the certification does have a real effect on risk. In any event, improved traceability does create an increased incentive to engage in safer practices to avoid costs associated with recalls and outbreaks.

-RS

3. I've joined food safety coalition meetings and the focus is on marketing food safety. Sales is focused on the perception of food safety and not necessarily that decisions are made based on risk assessments. Have you heard a buzz around marketing food safety?

Marketing food safety can be very beneficial both to the company and as a way of incentivizing safer practices, but only if the messaging can be validated. Successful audits and verifications are one way of dealing with this, but more needs to be done to make sure claims can be validated. I think this is an area where industry associations can play a big role.

-RS

Global

1. Ed, you have been in the forefront of the discussions and debates on produce traceability. Cost of traceability is always part of the discussion but so are the operational challenges and benefits. What are you expecting from the FDA and rule 204 operationally, and how will it help FDA move more effectively to limit the impact of product recalls and industry learn the what, why, and how of outbreaks to prevent future incidents?

I expect FSMA 204 to align with the Produce Traceability Initiative best practices. I expect that if you implemented PTI, including the data sharing guidance, you would be able to transmit the data in a sortable spreadsheet format to FDA. I am hoping the non-value-added data requirements in the proposed rule do not survive the final rule.

-ET

2. The 65% and 90% referred to in the PTI, is this all U.S. produce or does it include all produce coming in from foreign countries as well?
That is the number of all cases purchased by U.S. buyers, including domestic and imported.

-ET

3. Is there a list of those that are using PTI?
There is no list of companies labeling their cases or capturing and storing the information on the label.

-ET

Industry

1. Steve, Wegmans has had a long-standing priority of working with fresh produce suppliers to help them understand best practices for managing hazards and risks in the production and distribution of fruits and vegetables. Your company even operates an experimental organic farm where both production practices and food safety education are emphasized to educate growers. How has the company been successful in executing these programs and catalyzing discussions with growers? Are there learnings that can be applied more broadly across the entire supply web?

Wegmans has made a point of, first, partnering with local food safety experts in all the states we do business in, and then reach out to other industry experts for timely, relevant produce safety topics. We have focused on in-person trainings where we can match experts with the growers, share a meal, and have open discussions face-to-face. We have also transitioned to online trainings during COVID. We have increased the level of content as the knowledge level of our growers has increased. It is also important to show these growers that I am accessible if they have food safety concerns because, of these trainings, I am the one face they all know in the Produce Office. Another focus over the last few years has been on understanding the differences in the Preventive Controls Rule versus the Produce Safety Rule as more growers consider the pluses and minuses of trying to produce a value-added product.

-SS

2. Are there any programs, or procedures, in place that are similar in nature to the now defunct MDP testing?
To our knowledge, there are no current programs or procedures similar in nature to the USDA MDP testing. The Microbiological Data Program (MDP) was a national foodborne

pathogen monitoring program that operated from 2001 to 2012. Data generated from that program are available [here](#).

-CONTACT Team

Miscellaneous:

1. With some of the slides presented, it was stated that the produce industry has made a lot of progress, but that there were still significant changes ahead. From each of the panel's perspectives, what do you see as the most important challenges we face in improving produce safety?

In my opinion, big data is the future of food safety. It will better help us find the sources of problems, which is the first step toward fixing those problems. The challenge is creating trust between those who produce the data (industry) and those who use the data. Industry is understandably nervous about sharing testing data with regulators and proprietary data with anyone. Mandating provision of all data is not the answer. This only acts as a chilling effect on voluntary data collection. Coordination of activities between industry, industry groups, and academics with strong Institutional Review Board involvement may be the answer.

-RS

Echoing Robert's thoughts, I see the multitude of supply chain issues taking its toll on our growers and suppliers. Rapidly increasing costs of all inputs has put a strain on our suppliers – add in labor issues and growers are having to react to a rapidly changing market and they are making hard choices on what crops they can afford to grow. We are actually seeing some reduced audit scores from some traditionally strong suppliers, and we believe this is, in part, due to these added strains leading to less focus, training, and time spent on food safety.

-SS

Getting everyone who handles fresh produce to understand that they have a role to play in keeping the product safe and they need to do their part. From washing their hands, to assessing the risks to providing supply chain information about the product they are handling.

-ET

Communicating good science to the industry and public. I think we all got some good examples of how not to communicate science during the pandemic and how mistrustful the public can be to changing/growing/new information (while the scientific community tends to embrace changing information).

-LD

I think Robert is spot on here. Ten or 20 years ago the fear about sharing data was visceral and understandable – a positive test result could scare off a customer and bring regulatory sanctions. But there have been tremendous knowledge gains in the last decade and, frankly, we know that these pathogens are indeed part of the growing landscape and the distribution supply web. Given that learned reality, the data takes on a different role and I would think that it is not the positive test that should surprise or be feared, but the key point is what a company does when the positive is uncovered and the steps they take to ensure the safety of the product sent through distribution. Frankly, if I see a company that points proudly at their environmental monitoring program or their product sampling programs and claims no positive pathogen samples or just looks for surrogates or indicators, it sends a signal to me that they aren't looking hard enough or at the right organisms. I would think we should have progressed to the point where the preferred supplier or the desired operation is the one with rigorous sampling and testing

and an efficient root cause analysis process in place. The actual data becomes a tangential piece of the puzzle and sharing it poses less risk because the follow-up steps were conducted and steps taken to protect the public. More importantly key learnings can be demonstrated and shared that prevent future illness/recalls. Sharing data and using technologies as Robert suggests is critical as it can permit us from being reactive and provide opportunities to use trending and AI applications to be predictive so that higher risk situations can be predicted and steps taken to mitigate risks before they present themselves in real time.

-RW

2. One of the themes the presentation highlighted was the industry need to engage in the science and be open to change. Again, from your perspectives, what do you see as inhibitors of that need?

a. Laurel and Robert, you come from the academic world. What needs to be done to better communicate with the produce industry to help them overcome hesitancy to engage with scientists and incorporate key learnings into their operational produce safety programs?

As noted above, overcoming the trust issue is paramount. Industry must be convinced that communications and collaborations have an upside for them.

-RS

b. Ed, you are an old supply chain guy from the retail world and now work across the global supply web. From the perspective of industry operators, what do you see as the keys to relieving the anxiety that scientific research and emerging technologies sometimes cause and encouraging active participation by industry in consuming and adopting new findings? I think the people developing these technologies and research need to involve the industry operators earlier to make sure they are solving operational challenges properly. As well, they need to help the operators in assessing the changes that will be required in their operation to make the new technology work. The physical changes, the procedural changes and the people skills required need to be addressed prior to implementation. If you automate a poorly run operation, what you get is an operation that fails faster.

-ET

I think we have to master the language of science and understand the various audiences we need to communicate with from a scientific perspective. I mentioned during the presentation that when I was at PMA (now IFPA) I would look out in the audience and see the same faces at every event. Representatives from 50-75 companies that sent their Vice Presidents and Directors of Food Safety to monitor the latest in food safety. Great support but that leaves virtually thousands of companies unrepresented and not part of the conversation. Sadly, even some of the most hard-working food safety folks in the industry are not making corporate investment decisions so that the resources for conducting proactive food safety activities are just not there. There is a natural aversion to what we don't understand and unfortunately there are not many STEM-trained CEO's or COOs in the industry. So, if the science world does not take the anxiety out of the non-scientist's view of emerging science and technology around food safety, they will be heard but not understood by the decision makers in the industry. I wish I had a dollar for every food safety meeting I went to over the years I was in the industry where the scientists in the room argued over an experimental methodology and drove the conversation into

a quagmire that the thought leader, non-scientific folks just tuned out and an important key learning was totally missed by the audience and the specific folks that can ensure the learning be addressed by their company. I said a few times when I was speaking the other day that letting perfect be the enemy of good is not a way to engage in science but it goes even deeper than that - it is a very good way to make sure that real progress is delayed or subverted, and I am afraid that is exactly what has happened over the last two decades.

-RW

- c. Steve, you are solidly in the retail world and have peers in both the production and retail arenas. Wegmans has been one of the real leaders in the industry supporting research and technical innovations. What are your thoughts regarding industry change and uptake of emerging science? First of all, I think it is important to be open to any research support opportunities. While I am not a scientist, I have realized the importance of allowing researchers access to our stores, DC's, and even putting them in contact with some of our growers to allow them real world access to help make their research more meaningful – I have actually worked with both Laura [Strawn] and Laurel [Dunn] in this regard. It is also important to share these findings with our stores, growers, and suppliers and make them aware of where they can implement this knowledge and improve their food safety programs. Finally, I believe that the work CPS has done over the last several years to produce actionable results that industry can understand and adapt has greatly improved. Not perfect, but moving in a better direction that the produce industry can better benefit from.

-SS

3. Prior to the pandemic, we saw covered agriculture, vertical farming, rooftop gardens/containers, robotic delivery systems, fresh meal preparations, and other innovations around fresh produce introduced to the market, and the pandemic has hastened their development in some ways. What are your perceptions of the potential safety risks of these new production and delivery systems and how they can be managed?

In regard to the changes in growing practices, while these new technologies eliminate some of the outdoor growing food safety concerns, they do come with their own sets of food safety issues, and there have been a few recall situations linked to these facilities. Regardless of the technology, the need to develop and follow a strong food safety plan that addresses these concerns does not go away. In our stores, the pandemic forced us to pivot quickly concerning fresh meal preparations, eliminating our traditional food bars and resulting in more focus on store pickup, home delivery, and Meals To Go options that resulted in changes to store layouts and adding the equipment and technology we needed to keep hot foods hot and cold foods cold.

-SS

My perspective is really on traceability compliance. I have seen these start-ups in Direct to Consumer and Indoor Ag actually have an easier time implementing PTI and traceability because they do not have to undo legacy systems and procedures.

-ET

I think we need to continue to support the adoption of these technologies because they continue to be one of our best resources to fight food insecurity and promote healthier eating in communities with less access to produce. As far as risks, we need to start by focusing on the same good agricultural practices and good manufacturing practices we already use throughout the industry. I think GAPs and GMPs will mitigate the majority of

our risks within these newly adopted/developed methods. Sure, new issues will pop up, but I believe we need to focus on the basics first since these are tried and true ways to manage our farms and facilities. If we come on too strong before we understand the hazards of these new operations, we run the risk of alienating some of these fledgling segments of the industry to the point that they have no interest in food safety because they think we're trying to discourage them. So anytime I get asked to work with one of these operations (because they're popping up everywhere), I try to keep my messaging simple. Keep things clean, wash your hands, and have good records.

-LD

Adoption of any new production method is going to have risks associated with it. This is not a reason to stop innovation from being implemented. The important thing is to study these new systems so that any new risks associated with them will be discovered sooner, rather than later.

-RS

4. For each panelist, what are you certain of in regard to produce safety as we look toward the future?

I am certain that we will continue to learn and improve the safety of our fresh produce.

-ET

We have an opportunity to adapt to the changing agricultural landscape but must be sure we don't miss our chance to have an impact.

-LD

Before this webinar, I spent the day judging the New York State FFA Food Safety competition. It was great to see some bright young students displaying an interest in food safety and, even though Dr. Bob feels we are making headway in attracting new talent to food safety, I am certain we still need to do all we can to reach out, mentor, offer internships, and do our best to continue to attract young people to the field.

-SS

There will always be risks associated with produce (and every other food). The goal should be to mitigate that risk, not eliminate it.

-RS

5. What is the panel's view about the produce industry investment in experienced food safety professionals [versus] the food industry in general? [Follow-up]: What can the produce industry do to attract more experienced food safety professionals to join the produce industry?

We definitely need more STEM-trained personnel in the industry. That is not a slap at the food safety professionals currently in produce – it is a remarkable group, but they are undermanned and under-supported. We simply need an influx of trained scientists to take on the challenge of reducing our ever-growing research knowledgebase and technologies to practice within specific companies. I used to think that produce experience was a prerequisite, but I do not believe that today. Critical thinking, ease in data analysis, problem-solving, and communications skills are the real prerequisites; the intricacies of the produce industry can be learned and, along the way, re-thought and reimagined when the data merits adjustments.

I think that the industry's general challenges in attracting top STEM talent is reflective of a company's true food safety culture. If you want to attract top talent, you have to reward them with appropriate salaries and benefits, provide the resources needed to address challenges, and demonstrate their value by creating corporate structures that recognize their value to the corporate strategy. Beyond that, companies have to recognize the need for food safety education throughout the company and not just be satisfied with

pre-season training during orientation or periodic tailgate sessions. No matter how good your STEM-trained personnel are, unless everyone in the company understands their role in food safety (what to do, why they do it, and how to do it right) a company will not have a proactive food safety culture. Trade groups, regulators, and academia can and have developed valuable educational content but companies have to recognize the need to engage and expose their workforce to that material. Content providers have to engineer the content based on target audiences and their familiarity with the science – meet them where they are and deliver it in the most cost-effective formats.

-RW

6. Bob, should [academia] be included within the concentric circles slide? While they are not part of “industry” per se, they certainly influence every level of the industry[...]and changes in the conversation.

Absolutely! I think I mentioned that I re-drew the figure looking out at the industry from an academic perspective, so I took “academics” out of the circle and put in “industry”. I think academic researchers and educators are most definitely “part of the industry” as you collectively build our food safety (and other) knowledgebases and train the STEM-educated employees we need to secure a future for the industry. It is important to note that to gain the most benefit, industry participants in the supply web and academics need to learn to talk to each other more effectively. I have observed that most effective academic researchers and technology purveyors are the ones who have taken the time to learn the “industry” audiences, adjusted their communications to use language understandable to non-scientists, built relationships, and then engaged with specific operations to collaborate on research or educational opportunities. In other words, academics are “influencers” and vital voices within the industry and can help drive real and needed changes as the industry professionals become more comfortable and knowledgeable with how the science can be used. It is a journey.

-RW

7. Lots of talk around retailers not accepting “group certifications” anymore. For already-super-low-risk products, where monthly audits occur[,] what is the risk that you guys feel isn’t being addressed?

I guess my first reaction is: what is a “super low risk” product? All fresh produce products have cross-contamination risks (as do most other foods). As I indicated in the presentation, it is not the crop but the practices used to raise the crop and move it through distribution that need to be considered and managed. The best tool to address that is performing a true hazard analysis and risk assessment for the operator’s piece of the supply web. It is one of the most powerful tools in the grower’s arsenal, yet not universally employed. Often the hazard analysis and risk assessment has been substituted for a generalized check list that operations can use to prepare for a generalized audit which in the end is really just a communication tool to tell a supply that you have checked the boxes the way you were expected to. As I mentioned in the presentation, no two operations are exactly the same: different pieces of land, different adjacent operations, different water sources, different fertilizers and application practices, harvest variations, postharvest handling, etc. Therefore “group certificates” are a cost savings strategy and not a food safety strategy in my view. I recognize the value of group activities to create awareness and share ideas, but food safety at its most basic requires personal engagement and daily diligence that a group certification audit has only limited abilities to determine.

-RW

8. Is anyone else frustrated at the prospect of having to audit your food safety culture? I am not looking forward to having to do more assessments of a super [successful] culture and program.

I agree with your sentiments but is it really so bad? It's coming (and is here in some cases) so look at how you can use it to demonstrate your company's prioritization of food safety, and if you can't comfortably do that ask yourself why not? In the end, audits are simply a communications tool; a way for a company to have another set of eyes and expertise portfolio, look at the food safety practices and aptitudes of a company, and provide a buyer or regulator their impressions of the company's efforts. The most basic tenant of that food safety performance is the company's culture – its behaviors, commitment, and structural preparations to manage the safety of the food they produce every day. If a company has developed proactive, science-, and risk-based food safety strategies and supports that with properly resources foundation programs (sanitation, microbiology, personnel, education, maintenance, traceability, etc.) then being able to measure and communicate those measures to auditors trying to assess a company's culture should be eminently doable and a point of differentiation for a company. I get it, adding another thing to a list of "requirements" seems like piling on, but it can also be seen as a *gift*; it forces you to really ask the tough questions about how the company does food safety and is it *really protecting your company*? I mean that is the real bottom line – does your food safety program protect or minimize the damage your company might incur if it has to recall products or causes injury to consumers? Culture digs deeper than just passing a GMP audit or conducting a few micro tests and being able to answer a checklist of questions you already know the expected answers to. Repeatable behaviors, ease with describing food safety actions, data collection and analysis, looking to the science for answers, acceptance for change when that change is properly vetted requires real engagement daily. Other sectors of the food industry have been involved in culture development for some time and it can be argued that its impact has had variable results. But just like with fresh produce it is easy to dismiss when examined in the aggregate because all food sectors have good and less than good actors. It is more valuable to look at individual companies with a strong focus on their food safety culture, where staff is engaged, where science is a driver in decision making and resources are allocated appropriately, and expertise is leveraged and compare that to your own operation and look for places to improve.

-RW

For the acronym key, please review the "Key Takeaways: 'Food Safety in the Supply Chain: The Web You Can't Escape'" document on the CONTACT website. If you have difficulty acquiring access to any of the links included within this document, please contact the grant coordinator, Christina Kessler, at christinakessler@ufl.edu.