**Development Dialogue: Improving Global Food Safety**

**Challenge Statement**

The World Health Organization estimates that each year, at least 2 billion people worldwide become ill as a result of food poisoning and contamination of the food supply chain. Poorly handled food and unsafe practices can also cause millions of people to die, including many children. Food containing harmful bacteria, viruses, parasites or chemical substances is responsible for more than 200 diseases, ranging from diarrhea to cancers. As the world population is projected to climb to over 9 billion by 2050, the demand for food will continue to rise. Furthermore, higher incomes and increasing urbanization trends are likely to transform food consumption patterns, and increase demand for animal products and more readily accessible and processed food. However, food availability alone does not guarantee food safety. The consequence of having an increasingly global and interconnected food supply chain is that the likelihood of having food safety incidents is increased. Food safety outbreaks have can significant public health impacts, as well as potentially devastating market consequences. Increasingly, we are learning how food safety problems affect people, and disproportionately impact the lives and livelihoods of poor people. So alarming is this trend that this year’s World Health Day (April 7th) is dedicated to promoting food safety. The World Bank has also been on the forefront of this issue since 2012, when it launched the [*Global Food Safety Partnership*](http://www.worldbank.org/en/topic/agriculture/brief/global-food-safety-partnershiphttp:/www.worldbanhttp:/www.worldbank.org/en/topic/agriculture/brief/global-food-safety-partnershipk.org/en/topic/agriculture/brief/global-food-safety-partnership) (GFSP), a unique public-private initiative dedicated to capacity building to improve the food safety systems in middle-income and developing countries for the purpose of reducing risks to consumers, improving public health, promoting economic growth, and alleviating rural poverty.

This conversation seeks to catalyze thoughtful discussion about global food safety, highlight best practices in food safety capacity building across the world, and seek new ways of ensuring that people all over the world have access to a safe food supply and are in a better position to address the above-mentioned challenges. Below is a list of key questions intended to kick off the conversation:

* How can we build resilience across the global food supply chain to successfully lower the risk posed by new and emerging pathogens, environmental hazards, and contamination during food processing?
* National governments, the private sector, academia and consumer advocacy groups all have a role to play in building food safety capacity across the food supply chain. How can each contribute to better detect and promptly respond to foodborne disease outbreaks and food safety emergencies?
* How can we minimize the risk of foodborne disease that can result from the interaction between animals, people and the environment?
* What steps can the GFSP take to boost information and knowledge sharing about food safety?
* Aquaculture is a key industry for many Asia-Pacific economies and the vast majority of businesses in these countries are small holder farms: how can disease prevention and food safety be addressed to secure economic growth and trade in this region of the world?

**Jairo Romero**, International Food Safety Risk Management Expert and member of the **[International Union of Food Science and Technology](http://www.iufost.org/" \t "_self),**on the safety of domestic and international food supply.   
  
*Food Engineer, M. A. in Education. 26 years of experience working in food safety. Expert in strengthening national food control systems and modernizing public and private food safety measures in accordance with Codex Alimentarius guidelines, he is also proficient in Food Safety Risk Management, Food defense, and GMP and HACCP implementation. He is the author of three books, one chapter and 43 articles, a presenter in more than 125 international workshops and technical meetings, and has served in 34 countries in America, Europe and Asia acting as independent expert or under temporary contracts with FAO, WHO, ILSI, AECOM, Nathan, ACTA, USAID, AECI, Fundacion Chile, Fondonorma Venezuela, Food Solutions Peru, 3M and others. Mr. Romero is currently an International Food Safety Risk Management Expert, and also consults on multilateral negotiation of SPS requirements. Past: President of Colombian Association of Food Science and Technology – ACTA, President Elect of Latin America and the Caribbean Association of Food Science and Technology (ALACCTA)’s Directive Council and member of the Governing Council of the International Union of Food Science and Technology – IUFoST.*

**Jairo**: The dramatic changes in food production, distribution, and consumption associated with globalization of food trade, world population growth, intensive agriculture, mass catering and street food, among many factors, pose significant challenges to the safety of the domestic and international food supply. This is particularly problematic for developing countries and net exporters of foods and food products, whose economies can face serious difficulties to access or maintain global markets where strict food safety standards are required.

From the food science and technology perspective, assuring a safe food supply, a complex worldwide problem, requires sound science, proper education and close communication and collaboration among all stakeholders sharing responsibilities along the food supply chain.

The International Union of Food Science and Technology, IUFoST, is recognized as providing global scientific leadership for food science and technology. In accomplishing its mission of strengthening global food science and technology for humanity, food safety and security have been for years one of IUFoST’s main drivers, as reflected by numerous projects and successful outcomes.

In an effort to improve global food safety systems, the GFSP has requested IUFoST to lead the Global Food Safety Curricula Initiative. This initiative seeks to harness the power of education on food safety through a common core curriculum that that will ensure that best practices are being met and applied to food safety through the food science professionals trained in them.

***Conversations – To read the comments as posted in chronological order please scroll to the bottom and read scrolling back up.***

Top of Form

Bottom of Form

[Martin Kimanya](https://disqus.com/by/martinkimanya/)

The current food safety control systems were designed to address food safety concerns for the traded food. The entry points for control, therefore, are located at the processing and sale parts of the food chain. Thus most foods safety control systems are designed to address hazards that are introduced,  
enhanced or eliminated at the points of processing or sale.

Food safety hazards such as mycotoxins are not easy to eliminate or  
reduce during post-harvest. Sustainable technologies for mycotoxin prevention are designed to be applied during pre-harvest. A good example of such technologies is the bio-control of aflatoxins. When such technologies are adopted even farmers who eat their home grown food will be protected. Unfortunately, the regulatory infrastructures in many countries are not designed to extend their services to pre-harvest stages. Thus, we need to redesign food safety systems differently in order to be able to prevent food contamination with contaminants like mycotoxins which are adversely affecting the health of people in rural areas, who consume home grown food. This changes should include a component to build capacity of agricultural extension officers, who work with farmers, by incorporating more food safety topics in their training modules

[Jairo Romero](https://disqus.com/by/disqus_o5njx3MedJ/)

Before this exciting dialogue ends I want to thank GFSP and IUFoST for inviting me to be part of it. I learned a lot more about food safety reading all this comments, among other things learned about aflatoxins in food as a world wide food safety problem.

Also keep in my mind some of the challenges we as food safety fans have to address in the near future:  
1. Continue building "Team Food Safety" on a global scale, strengthening, among others, public private partnerships such as the GFSP to improve and ensure the food supply is safe across all borders.   
2. Continue developing food safety curricula for the next generation, the GFSP program IUFoST is leading right now  
3. Continue efforts to build consumer understanding and partnerships though trust and transparency of the global food supply

And the invitation to take the opportunity the World Health Day 2015, devoted to food safety, give us to rise awareness about this fundamental global issue.

[Ranajit Bandyopadhyay](https://disqus.com/by/ranajitbandyopadhyay/)

Thanks John Lamb and Kelley Cormier for bringing this discussion group to my notice. Food safety is a critical issue for food security, particularly in Africa. Aflatoxin is one of the most pervasive food safety matters in African food system. Not only does it affect health of humans as highlighted by many in this discussion thread, there are serious trade and food availability issues as well. What happened recently in Kenya is a case in point – last year the Government spent considerable sum of money to burn 13,950 tons (155,000 bags; 90 kg each) of aflatoxin-tainted maize worth $5.05 million. The first cabinet meeting of the Government decided to invest almost $10.5 million in aflatoxin abatement after repeated episodes of aflatoxin contamination in areas designated  
by the Government as the food security zone (Hola/Bura/Galana irrigation  
schemes). Some of that investment in training and awareness has already begun and the government is procuring 230 tons of Aflasafe. As previous posts have mentioned, there are indeed methods available to reduce the aflatoxin load in African staples. As Angela Stene highlighted earlier, several thousand farmers in Nigeria participated in the AgResults Aflasafe Initiative, which promoted a multipronged approach of using biological control, awareness, training in GMP and GAP, grain aggregation, market linkage using innovation platforms, innovative financing among other tools to reduce aflatoxin to less than 4 ppb in maize. This is being scaled up such that 260,000 tons of low-aflatoxin maize can be produced annually in Nigeria by 2018. Smallholder farmers are the beneficiaries of this initiative. There are other innovative models that can be designed to scale up aflatoxin mitigation practices. I think that there is a large need to scale up aflatoxin mitigation measures in Africa where the burden of the toxin is greatest.

[Jeffrey K. Griffiths](https://disqus.com/by/jeffreykgriffiths/)

Using published data from West Africa connecting stunting and aflatoxin, I've recently estimated that the quantitative benefits of reducing aflatoxin exposure are of the same magnitude as the top 10 classic nutrition interventions listed in the 2013 Lancet series. Patrick Webb has added to this an estimation of the economic benefits that can be expected from this reduction in stunting. We find that the human and economic case to be made for the elimination of aflatoxin exposure is stunning. We'll be submitting this estimation soon for publication.

On the basis of this conservative quantitative analysis I believe the elimination of aflatoxins from the food supply is an overwhelming global necessity, will repay any investment many times over, and cannot be ignored.

The bottom line is that removing aflatoxins will, as Juergen Voegele writes,   
1. Decrease the risks to consumers of stunting and cancer.  
2. Improve public health by removing those risks.  
3. By reducing stunting, which reduces economic performance and lifetime achievement, we will decrease poverty and increase economic growth.

The elimination of aflatoxins from foods can lead to a virtuous circle of better health, better food safety, and economic growth.

[Lynn Brown](https://disqus.com/by/disqus_4oHOzEwXef/)

Couldn't agree more with Kiity C and John L we have to sort out the aflatoxin nightmare in developing countries. Agriculture is supposed to deliver an affordable, accessible nutritious food supply for all and do it in a way that causes no nutritional harm. The failure to seriously address aflatoxins means that agriculture fails in that regard, it does nutritional harm. If we cannot get our act together on aflatoxins then we will never sort out all the other mycotoxins and fumonisims, many of which we know co-occur and potentially lead to nutrition and health failure......but hey we don't have the human tests for those yet so I guess that means we don't have to take action!

So we need to action aflatoxins and the time is now. This is an issue that lies squarely in agriculture's remit. If we actually succeed in aflatoxins we stand a chance of addressing the other mycotoxins and fumonisms in the future with what we learn along the way. If we continue to ignore aflatoxins then kids will continue to fail to thrive, and their mothers will continue to feed them grain that stunts their growth. It may well kill them young and if they survive they may well have liver cancer in their future. The fact that we know this means our failure to act is................I leave other readers to decide for themselves what a failure to act constitutes!

[Kitty Cardwell](https://disqus.com/by/kittycardwell/)

There is no single food safety issue that has a wider geographic reach, a more consistent and chronic exposure risk across the world, with as impactful consequences as aflatoxin. Because of its designation as a Group 1 Carcinogen by the International Agency for Research Cancer, there are few other food safety concerns as strictly regulated and monitored in global trade as aflatoxin. It is an economic burden that must be borne, an inconvenient truth.

Nevertheless, millions of lives are at risk every day in countries for which regulatory monitoring and enforcement have not been fully developed. There is no other food contaminant that is as immune suppressive and as frequently found in complementary weaning foods in developing countries as aflatoxin, proven to be involved in growth faltering and undoubtedly a factor in pre-5 mortality. Millennium Development challenge goals and metrics concerning health of mothers, development and survivorship of babies, and control of broader public health concerns, will not be met in countries with uncontrolled aflatoxin.

In today’s world, people can be divided in two categories: those who are at chronic risk of exposure to aflatoxin, and those who are not. The differences in child survivorship and life years lost to liver cancer are day and night. Aflatoxin is a hidden killer and must be controlled. Fortunately, there are technical, political and social options available to manage this significant food safety problem, but the scope of actions needed is often bigger than any one country. To eliminate the divide, this food safety issue will require a sustained, global effort, tackled at a global scale, marshalling commitment and combining resources.

[Geoffrey Onen](https://disqus.com/by/geoffreyonen/)

Dear Colleagues  
Certainly food safety at the global level should take top priority given the burden of foodborne diseases. As is the case in most African countries, one of the limitations in mitigating food safety challenges is the differences in the level of infrastructural capacities both within the public and private sector which should be able to address food safety and quality concerns through out the entire food chain. The same I would say goes for food fraud and authenticity which globally had not taken a center stage until we were hit by the melamine and horse meat scandals.

In my view, the public sector have to take the leadership role by bring together all the players in the food chain to be part of an integrated global capability for assuring food safety and integrity. Which in my opinion will require a lot of transparency when it comes to sharing of information between the public and private players. This ultimately will also need a harmonized systems for it to get a wider acceptability globally  
Geoffrey Onen  
Principal Government Analyst  
Directorate of Government Analytical   
Laboratory

[John Oppong-Otoo](https://disqus.com/by/johnoppongotoo/)

Dear Juergen,

This is undoubtedly a very important food safety/food security platform. In my opinion, food safety and food security are inextricably linked. Postharvest losses resulting from food contaminations such as. Aflatoxin contamination of maize and peanut, microbial spoilage of fresh agri-produce reduce the amount of food available for human consumption.

Monitoring programs in several countries have also indicated food chemical (e.g. pesticides and mycotoxins) contamination with different food products especially cereals and fruits and vegetables. In some cases MRLs or MLs have been exceeded by several magnitudes and subsequent exposure assessment have indicated the presence of chronic risk. This does not only raise concerns on the application of GAPs but could also impact negatively on consumer perception of food with regards to safety hence reducing the food options available for consumers.

Clearly, good practices that integrate hazard analysis based tools such as HACCP represent a primary line of defense against contamination of food and must therefore be sanctioned by national authorities in food laws as minimum requirements. Unfortunately food laws in many developing countries are either outdated or lack the risk component hence making them ineffective in addressing contemporary food safety challenges. Countries must therefore be assisted to build the requisite technical expertise needed to develop effective and implementable food laws.

Training and education is crucial and have been alluded to in almost all the posts. It is important to mention at this stage the role being played by the international community in the area of capacity building. The FAO, WHO and Codex Alimentarius Commission have spearheaded food safety trainings in developing countries which is highly commendable. From experience it is interesting to know that many producers are not aware of the potential food safety hazards that pertain to their operations. Food safety trainings with strong components of risk identification and risk perception (which has also been recommended in Jairo Romero’s post) will be very helpful in addressing the knowledge gap. Trade associations should be the primary focus of such training programs to ensure widespread dissemination of information.

A lot still need to be done to conscientize policy makers on the fact that it is not an issue of food safety versus food security but food safety forming an integral part of food security.

[John E. Lamb](https://disqus.com/by/disqus_lPJx9V0mvm/)

Once again, as many have agreed in this dialogue, aflatoxins represent a significant global food safety risk. They affect plant and animal agriculture as well aquaculture, contaminating many food and feed products from farm through storage to processing. The causal organisms Aspergillus flavus and parasiticus are prevalent across the globe in a band at least 30-40 degrees above and below the Equator. Aflatoxin B1 is the most potent naturally occurring cancer-causing agent. High total aflatoxin loads are associated with hepatitis B and C. Via environmental enteropathy, they affect gut health and nutritional uptake. They are suspected of contributing to malnutrition, mortality in children under five, and early death in adults. Via immunosuppression, they may increase susceptibility to the three main communicable diseases: malaria, TB, and HIV/AIDS. They affect developing as well as industrialized countries, limiting trade and impeding economic growth. They hurt the poor, women, and vulnerable populations most. They are becoming a major concern for human productivity that is greatly determined during the first 1,000 days.

Prevention and mitigation is not only desirable in itself, but a major effort would contribute to strengthening food safety infrastructure, the policy and regulatory environment, capacity building and public awareness, all of which would have spill-over effects on other risks. Last but not least, they are of sufficient concern to government, civil society and private industry to stimulate partnerships and generate resources.

For all of these reasons, I recommend that aflatoxins be fast-tracked within GFSP, starting with inclusion on the agendas of one or more of the five working groups (EWGs): at least primary production and processing/manufacture. Prioritization would energize GFSP, focus its efforts, and attract/bring back many members of the food safety community of practice.

The time to act is now.

[Julian Velez](https://disqus.com/by/julian_velez/)

In my opinion, food safety, as well as food security, has development components that should be addressed based on three major categories: policy, supply chain and consumers. A country needs to have the political and institutional will to adopt efficient food safety legislation that provides the norms and regulations for a safe supply chain, especially at the farm level. At the same time, these policies must include provisions to protect consumers, fight poverty and assure the sustainability of the small and medium farming enterprises. Even before food safety legislation is in place, capacity building inputs need to be provided to farmers and other supply chain actors to help them achieve compliance with food safety norms and regulations. This process should be implemented in phases or levels to allow small farmers and other actors to become compliant in stages and over a reasonable period of time. At the beginning, a low level GAP, GMP and GCM approach should be used. Once small farmers and supply chain participants master these first levels of compliance, they get the assistance required to move to the next level. This process is repeated as required by the legislation, the consumers and the markets. Consumers must be the driving force of the whole process; therefore, they must become active in demanding food safety throughout the supply chain on a continuing basis. To make them aware, consumers must receive education on food safety. Policy makers and farmers must keep up with consumers and must respond to their demands. Again, assistance inputs are required to enable the dynamics of the process to work efficiently until it becomes self-reliant.

[Chinyere Ikechukwu-Eneh](https://disqus.com/by/chinyereikechukwueneh/)

Thanks Mr Juergen for initiating this discussion. Please permit me to be more specific, my comments and suggestions will be a bit tiltedto the need to strengthen veterinary services especially in developing countries. According to the World Organization for Animal Health (OIE), 60% of human diseases are of animal origin and 75% of emerging animal diseases can be transmitted to humans. So, what I think we should do differently is to channel more resources to prevent and control these diseases at the farm level, though not neglecting other critical control points along the food chain. GFSP therefore could advise relevant government authorities and other stakeholders on the need to employ this measure as a first line approach to ensuring food safety and food security. Developmental projects and programmes aimed at strengthening ailing Veterinary services especially in developing countries therefore should be encouraged and supported. Such Programmes and projects should focus on capacity building (infrastructure and personnel) and policy development.

Secondly, I suggest promotion of the One Health approach to food safety, where veterinarians, physicians and other related professions jointly tackle such issues. In Nigeria for example, the multidisciplinary approach employed for the control and containment of the Highly Pathogenic Avian outbreaks (2006-2008) was highly effective and commendable. The constitution of a technical committee comprising veterinarians, physicians, communication specialist etc provided for timely containment of the disease.

Thirdly, effective communication using a participatory approach should be adopted in educating and sensitizing both producers and consumers. Traditional and religious rulers have proven to be effective channels of communication for the low income producers and consumers. In Nigeria, awareness creation via short message service (SMS) seems to be impactful. Town hall meetings as well as TV and Radio jingles can be supported by GFSP in sensitizing the general public.

Fourthly, review, enactment and enforcement of relevant laws and policies are needed in the pursuit of food safety and food security. In most developing countries, sanitary measures and standards are not adhered to along the entire food chain, from transportation of animals, slaughter, processing, storage to marketing of finished products. The state of most abattoirs is worrisome; butchers' resentment of ante and post mortem inspections for lack of compensation for condemned meat has impacted negatively on this course. It would be worthwhile for relevant government agencies and private individuals to explore reviving moribund Agricultural insurance companies or establishing new ones.

Finally, GFSP can be instrumental in sensitization of policy makers, farmers’ associations, processors and other relevant bodies at the three (3) tiers of government (in Nigeria for example, at Federal, States and Local governments) on food safety best practices. A regional approach (e.g within ECOWAS) can also be explored by GFSP as a means of getting more stakeholders to the table to discuss this issue. Countries with satisfactory food safety standards are more likely to earn foreign exchange by exporting their products within the block.

[Englishman](https://disqus.com/by/disqus_y3mECfIanu/)

Mr.Juregen voegele U r right. My thought is also like u.

[J. David Miller](https://disqus.com/by/jdavidmiller/)

It is possibly important to note that food law does not help three dozen countries that needed food aid in 2014, all of which have issues with aflatoxin/fumonisin.

[Gnonlonfin Benoit](https://disqus.com/by/gnonlonfinbenoit/)

I thank Juergen Voegele for initiating this discussion platform. In fact, all have been said by others. Prioritization of these issues is paramount, government (politic) buying-in a pre-requisite and a value chain approach should be promoted. I would suggest more attention should be given to: institution capacity building (infrastructure, human), training, awareness and sensitization of stakeholders along priority value chains, public-private partnership. For example, there have been cases where highly trained regulars could not pointed out the link between food safety and food security. In developing world attention is more given to production than quality which is bringing in the discussion more misunderstanding and confusion. Efforts are required to help well trained staff to better understand the two concepts above i.e. food security and food safety. Regarding mycotoxin (aflatoxin, fumonisin and other emerging toxin) there is need to focus more on alternative use of contaminated crops. This will contribute to add value to the contaminated commodities. Furthermore the establishment of monitoring and evaluation system is required to ensure proper implementation, and scale up of success stories. So, measuring impacts and ensuring sustainability.

Finally, future research and development projects should also pay attention to pesticides residues in food and feed as this topic is currently neglected especially in the developing world.

[Gnonlonfin Benoit](https://disqus.com/by/gnonlonfinbenoit/) [Gnonlonfin Benoit](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety" \l "comment-1940433042)

I am in the opinion of many of you. As John Lamb pointed out aflatoxin/fumonisin issue is of big concern. Again, infrastructure and human capacities together with trainings are important to tackle at this time. I concur with John Oppong that private sector should take the lead. Therefore establishing strong public private partnership. In this respect, GFSP could play instrumental role.

Furthermore, GFSP could also assist developing countries to: i) update and enforce the existing food and food safety regulations, ii) develop or align food safety regulations in countries where it is lacking, iii) training of policy makers, traders, consumers and other stakeholders along priority value chains on food safety issues and management with focus on GAP, GCP and GMP.

Finally, GSFP could also assist in establishing efficient monitoring and evaluation systems with the ultimate goal to scale up successful stories.

[Kristian Moeller](https://disqus.com/by/kristian_moeller/)

John is right to strengthen the aspect of incentives. We know, as soon   
as there is a market premium for changing practices (towards more food   
safety), this is likely to happen, provided the costs of adoption and change of practices do not exceed the premium price. And here often lies the difficulty: Suppliers lack a simple and concise and omni-recognized set of food safety practices. Many stakeholder groups differ largely in their set of requirements,  
thus, giving suppliers either a high cost of duplication (food processing level) or result in hesitation to adopt any standard or food safety practice, as I am observing in the farming community. All current initiatives of harmonization still fall short to integrate successfully all stakeholders actually accepting the same set of practices. And this is due to the "proprietary nature" of the codes of practice. Some are public but not operational and others private, and therefore difficult to endorse by some Governments.

I suggest to develop an "open source" set of practices, with the aim to be recognized by all, or at least to be translated into all other practice languages. This way we would try and remove the barrier of ownership and arrive at a new dimension for collaboration.

ITC and the ITC [Standardsmap.org](http://Standardsmap.org) have been involved in this discussion, jointly with SAI Platform and ourselves, GLOBALG.A.P.

[Kateryna Onul](https://disqus.com/by/katerynaonul/)

I thank Juergen Voegele for mentioning the issue of connection between food security and food safety. While working on improvement of food legislation in many countries I mentioned that quite often in those countries where food safety reform is at the very beginning, there is a confusion between food safety and food security. Practice shows that roots of the confusion are in lack of understanding on national level of what food security is and why food safety is an integral part of food security. This has negative impact on development of new national food legislation as the concept is not clear and, consequently, confusions continue to happen throughout all food legislation. As an example I might provide a case, when two laws regulating food security and food safety exists in one country. Where on is Law on Food and another is Law on Ensuring Safety of Food Products. Logically, that the Law on Food needs to be focused on food security issues by giving structure on national food security and adopting its basic principles, while Law on Ensuring Safety of Food Products needs to provide norms related to food safety. However, the Law on Food in that country is a mixture of everything (from general definition of “food security” to very specific ones like “food supplements”, “appropriate behavior” or “food business” and from general food security principles to requirements for food business).

At the same time a lot of issues vital for food security are not covered by this Law. This results in gaps and further confusions.

Another issue of connection between food security and food safety is that in many developing countries there is lack of understanding that food security is impossible without food safety. When discussing this issue during GFSP event in Cape Town with participants from African countries it was mentioned couple of times that first it is necessary to provide enough food and only then to discuss food safety. But what if the above-mentioned “enough food” will be unsafe and might bring the same death as hunger? I understand that in countries, where people don’t have enough food to eat, governments are more focused on ensuring food availability, but food that might make population of those countries ill is not helpful. Isn’t it?

Summarizing the abovementioned, I would propose GFSP, including Regulatory EWG, to pay more attention to food security and food safety connection. This is required when working on development of proposals for national food strategies, as well as on improvement of food legislation by giving very precise explanation of what is what and why there is strong connection between food security and food safety. It is extremely important to ensure that national decision-makers have right understanding of each of element of food system.

[Jairo Romero](https://disqus.com/by/disqus_o5njx3MedJ/)

This comment is on things we should do more of, and addresses three topics: More institutional strengthening, more training and education in association with risk communication and more public-private partnerships

First. Provide more capacity building in the form of institutional strengthening. I already addressed this point in a previous comment, but it is worth to expand the idea by saying that some multilateral organizations have devoted significant resources to describe what a good food safety control system should be and have successfully assisted some countries to improve their national systems. Just to mention some, the World Bank recently published a Food Safety Toolkit; FAO/WHO produced the Guidelines for strengthening national food control systems and, more recently, the Guidelines to assess capacity building needs. In the Americas, and IICA, the Inter-American Institute for Cooperation on Agriculture delivered a widely used assessment tool, the Performance, Vision and Strategy (PVS) for National Veterinary Services.

Second. Undoubtedly, as most of us have underlined in this forum, more training and education is required, no need to repeat that. Perhaps the only thing I’d like to add is that, for some audiences more than others, it is necessary to enrich training and education methodologies with the risk communication approach. Key concepts such as risk perception and anticipated reaction of the audience, values such as transparency and coherence and principles as adherence to the law, opportunity and relevance, are of great value when designing and implementing a food safety training program. Additionally, linking training and education with food safety communication strategies, this is, making them happen at the same time, can produce a synergy that lead to a greater outreach. See for example how useful has been for food companies to use the Global Hand Washing Day for educating their staff. This and other useful ideas can come up from an open dialogue between food safety educators and communicators.

Third. Continue strengthening public-private partnerships. Private sector has a very important role to play in the improvement of food safety, not only because food producers, processors and retailers are responsible for the safety of the food they provide to the consumers, but because market requirements, specially in the way of private standards, have been a major driver for food safety - and for food safety continuous improvement - specially in developing countries, where consumer and, therefore, politicians are less concerned with food safety than in developed countries. I’ve heard some specialists saying that market requirements are the only reason why food safety is important in many countries and why it is now in the mind of public and private decision makers. One could add that we have learned a lot about food safety from our exposition to global markets, to global food producers and retailers, and that now, after some decades of contact with them, we have more food safety professionals than ever before and food safety has begun to expand to domestic foods and food companies. There are some very good examples of what public-private partnerships can do. GFSP and GFSI are two of the most important ones, as are many partnerships for real business happening everywhere, so what we need is to understand better what makes partnerships work good and replicate those experiences

Guest

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First. Provide more capacity building in the form of institutional strengthening. I already addressed this point in a previous comment, but it is worth to expand the idea by saying that some multilateral organizations have devoted significant resources to describe what a good food safety control system should be and have successfully assisted some countries to improve their national systems. Just to mention some, the World Bank recently published a Food Safety Toolkit; FAO/WHO produced the Guidelines for strengthening national food control systems and, more recently, the Guidelines to assess capacity building needs. In the Americas, and IICA, the Inter-American Institute for Cooperation on Agriculture delivered a widely used assessment tool, the Performance, Vision and Strategy (PVS) for National Veterinary Services.

Second. Undoubtedly, as most of us have underlined in this forum, more training and education is required, no need to repeat that. Perhaps the only thing I’d like to add is that, for some audiences more than others, it is necessary to enhance training and education methodologies with the risk communication approach. Key concepts such as risk perception and anticipated reaction of the audience, values such as transparency and coherence and principles as adherence to the law, opportunity and relevance, are of great value when designing and implementing a food safety training program. Additionally, linking training and education with food safety communication strategies, this is, making them happen at the same time, can produce a synergy that lead to a greater outreach. See for example how useful has been for food companies to use the Global Hand Washing Day for educating their staff. This and other useful ideas can come up from an open dialogue between food safety educators and communicators.

Third. Continue strengthening public-private partnerships. Private sector has a very important role to play in the improvement of food safety, not only because food producers, processors and retailers are responsible for the safety of the food they provide to the consumers, but because market requirements, specially in the way of private standards, have been a major driver for food safety - and for food safety continuous improvement - everywhere, specially in developing countries, where consumer and, therefore, politicians are less concerned with food safety than in developed countries. I’ve heard some specialists saying that market requirements are the only reason why food safety is important in many countries and why it is now in the mind of public and private decision makers. One could add that we have learned a lot about food safety from our exposition to global markets, to global food producers and retailers, and that now, after some decades of contact with them, we have more food safety professionals than ever before and modern food safety management has begun to expand to domestic foods and food companies. There are some very good examples of what public-private partnerships can do. GFSP and GFSI are two of the most important ones (see below the Global Markets program mentioned by Milena Genkova), as are many partnerships for real business happening all around the globe. So what we need is to understand better what makes partnerships work good and replicate those experiences

[Sikira](https://disqus.com/by/disqus_UC43Tk9LEd/)

Thanks for this initiative. There is the need for a strong Political will amongst Leaders for there to be a workable regulatory law on Food Safety. Many Developing Countries need to put in place adequate Regulatory framework and policies in the advancement of food safety amongst their populace and for their exports. There is also the need to have specific Regulatory Authorities in place in charge of the various aspect of food safety e.g. Fish and fishery products, Cereals, Liquids, ; rather than have a sole regulatory authority with no diverse authority in many areas. Training and Retraining of all Personnel involved in the processing and Handling of foods at all strata of the economy should be ongoing. If a nation can have a high level of food safety and preservation in place, then that nation is on a good road to food security.

[Milena Genkova](https://disqus.com/by/milenagenkova/)

Dear Juergen,

I would like to congratulate you for this good initiative of the GFSP and the World Bank!

I will focus in my comment on your question about what works in food safety capacity building. I am talking from the perspective of a service provider with substantial experience in capacity building projects most of which are based on the Global Markets Programme.

In the beginning of discussion lack of political will was discussed. I agree that it is one of the critical success factors but I have a good example how this was overcome in a successful project that we at ISACert had in Bulgaria and Serbia. In these two countries the Global Markets programme has mostly been introduced in collaborative public-private coalitions of organisations with shared aims. This has helped to overcome barriers such as funding, regulatory recognition and market access. In this case, the governments of both countries, though supportive, played a relatively small role limited to attending supplier training workshops so they could communicate their regulatory approach.

In our opinion key success factors in capacity building projects are:

1) Transparent communication to suppliers made by the buying company and the service provider, fixed deadlines to get certified and monitoring of progress - If suppliers understand what is going on and the implications for themselves, then the benefits are significant.

2) Strong commitment to the project by the people appointed to manage it locally - The strong relationship between the service provider and the local managers of buying companies is a success factor for the crucial supplier training workshops. This provides a foundation of credibility for the project and helps the delegates to better understand the concept of the Global Markets Programme as well as future opportunities for their companies once certification is achieved.

3) Hand-in-hand collaboration between local QAs of buying companies and service providers - commitment and trust to invest in the needed auditor capacity and qualification to support a forthcoming certification process locally;

4) Stakeholders’ support locally – involvement of other service providers, consultants, state authorities in the process of preparation of suppliers and their training is crucial.

Based on results achieved in our projects, we at ISACert are convinced that Global Markets Programme is a straightforward and practical capacity building tool that can be used continuously for the management of supplier food safety management systems.

In order more small and medium companies to take advantage of this efficient step-by-step tool and gain market access, greater commitment of buying companies and service providers supporting GFSI is needed especially in clear communication with their suppliers about their expectations for certification against GFSI recognized schemes. Unless there is a requirement for certification from a critical mass of buying companies in a particular market, suppliers are unlikely to engage with the process. Many stakeholders would expect from their suppliers to be self-motivating and eager to achieve certification and consequently market access. However, in less developed market facing high competition and margin pressure, this is usually not the case.

If we talk about how GFSP could help - we would suggest that a greater number of buying companies and service providers are invited to actively participate in GFSP and give their input in this great global initiative.

[Valentina Paskalova](https://disqus.com/by/valentinapaskalova/) [Milena Genkova](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1937949025)

Dear Milena,

Thank you for sharing your valuable experience with the private sector and highlighting the importance of food safety management systems using the step wise approach GFSI is promoting through its Global Markets Programme (GMP). You will be pleased to know that GFSP is cooperating with GFSI on various levels but more importantly our joint members have demonstrated the value that GMP brings to the suppliers (both for the processing industry and retail sector). Some of the GFSP initiatives in the pipeline see the deployment of GMP in the various capacity buildings activities.

On its part, the World Bank Group which is taken to include IFC, is actively promoting and using the approaches such as GMP when advising our client companies in different parts of the world, both for the direct client support on individual company basis but also through engagement with suppliers when it comes to the retail sector clients. The results have been very promising and we have shared the same with the GFSI Board as well as with other stakeholders.

Thank you again. We welcome all interested private sector parties – processors, retailers and certification bodies -- to take part in GFSP’s working groups and contribute ideas and insights on various food safety capacity-building approaches.

Best regards,  
Valentina

[Juergen Voegele](https://disqus.com/by/juergenvoegele/) [Milena Genkova](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1937949025)

Dear Milena, thank you for your thoughtful contribution to the discussion and your mention of the GFSI Global Markets Program. Thank you also for citing examples from Bulgaria and Serbia where public-private coalitions were established and helped to overcome common barriers to improving food safety. Indeed, these are the kinds of examples that are indicative of the potential of broad-based partnerships. You also make a good point about the importance of local ownership and engagement when training suppliers. I encourage some of my World Bank colleagues and other participants to weigh in on the important points you raised about the imperative for building capacity.

[Jairo Romero](https://disqus.com/by/disqus_o5njx3MedJ/) [Milena Genkova](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1937949025)

Thank you for your comment Milena and for bringing the Global Markets Program to this dialogue. I think this is a great example of a successful PPP!!! And congratulations for the job well done!!

[Selma Rasavac](https://disqus.com/by/selmarasavac/)

Many thanks for initiating this important and interesting dialogue on food safety reform. In light of our experience thus far in supporting governments in implementing food safety reform focused on bringing the private sector perspective and addressing their key constraints resulting from ineffective food safety regulations and enforcement, I wanted to put an issue of "gold plating" on the table as we have seen this taking place particularly in relation to EU regulations on food safety. Developing a regulatory framework that is not adequate for the types of business operating in a select country is both counterproductive to food safety outcomes and the development of the private sector. It is also important to view the reform in the context of the country development level coupled with an understanding of the types of businesses operating in that market in order to develop solutions that are realistic and can be implemented. I find this aspect also as an important point of discussion for relevant GFSP working groups such as the regulatory WG.

[Kateryna Onul](https://disqus.com/by/katerynaonul/) [Selma Rasavac](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1937917774)

Selma, this is very important issue! Unfortunatelly, not always country's peculiarties are considered when developing proposals for food safety reforms by international experts. I 100% support the necessity of discussion of "golden plating" within GFSP. A simple example, when HACCP ispushed to be requested in countries where people don't have e.g. enough water to implement GHP.

Guest

I thank Juergen Voegele for mentioning the issue of connection between food security and food safety. While working on improvement of food legislation in many countries I mentioned that quite often in those countries where food safety reform is at the very beginning, there is a confusion between food safety and food security. Practice shows that roots of the confusion are in lack of understanding on national level of what food security is and why food safety is an integral part of food security. This has negative impact on development of new national food legislation as the concept is not clear and, consequently, confusions continue to happen throughout all food legislation. As an example I might provide a case, when two laws regulating food security and food safety exists in one country. Where on is Law on Food and another is Law on Ensuring Safety of Food Products. Logically, that the Law on Food needs to be focused on food security issues by giving structure on national food security and adopting its basic principles, while Law on Ensuring Safety of Food Products needs to provide norms related to food safety. However, the Law on Food in that country is a mixture of everything (from general definition of “food security” to very specific ones like “food supplements”, “appropriate behavior” or “food business” and from general food security principles to requirements for food business). At the same time a lot of issues vital for food security are not covered by this Law. This results in gaps and further confusions.

Another issue of connection between food security and food safety is that in many developing countries there is lack of understanding that food security is impossible without food safety. When discussing this issue during GFSP event in Cape Town with participants from African countries it was mentioned couple of times that first it is necessary to provide enough food and only then to discuss food safety. But what if the above-mentioned “enough food” will be unsafe and might bring the same death as hunger? I understand that in countries, where people don’t have enough food to eat, governments are more focused on ensuring food availability, but food that might make population of those countries ill is not helpful. Isn’t it?

Summarizing the abovementioned, I would propose GFSP, including Regulatory EWG, to pay more attention to food security and food safety connection. This is required when working on development of proposals for national food strategies, as well as on improvement of food legislation by giving very precise explanation of what is what and why there is strong connection between food security and food safety. It is extremely important to ensure that national decision-makers have right understanding of each of element of food system.

[Lucy Robertson](https://disqus.com/by/disqus_iPFaW9WC4d/)

We have recently started a COST Action that seeks to focus on various aspects of control of foodborne parasites, bringing together a network of scientists, medics, veterinarians, food safety regulators, industry etc.etc. from, so far over 50 institutions from 25 countries in Europe. This is obviously a topic concerned with improving global food safety, and if you see that you can contribute or participate, please take a look at details of the Action on the EU COST Action page [http://www.cost.eu/COST\_Action...](http://www.cost.eu/COST_Actions/fa/Actions/FA1408) (we don't yet have our own homepage, that will come later), and see if you are eligible to join us. Only through cross-disciplinary interactions can we hope to get a handle on this poorly recognized problem that particularly afflicts countries where infrastructure is less advanced and parasitic infection an endemic problem.

Thank you for posting this comment.

[J. David Miller](https://disqus.com/by/jdavidmiller/)

I thank John Lamb for bringing this to my attention. Working under the visionary leadership of Dr. Chris Wild (IARC), a number of us have worked to frame the issues around mycotoxins and the broad influence they have on human development. We estimate that between 500 and 750 million people are exposed to fumonisin and aflatoxin at multiples of the tolerable daily intakes. Co-exposure is the norm not the exception. When there is adequate supply of groundnuts and maize, segregating more versus less contaminated material is a necessary step. However, absent an economic value for the contaminated material, it stays on the market. Published by the WHO, the first part of our work appeared in early 2013 as “Improving public health through mycotoxin control.” I encourage people interested in this subject to obtain a copy.

The second part of our work will be the output of an IARC panel report focusing on an evaluation of the evidence for the impact on the health of children and on interventions that have been shown to be effective reducing mycotoxin exposures and improving community health. In some situations, a value chain can be created where none existed. The report is anticipated in the next couple of months.

When I previewed this effort at the World Mycotoxin Congress last November, I commented on the strategy Dr. Moy mentions, sorting. Scholars, physicians and church leaders in France studied the impact of sorting to reduce ergotism in 17th century. Over the next 150 years, this became the norm and ergotism disappeared. It should not be assumed that ergot is not a problem. In the last decade, ergot has become quite a nuisance again in parts of Europe, Canada and the US. Thanks to sorting, it does not end up in flour and, well, the sclerotia can be burned or extracted to make medicine. It is, however, clear that many if not most of the tools and strategies we use in Europe, the US and Canada to deal with mycotoxins are not relevant to countries concerned.

Because the issue of mycotoxins is invisible to those of us to live in the fully developed market economies, it is not a top of mind food safety issue. However, for the highly exposed people I note above, it remains as Wild & Gong put it “a shamefully neglected issue” (Carcinogenesis 31:71).

[Gerald Moy](https://disqus.com/by/geraldmoy/)

The comments of Angie Stene and Lynn Brown have motivated me to share an aspect of the project proposal for sorting of peanuts to reduce alfatoxin contamination that I mentioned earlier. Begun at the International Union of Food Science and Technology (IUFoST) Congress in Montreal, the proposal being developed by Young Food Scientists from Sub-Saharan Africa (which includes number of women) has an innovative feature that probably will benefit poor women with families. While the main project is to establish pilot sorting facilities at participating universities, there will also be an exchange program where a person could bring moldy aflatoxin-contaminated peanuts and exchange them on a favorable basis for clean peanuts produced by the facility. To provide an incentive for their efforts, the exchange rate would be set, say, at 1 kg of bad peanuts for 2-3 kg of sorted peanuts. These bad peanuts as well as those produced by the sorting facility would be pressed into briquettes for cooking/heating and therefore would be removed from the human food and animal feed chain. While the sustainability of this approach may be questioned, one might expect that as the a greater portion of the peanut supply passes through sorting facilities, fewer exchanges will occur because of the general improvement in the quality of peanuts in the market. To secure an initial market, the World Food Program has been approached about the local purchase of peanuts that will meet international standards to be used in their food distribution activities.

My sense from the meeting in Montreal is a frustration among young scientists that aflatoxins have been known to be potent carcinogens since the 1970s and the many efforts, however well meaning, seem to have come to nothing. Now here is a technology that can significantly improve the health of all consumers, both the rich and poor, women and men. Inequality is a growing problem in the developing world and it unacceptable that some people are forced to consume food that will make them ill and eventually kill them.

[Juergen Voegele](https://disqus.com/by/juergenvoegele/)

The first week of the Development Dialogue on Improving Global Food Safety included dynamic participation from a range of technical experts and concerned voices. One of the most frequently issues raised during the course of the week was that of Aflatoxins, a recognized threat to the entire food supply chain and one that might be considered a rallying point for a partnership like the GFSP.

John Lamb, a participant in this week’s discussion, considers Aflatoxins management a topic that is serious and widespread enough to prove the value of global food safety collaboration across sectors. Panelist Paul Young adds that Aflatoxins control could result in profound health and wealth benefits for people in many low-income economies though he says that systems upgrading is also necessary. But Lynn Brown warns that this will only succeed if gender is factored into the picture and women farmers are prioritized in food safety interventions.

Capacity building and training on food safety have also been recurring topics in this week’s discussion. Amy Proulx noted the importance of establishing occupational standards for various food safety professions as an objective measure of the effectiveness of curricula and training programs. “At the heart of food safety,” she says, “is education and reinforcement of practice.” Panelist Jairo Romero underscored the need for institutional strengthening in order to achieve sustainable improvements in food safety management, especially in developing countries (he is based in Colombia) where the lack of national food safety policies and high rate of public work force turn over are frequent.

Participants also raised the issue of bioterrorism through food and water and referred to the 2002 World Health Organization (WHO) report on Terrorist Threats to Food. Darin Detwiler said that trade and economy are cited in the report as a “primary motive” for food terrorism and encouraged those interested to visit the USDA Food Safety Inspection Service list of recalled food products. Gerald Moy expresses his concern about the complacency of governments and the food industry with regard to terrorist threats to food. Contamination of the food supply, whether intentional or by accident, is also mentioned by panelist Caroline Smith DeWaal who cites a 2011 law in the US that requires food companies to consider their vulnerability to contamination when designing their food safety plans.

It was acknowledged that food safety is an ambitious goal and that partnerships are critical for achieving sustainability. Albert Chambers mentioned Canada’s experience with successful collaboration between government and industry across the food supply chain. Specifically, he referred to the development of HACCP-based food safety programs from primary production to final marketing as an initiative that has achieved many positive results. He encourages GFSP engagement with Codex and ISO to strengthen capacity building at the global level.

One of the most valuable benefits of having these types of conversations is that everyone has a chance to engage, contribute new ideas and identify topics that are of common interest. I look forward to another fruitful week of knowledge sharing and encourage everyone to continue to think about ways to improve global food safety for the purpose of reducing extreme poverty and promoting shared prosperity.

[Angie Stene](https://disqus.com/by/angiestene/)

I am really glad that Lynn Brown mentions gender. The basic GAP and smallholder behavioral techniques to mitigating aflatoxins often do rest on women and girls. Without appropriate access to resources, extension, and time saving technologies--we need to ensure that the global call for food safety, doesn't create undo burdens on these populations. Increasing access to extension, focusing on technologies/financing and women's and men's joint role in household nutrition and food safety can help. Increasing incentive structures for food safety within communities can also help--to a certain extent. But let's face it: aflatoxin and food safety in general is a problem of poverty. Formative research on tastes/perception/ability and willingness to pay for higher grade food stuffs shows high price sensitivity in the food markets among the poor.

How can we ensure that food safety doesn't become something that only the rich and middle class can afford? How can we penetrate to the base of the pyramid to ensure that the poor, also have access (or time and resources) to grow, buy and consume safer foods (particularly difficult when no cheap 'test' can confirm/deny presence of aflatoxin and other food safety hazards)? For one-we can mainstream food safety with production and market linkages programs. We can ensure that protective safety net programs particularly related to food/cash transfers can link the poor to safer sources of commodities. We can promote the great work that IITA has done in Nigeria and throughout SSA to not just create Aflasafe---but couch the package with financing, general GAP extension, and community education to not only increase safety--but marry safety to increased production, while creating community demand for food safety and quality. I guess the success story from IITA suggests that the simple and accessible solutions are best--make them accessible, make them easy and find a way to incentivize the use. No--Aflasafe cannot increased crop yields---but yes, Aflasafe when combined with a package of intensive extensive extension, financing, and agro-inputs can certainly incentivize behavioral change among smallholders and the community of consumers they serve.

[Lynn Brown](https://disqus.com/by/disqus_4oHOzEwXef/)

This comment is what we should definitely do more of!   
It's interesting that as I read through all the comments I see none relating to gender...I guess most think food safety is everyone's issue and not gender specific. But actually I would argue one reason why mycotoxins have been neglected is they are very much a women's issue. Men often grow grains and legumes susceptible to mycotoxins for the market, and sell before aflatoxin levels are such that they lose their sale. Women grow these crops for their own granaries to feed their children. Women are often neglected by agricultural extension workers, don't get access to new technologies, cannot dry or store their grain properly and as a result they poison their children with the fruits of their labors!! A deliberatively provocative statement on my part! But there is significant research showing the very strong linkages between aflatoxin consumption and poor child nutritional status. In a careful study in Benin the stunting level was dose responsive to the aflatoxins level in a child's blood, and many studies since have shown this.

When WFP started Purchase for Progress to buy 'food aid' from smallholder producers the biggest problem that stopped them being able to execute contracts was the level of aflatoxins.

We need to prioritize control of mycotoxins, and work with the farmers most affected - women. If we are serious about a focus on nutrition sensitive agriculture this is a fundamental topic for engagement. We should not be doing productivity improvement projects for affected crops without serious attention to mycotoxins and fumonisms. Let's face it many of these we don't even have the tests to show the damage from human consumption...and we should.

[Albert Chambers](https://disqus.com/by/disqus_ecOhKil4fE/)

In his initial post, Juergen Voegele raised a wide range of questions. I will confine my initial comments to two themes: capacity building and engagement. In doing so, I draw on my experience in Canada and at the international level in ISO and other fora, including the Global Food Safety Initiative (GFSI).

To start, I would propose that Canada’s deep experience with collaboration between government and industry groups all along the supply chain be explored. The development of HACCP-based food safety programs from primary production to final marketing at retail and foodservice for micro, small and medium-sized enterprises has borne very positive results. By employing the HACCP “toolkit” of a rigorous generic hazard analysis focussed on the prevailing modes of “production” within a commodity or supply chain segment, these collaborations have produced the basic elements of food safety management systems - prerequisite programmes whether you call them good manufacturing practices (GMPs), good agricultural practices (GAPs), good trucking practices (GTPs) or good retail practices (GRPs), other more stringent control measures and even CCPs as well as common management system activities (e.g. record keeping, verification, review and updating, etc.).

This approach is not unique to Canada, but perhaps nowhere else has it been pursued with such rigorous consistency in use of generic hazard analysis and such clear expectations for the basic approach to FSMS requirements. Over the past two decades it has led to thirty-four (34) industry/government collaborative initiatives: twenty-one (21) in primary agriculture and thirteen (13) post farmgate. It has also led to the establishment, by agreement of Canada’s federal and provincial ministers of agriculture, of a transparent and rigorous national program that results in the recognition of these industry-led initiatives by the Canadian Food Inspection Agency.

Several of these initiatives have obtained recognition outside of Canada. For example, the on-farm program for fresh produce producers, packers and storage facilities - CanadaGAP - has been benchmarked by the GFSI. As well, the Packaging Association of Canada’s PACsecure program has been integrated into another GFSI benchmarked scheme, IFS.

The lesson in capacity development is that, by collaborating, experts from industry and government have created practical programs of rigorous, generic, HACCP-based measures. Here in Canada we have effectively demonstrated, on-farm and elsewhere, that if food businesses are provided with these new tools they can implement strong food safety controls.

Other initiatives, for example, the “codes of practice” developed by the Codex Alimentarius Commission committees and the increasingly popular Global Markets Programme of GFSI, have also provided roadmaps to good practice. But what differentiates them from the Canadian model is the absence of a direct linkage to and the availability of a rigorous hazard analysis. This linkage is increasingly important. The marketplace wants certification to a FSMS scheme based on HACCP or benchmarked by GFSI. New regulatory requirements (domestic and export) demand a preventive control plan or a FSMS supported by a hazard analysis. Without access to a good model, micro and small food businesses are faced with an exceptionally costly barrier to market access or retention.

While I understand some of the impediments, it has always been a disappointment to me that the Codex committees, which have the responsibility to establish intergovernmental standards, have failed to underpin their codes with solid, publicly accessible hazard analyses. They have missed the opportunity to provide these food businesses with optimum starting points for developing their own food safety systems.

One of GFSP’s objectives should be to bring the Codex process on-side with this approach. The opportunity to strengthen Codex’s role in this area is there today. The Codex Committee on Food Hygiene’s is considering revising its General Principles of Food Hygiene (CAC/RCP 1-1969) and its HACCP Annex to align them more closely with modern concepts of food safety management, including a stronger role for the hazard analysis toolkit. This revision needs to be strongly supported. And, in time, as custodian of the “HACCP” approach, Codex needs to be encouraged to make better use itself of the tools it promotes.

GFSP’s initiatives in capacity building and in engagement should also be extended to another international player – ISO and the international standards system. Since 2000, ISO has pursued an agenda, shaped by its cadre of volunteer experts, to create the ISO 22000 family of standards for food safety management systems and traceability. These cover all segments of the food and feed sector. Their advantage is threefold. The process is open to input from around the globe. It is transparent. And the results are owned by all, not some particular group.

Over the past fifteen (15) years, both the number of users (more than 23,000 at the end of 2013) and the number of experts and countries have continued to increase. But there are impediments. Developing countries have the experts, but find it difficult to fund participation. Various institutions, including key GFSP players, have contributed funds to enhance their participation. However, more could be done to enable expert participation at the ISO working group level and to encourage outreach, knowledge exchange and training related to implementation.

Greater collaboration with the international standards systems could also result in a deepening of the approach discussed first – the development of generic hazard analyses and the resulting generic control measures. The 2005 version of ISO 22000 recognizes this “pathway” to implementation by a food business through what it calls “externally developed combinations of control measures”. The ISO working group currently revising ISO 22000 is looking very seriously at strengthening this “pathway” and the requirements related to it. This would enhance the attractiveness of implementing ISO 22000, with or without  
certification, for small/micro/medium-sized food businesses and provide competent and reputable organizations such as governments, industry associations, universities, etc. with the framework for the development of new “toolkits” (e.g. hazard analyses, control measures, etc.).

So, in conclusion, I would strongly urge GFSP to look at this approach to building capacity and to strengthening its engagement with Codex and ISO to further it.

[Amy Proulx](https://disqus.com/by/amyproulx/)

Besides the International Union of Food Science and Technology (IUFoST) Young Scientists' Initiative for Children and Youth Education, IUFoST has provided substantial leadership on the development of standardized post-secondary level food safety curriculum. Implementation and delivery of food safety curriculua at the post-secondary level is currently being benchmarked by the IUFoST Global Food Safety Curricula Initiative, in a program funded by the World Bank. From the point of benchmarking, however, a Occupational Standard must be established for what skill set is required by food safety professionals. Having an Occupational Standard for various food safety occupations allows for an objective measure of the effectiveness of curricula and training programs, and gives opportunity for objective measure and evaluation of the skill level of workers.

In Canada, we have been working extensively on the development of National Occupational Standards for food processing careers. With the Canadian Food Processing Human Resources Council, we recently released a National Occupational Standard for HACCP Coordinators, along with a Certification Regime. This will ensure that skilled workers in this critical job role for delivering food safety programming meet a benchmarked competency sufficient to deliver on food safety programs within food processing environments. The project continues with the development of twenty additional National Occupational Standards for careers in food processing.

These activities however are not limited to Canada. We are working with the Government of Vietnam through the Ministry of Education and Training, and Ministry of Labour, Invalids and Social Affairs on the Vietnam Skills for Employment Project, using a similar approach of developing National Occupational Stanadards for benchmarking food processing and agriculture training programs in Vietnam. Meeting IUFoST's Global Food Safety Curricula Initiative standard will be part of that benchmark. Education for food safety needs to meet these internationally validated standards to be effective.

[Amy Proulx](https://disqus.com/by/amyproulx/)

At the heart of food safety is education and reinforcement of practice. While the main targets of food safety interventions have focused on agriculture, food processing, distribution, and food service, food safety at the household level is equally critical. At the International Union of Food Science and Technology (IUFoST) Congress this past August, the Young Scientists Group came together to develop an action plan how they can take steps to bring food science to the forefront, and to attract youth to food science careers. One activity which had a high level of consensus and motivation was visiting schools and educating children and youth about food science. Teaching best practices for food safety is a logical and fun way to both encourage youth into food science careers, as well as deliver on the public health outcomes of improving food safety, creating a knowledge base of food safety that will transfer to the household level. We met with the IUFoST Secretariat yesterday, and have been approved to start our grassroots IUFoST Young Scientists' Initiative for Children and Youth Education. I personally will be out in the field with some of my team of Young Scientists, assisting on a proof of concept program with a secondary school level Toronto District School Board program this upcoming week. We are rolling out the program to our global Young Scientists in a few weeks, and will be developing a bank of resources for global IUFoST Young Scientists to take a grassroots approach to bring food science and food safety to our children and youth.

[Markus Lipp](https://disqus.com/by/markuslipp/)

Very interesting to read the discussion on how food safety and food security intertwine. Most past discussions seemed to have separate the two, yet food security can only be achieved in my opinion when sufficient amount of safe food is available.

Food security can be threatened in three ways. Of course, food safety and thus security is threatened when contaminants, typically introduced through air,water or soil are present at too high levels (and the mycotoxin discussion is rightly so already in full swing). Keeping contaminants at tolerable levels is extremely important to public health. In most instances their levels are best managed through Good Agricultural Practices, as most often contaminants cannot be processed out once they are present.

The second threat to our food supply, discussed already is some details by others, can potentially occur through bioterrorism (terrorism that uses food as a vector) and substantial efforts in the US and Europe as well as elsewhere are currently in place to quantify the risks and develop plans to manage, divert, or suppress such a threat. Of course the motive for terrorism is to cause harm and other boundaries or constraints are less or not important.

I would like to offer a third component that I believe can threaten food security: food fraud or economically motivated adulteration (depending on the region you are from). Food fraud is the fraudulent addition of non-authentic substances or removal or replacement of authentic substances without the purchaser’s knowledge for economic gain of the seller. Food fraud is purely motivated by economics which is a strong boundary condition (food fraud will not happen if it is not profitable) and is distinctly different from public health threat originating from terrorism or contaminants. It can involve the addition of non-food materials in food (e.g., melamine in milk powder, sudan dyes is spices) or food materials as a cheap replacement (e.g., peanut materials in cumin, horsemeat in burgers). Activities to combat food fraud, and an assessment where supply chains might be vulnerable to food fraud is critical and needs to follow its own paradigm though different from the one for the other two factors above that can impact food safety negatively.

One key element of course in all of these discussion is how we define a food or food ingredient. In other words the specifications for purity, the specifications that define its authenticity and last but not least the specifications what defines food-grade material need to be clear and agreed upon. In my opinion this is a critical, but oft overlooked element. Trade and food security will only be successfully established if the definition of what a food or food ingredient is are transparent and understood by all. To use an allegory, language for the exchange of information is only successfully employed if the definition of the words used is understood by all. Food trade and food security as its most fundamental aspect depends also on this understanding and the mutual understanding of the definition of what exactly is food-grade and specifications that define the purity, quality, authenticity and integrity of food and food ingredients.

Food safety is a tall order to achieve and to maintain. Only through public-private partnerships will we be successful. But food safety is essential to every single person.

[John E. Lamb](https://disqus.com/by/disqus_lPJx9V0mvm/) [Markus Lipp](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1929780424)

Markus, I agree completely that avoidance of contamination in the first place should be the vision. Also agree that GAP, not just pre-farmgate but extended to packing facilities (i.e Good Handling Practices, not yet a commonly used term) and then to Good Manufacturing Practices should be the core approach used by players within agrifood supply chains, all based on HACCP principles, Agree as well that it is often hard (nearly impossible in commerce in the case of aflatoxin) to remove contaminants once present, but of course there are effective treatments for many contaminants, such as chlorine, fungicides, ozone, blanching, boiling, drying, freezing, and so on, so each hazard merits its own critical control points and mitigation measures...buttressed by appropriate sampling and testing for conformity to official SPS regulations as well as private food safety and quality standards.

[Jairo Romero](https://disqus.com/by/disqus_o5njx3MedJ/)

I’d like to address one of the questions posed by Juergen in his opening statement, related to what works in food safety capacity building. I‘ve had the opportunity to work with national food safety authorities and food processors in several countries in the region and I see that raising awareness, training and education are certainly important but institutional strengthening must go beyond them in order to achieve sustainable improvements in food safety management, especially in developing countries where absence of long term national food safety policies and a high rate of public work force turnover are endemic. As a result of this, resources invested in capacity building through international cooperation programs often lack expected impact and food safety keeps being underrated or mismanaged both by public and private stakeholders.

Some strategies have showed practical benefits: first, to strengthen managerial and operational processes by identifying internal hurdles or bottlenecks and solve them through the implementation of documented solutions such as efficient organizational architectures, procedures and tools. Second, to learn from others’ experiences, benchmarking best practices or via exchange of experiences with similar organizations from other countries or regions. Third, to address the organizational culture, public service awareness, food safety culture, transparency, accountability, ethics and other foundations of best management practices both in public and private organizations within the food supply chain. It is often useful to establish a base line through rapid institutional assessments in order to design indicators and goals to evaluate success of interventions – very frequently you are faced with institutional strengthening initiatives which are not measurable and results are not evident after capacity building activities.

[John E. Lamb](https://disqus.com/by/disqus_lPJx9V0mvm/) [Jairo Romero](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1929774277)

I concur, Jairo. Yet one important topic that must be addressed to make food safety upgrading "stick" is the matter of incentives (and disincentives). Many would argue that the consuming public in the developed world is arguably more conscious of food safety than in the developing world (while that is changing in upscale urban markets in LDCs, yet even in a transitional economy such as Malaysia there is virtually no organized advocacy for safe food). And even in the US, when pesticide residues became a topic of debate in the early Nineties, industry attempts to differentiate based on safety boomeranged when it was found that "pesticide-free" labeling actually depressed sales of the entire category. At which point food safety became mainly an intra-industry concern, largely invisible to the consumer except by its absence and whenever a food crisis occurred. By tacit agreement within the food industry, it morphed into a pre-competitive topic, with formalization first through buyer audits and then later via private standard schemes such as GlobalGAP and benchmarking schemes such as Global Food Safety Initiative. Yet even then, from the supplier's perspective, the incentive quickly changed from a presumed price premium, to a basic requirement for participating in premium markets, with compliance costs pushed backward toward processors, handlers and ultimately producers.

This is a very live topic for aflatoxins again, since there are real costs to compliance. Yet the only premium in the marketplace is not for fresh consumption by humans but rather for raw materials used in animal feed. That is the case because feed manufacturers need to purchase and employ binders to offset the negative effects of contaminated product on poultry, swine, fish, and pets, One does not yet find "aflatoxin-free" or "aflatoxin-residue-compliant" maize or groundnuts in public markets or supermarkets even in Kenya, where the problem is now well-known after hundreds of deaths in notorious incidents of aflatoxicosis.

The conundrum that this highlights is that aside from injury to brand, market acceptance and payment for recalls associated food safety incidents, the real cost of non compliance with food safety is more often economic (i,e. societal) than financial (i.e. enterprise-level). In developing contexts especially, the marketplace speaks less forcefully so the largest incentives remain with the government. One would hope that this translates into greater public investment in this field, yet the reality is that most governments make significant investments in assured compliance more often when trade access (e.g. Turkey's accession to the EU) is in play, not so often for public health reasons in their own countries. And unfortunately, the paucity of data on the burden of food and water-borne morbidity and mortality as compared with communicable disease such a malaria, TB, and HIV/AIDs, skews donor investments as well.

This community of practice has a lot of work to do...

[Frederik Vossenaar](https://disqus.com/by/frederikvossenaar/)

I agree with John that no silver bullet exists to solve this. The practices that have worked in Europe cannot easily be transferred to regions with a climate which has a higher infection pressure. Diffusion of knowledge, awareness and behaviorial change are necessary.

The agricultural subsidies in the EU are no longer product related and do not distort trade. More important to developing nations would be market access and to engage them in international trade. It sets the framework for efficient public-private partnerships in which food safety can take central stage.

[John E. Lamb](https://disqus.com/by/disqus_lPJx9V0mvm/) [Frederik Vossenaar](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety" \l "comment-1929206437)

Yes, although decisions by the food security authorities in many developing countries to follow the lead of EU as often the most strict regulatory regime can have unexpected consequences that militate against the continuous improvement everyone desires. The use of EU tolerances for aflatoxin for example, which are tighter than USA for human consumption, are almost irrelevant in practice for most African producers not seeking to access the EU market, so they just shrug their shoulders and slog on. Yet major commercial buyers do still cite them as benchmarks, especially when rejecting shipments. A related problem is the fact that when developing countries do have standards, they are usually only for product destined for human consumption and for a few susceptible crops used for animal feed, especially maize and groundnut derivatives. The absence of other lower tolerances works against the idea that alternative uses for somewhat more contaminated product would provide a secondary or tertiary outlet. Yet another issue is the lack of regs on blending. Taken together these challenges within the regulatory regime tend to drive the aflatroxin problem underground. Where testing does occur, tight standards can cause rejects to bounce back into the hands of smaller farmers and the ultrapoor. Unintentionally, high standards can actually lead to a two-tiered system that contributes to poverty and hunger rather than alleviating it. This applies not just to aflatoxins, but other contaminants such as pesticides as well as microbacteriological pathogens.

On the other hand, because the contaminated products are often consumed much more than in developed countries, the argument can be made that even EU standards are too lax. Take Guatemala, for example. Huge daily consumption of maize often contaminated with both aflatoxins and fumonisins may well explain the persistent levels of stunting, as well as liver cancer and hepatitis.

The policy and regulatory challenges are daunting indeed, in terms of appropriate levels of protection, capacity to sample/test/enforce, and capacity to comply. Once again, in my view that is why aflatoxins are a perfect global target for both risk management and system upgrading

[Jorgen Schlundt](https://disqus.com/by/jorgenschlundt/)

One important way to move forward would be to look at sensible solutions that have proven efficiency in practice - Salmonella disease incidence has been almost halved in the EU because of (different) interventions in European countries over the last 10 years. Salmonella has been eradicated in Danish egg-laying hens. Salmonella in broilers have been eradicated or very significantly reduced in all Scandinavian countries. Antimicrobial resistance from microorganisms in animals has been significantly reduced because of the ban of antimicrobial growth promotors in EU. The use of trans-fatty acids in industrial food production has been almost eliminated in California and Denmark! Leapfrogging solutions to developing countries is possible for some of these issues.

The solution relative to aflatoxin is improvement of infrastructure, including dry holding capacity for relevant staple foods. This will follow from economic development, which seems to be picking up fast now even in Africa south of Sahara. The best way we could support such economic development would be to look seriously at our agricultural subsidies in the EU (and the USA) - the development aid from all countries combined dwarfs when compared to the value of these subsidies.

[John E. Lamb](https://disqus.com/by/disqus_lPJx9V0mvm/) [Jorgen Schlundt](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1927736809)

Jorgen, quite a lot of work has occurred in recent years on aflatoxin prevention, mitigation and control. While improvement in storage infrastructure is one of the agreed upon tools, there are many other measures being tested and to some degree applied. Biocontrols (e.g. AflaSafe) designed to prevent propagation of toxigenic Aspergillus, especially through competitive exclusion, have been used successfully for maize, groundnuts, and cotton. Modern storage approaches such as hermetic (e.g. PICS bags) and ultrahermetic approaches (e.g. GrainPro) also show promise. For some commodities, especially groundnuts, appropriate sorting can also help, less so for maize. Others (myself included) argue that a sort of Extended GAP that goes beyond the farmgate, is customized for different recommendation domains, and is filtered by a lens of impacts on Aspergillus prevalence and aflatoxin generation, may be the most scalable, lowest cost approach to management across vast areas, different growing and storage conditions, different production systems, and differing resource endowments. Since Aspergillus can emerge at both the production and post-harvest stages of supply chains, the general consensus is that drying and storage are just two parts of a complex biological and physical challenge. That challenge also begins with the enabling environment (policy, regulatory, REE), and includes behavioral change among producers, consumers and industry actors. No silver bullets....

[Gerald Moy](https://disqus.com/by/geraldmoy/)

Since my retirement from WHO, I have been working closely with IUFoST and its Food Safety Committee on a number of projects. I would agree that aflatoxin is a public health priority, especially in developing countries with a high prevalence of hepatitis B. JECFA has estimated that carriage of hepatitis B increases the risk of primary liver cancer by a factor of about 30. While FAO and donor organizations have attempted to reduce aflatoxin contamination at the farm level, the enormity of the task of providing better crop drying and storage facilities for so many small holders has proven difficult. Recently at the IUFoST Congress in Montreal in August 2014, a group of young African food scientists proposed a new approach that involved the sorting of peanuts at a central facility to remove highly contaminated kernels. This approach was endorsed by an IARC working group on practical approaches for reducing aflatoxin exposure. The IARC report should be issued in the near future. Working through their IUFoST Adhering Bodies, these scientists who are located in departments of food science and technology have prepared a project proposal for establishing pilot plants at their universities as a means for introducing this technology in their countries on a broad scale. This is a sustainable opportunity for the food industry to partner with these universities since the world demand for quality (safe) peanuts is likely to grow with increased trade to Asia. The project also has a component to improve the safety of peanuts in the local markets and even in the home.

On another matter, as the WHO Secretariat responsible for the publication “Terrorist Threats to Food”, I am also concerned about the apparent complacency of governments and the food industry in regard to this potential problem. In 2010, world trade in food and food products exceeded one trillion dollars but the complexity of trade in raw, semi-processed and finished food products defies effective trace-back or trace-forward systems. The latest example that can be cited is the horsemeat scandal in Europe. Under the current conditions of global food trade, all countries are vulnerable to both intentional and inadvertent contamination of food and new thinking should be focused on this issue as a priority matter.

[John E. Lamb](https://disqus.com/by/disqus_lPJx9V0mvm/)

Political will (too often the absence of it, actually) is critical to meeting the food safety challenge, whether the optic is global, regional, national, industry, commodity, or risk category. Politicians don't gain votes by focusing preemptively on food safety, yet they can and do lose them, when a crisis hits while in office. Ministers of Commerce or Trade don't gain or stay in office by focusing on SPS issues, except when they can say that ensuring better compliance will facilitate access to new markets or when railing against use of SPS as an NTB will protect domestic production. Ministers of Agriculture gain more by focusing on farm-level productivity gains in terms of average yields per hectare, than they do by emphasizing preservation of saleable volume and value through practices that reduce pre- and post-harvest loss attributable to mechanical damage, inadequate drying, substandard storage or the bacteriological or chemical contamination as well as physical deterioration that can arise from poor practices. Ministers of Finance don't request loans from international institutions for food safety, yet they do for storage facilities and price stabilization programs that supposedly target food security. Ministers of Health can cite ample data about DALYs associated communicable and non-communicable diseased, as well as the human and economic cost of malnutrition. morbidity and mortality, yet are at a loss when asked what food and water safety issues cost their country.

If we want to put FWS on the main page for politicians, we need better data, moving stories, compelling arguments, and "what it means to you" pieces from the vantage point of trade, commerce, agriculture, food, consumer protection, gender, vulnerable groups, the ultra-poor, developing and developed countries, even environmental protection. In sum, a serious, well-funded, segmented and nuanced communications strategy based on sound science and reasonable data.

[barbara.hrrsn@gmail.com](https://disqus.com/by/barbarahrrsngmailcom/) [John E. Lamb](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1926189729)

I suppose FWS is food and water safety, which SHOULD be at the top of any government's priority list but, sadly, usually is not.   
NB: Acronyms are only useful if they are first used with the full term spelled out, otherwise they leave one's readers guessing.

[John E. Lamb](https://disqus.com/by/disqus_lPJx9V0mvm/) [barbara.hrrsn@gmail.com](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1928924967)

It was spelled out, but website changed order :)

[barbara.hrrsn@gmail.com](https://disqus.com/by/barbarahrrsngmailcom/) [John E. Lamb](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1928969954)

FWS was easy, but SPS, NTB, and DALY are eluding me!

[John E. Lamb](https://disqus.com/by/disqus_lPJx9V0mvm/) [barbara.hrrsn@gmail.com](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1928981326)

Sorry  
SPS: Sanitary and Phytosanitary (as per WTO Agreement)  
NTB: Non-tariff Trade Barrier  
DALY: Disability Adjusted Life Years  
QALY: Quality Adjusted Life Years

[Daryl Lund](https://disqus.com/by/daryllund/)

There are two areas where education is underplayed in the constant battle to increase food safety. The first is educating the consumer. Good hygiene, proper storage of food, proper food preparation procedures, and shelf life of food are principles that are grossly not understood or misunderstood. Second is educating the personnel working within the food industry in these same principles. IUFoST has a series of courses aimed at people working in the food industry who do not have a technical education and may not even have a high school education. Supervisors working in the food industry can be the mentor to participants from their own company if the supervisor has a technical background in food science and technology. Just a thought. Daryl Lund Professor Emeritus UW Madison

[barbara.hrrsn@gmail.com](https://disqus.com/by/barbarahrrsngmailcom/) [Daryl Lund](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1926021345)

Along with education of food processors must be access to proper sanitation (too often neglected even in the First World).

[Caroline Smith DeWaal](https://disqus.com/by/carolinesmithdewaal/)

Interesting to see the WHO report on Terrorist Threats to Food (2002) raised in comments below. That report was part of the motivation for the Safe Food International work with the World Health Organization and the Food and Agriculture Organization, bringing together consumer organizations to develop the Guidelines to Promote National Food Safety Systems.   
Since that time we have seen the impact that intentional contamination can have on the food supply, though it is still dwarfed by the impact of natural hazards in the food supply.   
The new law in the United States, the Food Safety Modernization Act (2011), requires food companies to consider their vulnerability to intentional contamination in designing their food safety plans.   
Chemical contamination also shows up as a more frequent hazard in certain world regions than in others, though I agree with John Lamb that aflatoxin is underreported in the public health data. See A Comparison of the Burden of Foodborne and Waterborne Disease in Three World Regions, at [http://cspinet.org/new/pdf/foo...](http://cspinet.org/new/pdf/food_protection_trends__aug._2010.pdf).

[John E. Lamb](https://disqus.com/by/disqus_lPJx9V0mvm/)

Aflatoxins are what I had in mind, not because they don't require system capability and infrastructure but because their impacts are so wide-ranging and serious that they can engage everyone in building that, just as Avian flu did. Aspergillus spp now found 30 degrees +/I Equator, and expanding with climate change. Soil-borne initially yet spread by many other means. Contamination affects 42 crops, most from farm to fork. Via feed, also affect poultry, swine, dogs, etc. Proven cause of liver cancer. Co-morbidity with Hep B. Immunosuppressant effects suspected of increasing vulnerability to the main CDs (Malaria, TB, HIV/AIDS). They affect gut health via enteropathy, flattening villi in intestine and impeding nutritional uptake. Since mothers with chronically high levels pass M1 to fetus in the womb, M1 again through breast milk, and again B1 when they use porridges based on same contaminated commodities found locally, very possible they are a major contributor to child malnutrition and morbidity under 5.   
Worse still they act synergistically with fumonisins, another mycotoxin common on maize especially.   
They affect primary plant and animal agriculture, processed food and feed. They affect huge swath of planet, including developed, transitional and developing economies. They reduce human, animal and fish productivity. Impede trade and economic growth. Differentially affect smallholders, the ultrapoor and most vulnerable. Of major concern to governments, private industry, consumers. In sum, the perfect storm around which to build consensus and engagement, centered on improving food safety capacity and infrastructure.

[John Bassett](https://disqus.com/by/disqus_xGNXCuih7G/)

Good initiative and a good starting idea John. Having just seen Prof. Peter Roeder, ex FAO talk about the eradication of Rinderpest, with obvious benefits to developing economies, the traction that such a singular focus can generate is attractive. But what hazard would be the focus? I can't think of a foodborne hazard that has the amenable characteristics of Rinderpest that made it a good target. Many developing countries don't seem to have the surveillance infrastructure in place to know the prevalence of even the more common pathogens, so surely this for one is a system development that needs to take place first (even if just to provide a benchmark for success) . Doing some prioritisation work for developing countries we have had to use international attribution data to estimate the burden of disease and even import data as a proxy for consumption. Rinderpest had clinical signs and a pen-side diagnostic test that meant sophisticated diagnostic and data collection/analysis capabilities in-country were not critical, but which food hazard could we work on where there isn't a need to build system capability and infrastructure?

[John E. Lamb](https://disqus.com/by/disqus_lPJx9V0mvm/)

Hello folks. Glad to see this dialogue starting. Permit me to raise a persistent challenge, which is how to really get a partnership between public sector, private sector and civil society started around food safety upgrading, While everyone agrees that there are multiple, unpredictable hazards that require a capable food safety system to deal with, some hazards are more urgent, persistent and impactful than others. I have long felt that focusing on systems upgrading as such fails to energize enough to cause the three sectors to rally and invest time, energy, expertise and significant resources. As occurred first with HIV/AIDS, then with Avian Flu, should not the food safety community of practice select a major hazard of widespread prevalence and high impact to bring everyone together and show how a true partnership can be formed, funded, and implemented at scale? I look forward to comments....

[Samuel Godefroy](https://disqus.com/by/samgodefroy/) [John E. Lamb](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1924448788)

Thanks for your input on this John. A global effort for Capacity Building in food safety is in fact aimed to do just that i.e., create a momentum of capacity upgrade and development in areas where a set of priorities are deemed of most importance to all. The public - private nature of a partnership like the GFSP helps ensure that the various perspectives are taken into account, but also to converge resources towards a set of common goals. Prioritization and a choice of what should be done first will be key. In a lot of instances, there are already initiatives underway. Creating and keeping a momentum will mean to align and coordinate these resources, but also help magnify their impact. It will be also key to ensure sustainability. While this seems to be theory, applying these concepts to real examples such as the one you offered in your later comment i.e., Aflatoxin management may very well be one of the areas where a proof of concept could be easily made. Aflatoxins tend to impact the supply chain as a whole, cause threats to animal health and human health alike. Their prevention, mitigation and control are key to help farmers and further processors ensure the safety of their products. Other efforts should probably be envisaged to target upgrades of the foundations of food safety systems in developing jurisdictions, in a manner that equip them to support the food production sector and align them with international requirements, set by the Codex Alimentarius Commission. I look forward to comments on this and on what would constitute a priority to unite public and private efforts towards capacity development in food safety.

[John E. Lamb](https://disqus.com/by/disqus_lPJx9V0mvm/) [Samuel Godefroy](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1925494720)

Yes, Samuel I agree in principle. However, for the priority setting process to work as it should presumes that GFSP has reached sufficient critical mass of public private and CSO membership, broadly representative of the entire field of food safety, sufficiently inclusive to avoid elite capture, and with processes for consultation and meeting accessible to all. I am sure you would agree that GFSP is not there yet.  
There is also a catch-22 to deal with, which is the fact that getting to the situation just described requires substantial financial and technical resources, as well as active endorsement by leaders of all major constituent groups. I have long felt that the best way to achieve that is to tackle a big enough topic to prove the value of global collaboration. System upgrading per se is too broad and not gut- wrenching enough to serve that purpose. On the other hand really addressing a global challenge such as aflatoxin management would do it, and in the process lead to much greater support for cross-cutting upgrades and capacity building.

[Paul B. Young](https://disqus.com/by/paulbyoung/) [John E. Lamb](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1925567534)

I wholeheartedly agree with John's assessment. Whilst it's almost inconceivable that successfully addressing aflatoxin management could be achieved without some systems upgrading, focusing first and foremost on the issue of aflatoxin control could result in profound health and wealth benefits for people in large number of low income economies in a shorter timescale than a systems-based approach addressing 'all that ails food production' in any given country.

[Samuel Godefroy](https://disqus.com/by/samgodefroy/) [John E. Lamb](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1925567534)

Indeed a catch-22 situation John. I agree that the GFSP is just at its start. It is a promising start though. I agree with you that we need to ensure engagement of the broad food safety constituency for this initiative to be meaningful. I believe that it will be equally critical to have our International Organisations (FAO and WHO amongst others) be front and centre in an endeavour such as this one. They are the best positioned to advise us as to the critical needs and as to how best the limited resources available could be marshalled towards key food safety capacity priorities at the global scale. Your idea of using a tangible example such as Aflatoxin management as a priority global challenge that can lead to cross-cutting improvements is great and is noted. If you and other contributors to this forum have other areas of focus to suggest, please feel free to do so. The GFSP is currently going through a review of its strategic approach and priorities with input from partners and stakeholders. This forum will certainly be useful to get ideas and directions fro you all to support this review.

[Darin Detwiler](https://disqus.com/by/darindetwiler/) [John E. Lamb](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1924448788)

John, I agree about looking at this from the perspective of a food safety community.

A 2013 report from the CDC confirms that E.coli and other food-borne pathogen  
outbreaks have not decreased over the last two decades. Their comprehensive, 10 year study documents 67,752 reported illnesses connected to 13,405 food-related outbreaks reported during the ten year period of 1998 – 2008. Other  
organizations, such as the World Health Organization, have used studies of  
food-borne pathogen outbreaks to address our needs in this post- 9/11 world.

Not even a year had passed since the attack on the World Trade Center when the  
World Health Assembly, the decision-making body of the World Health  
Organization (WHO) adopted a 2002 resolution expressing serious concern about  
threats against civilian populations by deliberate use of agents disseminated  
via food. Later that year, WHO published “Terrorist Threats to Food” - a food safety / food terrorism document for national government policy-makers. In the document’s preface, the World Health Organization classifies food safety as an essential element of modern, global public health security.

In their document, WHO focuses on food, food ingredients, and water – in the forms  
of food ingredients and of bottled water. The organization defines food terrorism as:

“an act or threat of deliberate contamination of food for human consumption with  
biological, chemical, and physical agents or radionuclear materials for the  
purpose of causing injury or death to civilian populations and/or disrupting  
social, economic or political stability.”

In outlining the potential effects of food terrorism, the WHO utilizes data from  
“unintended” food-borne disease outbreaks to describe the toll of potential  
disease and death. The document looks at how a single incident of “unintentional contamination” of just one kind of food can infect hundreds of thousands of people with a “serious debilitating disease,” then goes on to extrapolate the effects of some more deliberate and dangerous attack on our food supply.

The impact on trade and the economy is discussed as a “primary motive” for food  
terrorism. Recalls in American markets of foreign fruits resulted in bankruptcy of international growers and shippers after consumers around the globe shunned such products. The WHO document details specific events in recent history when individual U.S. recalls of domestic ground beef contaminated with E.coli 0157:H7 and lunch meats contaminated with Listeria numbered in the 20 millions of pounds of affected product each.

The USDA’s Food Safety Inspection Service (FSIS) lists on its webpage a great  
amount of information online for each recall issued in the U.S. The number of entries for individual recalls is staggering. Not only are the examples listed by WHO the tip of the iceberg in terms of the numbers of recalls and the quantity of food products adulterated, but a look at data from the Bureau of Labor Statistics shines more light on scope of this economic impact. When analyzing Consumer Price Index average  
price data specific for the products and the year of the recalls, one learns  
that the approximate dollar value loss of just the two beef recalls listed in the  
WHO document come in at $44 million and $61 million respectively!

Again, the WHO points to the significant financial impact on the market and related  
stakeholders. Beyond the loss of profit and the closing of businesses and the financial toll on individual countries, however, the World Health Organization uses lessons learned from outbreaks and recalls over the last 20 years to emphasize that food-borne diseases have the potential of causing the disruption of global trade and economic stability and may even impact political stability.

While the World Health Organization published “Terrorist Threats to Food” to provide member governments with guidance on preventing the deliberate contamination of food, some of this document’s main points hold significant meaning for unintentional  
food problems. The understanding of those in the industry of every facet of the food chain, from farm to table, is critical in identifying and preventing failures and violations of the system.

[John E. Lamb](https://disqus.com/by/disqus_lPJx9V0mvm/) [Darin Detwiler](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1925201429)

Implicit in your useful comments are several points that are not yet widely accepted, which stands in the way of progress. One is that food and water safety are not synonymous, yet are closely linked. A second is that FWS should be viewed as what connects agriculture, nutrition and health--picture FWS as the bulls-eye in the center of a Venn diagram of circles for a, n, and h. A third is that FWS should be seen as a integral part of not just public health security but of national security, because its absence reduces human potential, slows growth, and also fosters both instability and inequality.

[Chuck](https://disqus.com/by/disqus_lSHd06MW6S/) [John E. Lamb](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1925291578)

Regarding "WHO published “Terrorist Threats to Food” - a food safety / food terrorism document for national government policy-makers." The document was published 13 years ago but it seems to have disappeared into everyone's to-do files for action later. Has anything meaningful been done? Could it be the single most unrecognized food safety issue?

[barbara.hrrsn@gmail.com](https://disqus.com/by/barbarahrrsngmailcom/) [Chuck](http://strikingpoverty.worldbank.org/conversations/development-dialogue-global-food-safety#comment-1925350133)

Good question.

**Development Dialogue: Improving Global Food Safety: Resources**

**Books and Reports**

* [FDA International Food Safety Capacity-Building Plan](http://www.fda.gov/downloads/Food/GuidanceRegulation/UCM341440.pdf)
* [Food Protection Trends](http://www.foodprotection.org/publications/food-protection-trends/index.php)
* [IFC Food Safety Tool Kit](https://www.wbginvestmentclimate.org/toolkits/food-safety-toolkit/index.cfm)
* [WHO initiative to estimate the global burden of foodborne diseases](http://www.who.int/entity/foodsafety/foodborne_disease/Summary_Doc.pdf?ua=1)
* [World Health Day 2015 Food Safety Campaign Tool Kit](http://www.who.int/campaigns/world-health-day/2015/campaign-toolkit-en.pdf)

**Articles and Interviews**

* [10 facts on food safety](http://www.who.int/features/factfiles/food_safety/en/)
* [China Food Safety in the news](http://www.nytimes.com/2015/03/02/business/international/chinas-long-food-chain-plugs-in.html?ref=topics&_r=1)
* [China’s legislature proposes stricter food-safety standards, anti-graft laws](http://www.cctv-america.com/2015/03/09/chinas-legislature-proposes-stricter-food-safety-standards-anti-graft-laws)
* [Creating and Sustaining an Essential Partnership for Food Safety](http://blogs.worldbank.org/voices/taxonomy/term/11235)
* [Food Safety in China: Addressing Common Problems Requires Unusual Approaches](http://blogs.worldbank.org/voices/food-safety-china-addressing-common-problems-requires-unusual-approaches)
* [Food Safety in Zambia](https://blogs.worldbank.org/voices/food-safety-zambia-how-small-improvements-can-have-big-impact)
* [Foodborne Illness Surveillance, Response, and Data Systems](http://www.cdc.gov/foodborneburden/surveillance-systems.html)
* [Health Dept Needs More Teeth to Ensure Food Safety](http://www.newindianexpress.com/cities/kochi/Health-Dept-Needs-More-Teeth-to-Ensure-Food-Safety/2015/01/12/article2615566.ece)
* [Public Health England reports Listeria rise](http://www.foodqualitynews.com/Food-Outbreaks/Listeria-cases-increase-by-5)
* [Quick DNA Scans Could Ensure Food Is Safe to Eat](http://www.scientificamerican.com/article/quick-dna-scans-could-ensure-food-is-safe-to-eat/)
* [Staphylococcus aureus and Staphylococcal Food-Borne Disease: An Ongoing Challenge in Public Health](http://www.hindawi.com/journals/bmri/2014/827965/)
* [The Food Safety Challenge of the Global Food Supply Chain](http://www.foodsafetymagazine.com/magazine-archive1/december-2011january-2012/the-food-safety-challenge-of-the-global-food-supply-chain/-the-risks-of-a-globalized-supply-chain/)
* [U.S. Makes Top 10 List of Worst Food Safety Violators](http://www.foodsafetynews.com/2014/08/u-s-in-top-ten-worst-food-safety-violators/#.VQI2WyndAVM)
* [Why Everyone Should Care About Food Safety](http://www.foodsafetynews.com/2015/03/why-everyone-should-care-about-food-safety-2/#.VQDPhyndAVN)
* [Why Low-Income Countries Should Care About Food Safety](http://www.foodsafetynews.com/2012/10/should-low-income-countries-care-about-food-safety/#.VQI3mindAVM)
* [World Bank to Help Improve Food Safety in China](http://www.worldbank.org/en/news/press-release/2010/05/13/world-bank-help-improve-food-safety-china)

**Multimedia**

* [Food Safety Emergency Prevention](https://www.youtube.com/watch?v=7PrzUNdjppA&list=PLzp5NgJ2-dK4R7m0oTSJdljGfypy2DDbx&index=3)
* [GFSP: Invitation to Collaborate and Call for Action](http://www.worldbank.org/en/news/video/2014/12/17/global-food-safety-partnership-invitation-to-collaborate-and-call-for-action-gfsp)
* [IFC in Georgia: Helping Companies Improve Food Safety](https://www.youtube.com/watch?v=9-iY-m2jz-U)
* [Improving Food Safety and Quality along the chain](https://www.youtube.com/watch?v=JbbtKV13xZA&list=PLzp5NgJ2-dK4R7m0oTSJdljGfypy2DDbx&index=1)
* [Regulating Risk: Using Social Science Research to Improve Food Safety](https://www.youtube.com/watch?v=L7YVCM8HlNw)
* [WHO: Five keys to safer food](https://www.youtube.com/watch?v=ONkKy68HEIM)
* [World Health Day: How Safe is Your Food?](https://youtu.be/H6IZypBQ8nA)

**Sites and Organizations**

* [2015 Conference: Providing Animal Protein to the World](http://www.theisef.com/2015-ilc-agenda-1.html)
* [APEC: Food Safety Cooperation Forum](http://apec.org/Events-Calendar.aspx)
* [BRC Global Standards](http://www.brcglobalstandards.com)
* [BRC Global Standards: Food Safety Americas](http://brcfoodsafetyamericas.com/)
* [China International Food Safety and Quality Conference](http://www.chinafoodsafety.com)
* [Codex Alimentarius – International Food Standards Annual Conference 2015](http://www.codexalimentarius.org/)
* [Food and Agriculture Organization of the United Nations](http://www.fao.org/food/food-safety-quality/home-page/en/)
* [Global Food Safety Curricula Initiative](http://foodsafety.iufost.org)
* [Global Food Safety Partnership](http://www.worldbank.org/en/topic/agriculture/brief/global-food-safety-partnership)
* [Global Food Safety Partnership Network Hubnet](http://www.hubnet.asia/im/self.php?op=startapplication&network=GFSP)
* [GMA Science Forum: Embracing Challenges. Meeting Future Needs](http://www.gmaonline.org/forms/meeting/Microsite/scienceforum15)
* [International Association for Food Protection (IAFP)](http://www.foodprotection.org)
* [International Association for Food Protection – Annual Meeting](http://www.foodprotection.org/annualmeeting/)
* [International Conference on Food safety and Regulatory Measures](http://foodsafety-hygiene.conferenceseries.com/)
* [Join the GFSP list serve](http://goo.gl/forms/PkbexRBEqV)
* [Joint Institute for Food Safety and Applied Nutrition](https://jifsan.umd.edu/about/)
* [Public Health Conference 2015](http://www.publichealth-conference.org/)
* [Safe Quality Food Institute (SQFI)](http://www.sqfi.com/?gclid=Cj0KEQjwrPqnBRD56dGe1o_WlZsBEiQAb5ugt-BBGk7Stdkv5JHnOYVXgFyUHB2-2z_16lTsP_cnpVsaAnie8P8HAQ)
* [The 14th ASEAN Food Conference: The Bigger Picture: One ASEAN through Food Technology](http://www.afc2015philippines.com/)
* [The Five Keys to Safer Food Program](http://www.who.int/foodsafety/areas_work/food-hygiene/5keys/en/)
* [The Global Food Safety Conference: Food Safety, A Shared Responsibility](http://www.tcgffoodsafety.com/)
* [Waters Corporation](http://www.waters.com/waters/home.htm)
* [World Health Day: From farm to Plate Make Food Safe](http://www.who.int/campaigns/world-health-day/2015/event/en/)
* [World Health Organization](http://www.who.int/foodsafety/en/)
* [XIII International Conference on Food Safety, Nutrition and Public Health](https://www.waset.org/conference/2015/07/zurich/ICFSNPH)