FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

FEED THE FUTURE
BUSINESS DRIVERS FOR FOOD SAFETY
Cooperative Agreement No. 720BFS19CA00001

BD4FS Pre-HACCP Validation Audit and Badge Program

Technical Learning Note

November 2023

Food Enterprise Solutions

Disclaimer

This publication is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of the authors and do not necessarily reflect the views of USAID or the United States Government.

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Key Terms

BD4FS: Business Drivers for Food Safety (created by FES)

BRC: British Retail Consortium

CODEX: The Codex Alimentarius, or "Food Code" is a collection of standards, guidelines and codes of practice adopted by the Codex Alimentarius Commission. The Commission, also known as CAC, is the central part of the Joint FAO/WHO Food Standards Programme and was established by FAO and WHO to protect consumer health and promote fair practices in food trade. It held its first meeting in 1963.

FES: Food Enterprise Solutions

FSSA: Food Safety Situational Analysis (FSSA) a survey/mapping tool that targets the challenges that small to medium food companies encounter. FES designed the FSSA with a business lens to survey and collect intelligence about key challenges and gaps in; infrastructure, service, academia, policy/regulatory, natural resources and available financial services.

GFB: A Growing Food Business is a small- to medium-sized enterprise that seeks to expand by adopting a business model that incorporates food safety practices.

GMP: Good Manufacturing Practices

HACCP: Hazard Analysis and Critical Control Points, or HACCP, is a systematic preventive approach to food safety against biological, chemical, and physical hazards in production processes that can render the finished product unsafe and designs measures to reduce these risks to a safe level.

Key Message: A key message is content that contains important information that can provide substantive information that can decision-makers use to make changes in personal actions, policies, management decisions, etc. Key messages can be via internet, social media, phone apps, radio, television, public awareness campaigns, etc. BD4FS has created a phone app where a caller can listen to multiple key messages using an interactive voice system.

mSafeFoods: BD4FS initiated mSafeFood in Senegal during the COVID-19 pandemic when in-person encounters were limited. BD4FS designed mSafeFood to complement and reinforce other program components. The BD4FS food safety and communications specialists generated content and the program contracted global communications technology company to help build the mobile learning platform.

PRPs (Prerequisite Programs): Prerequisite programs (PRPs) are the basic conditions and activities required to sustain food product hygiene and a clean, hygienic environment throughout the food chain. The prerequisites and procedures are necessary to ensure the safety of food operations. In developing PRPs, growing food businesses (GFBs) should consider relevant information, including regulatory and legal requirements, official instructions, national and international standards, guidelines, and the codes of practice in the Codex Alimentarius'. Prerequisites are applicable for the delivery, production, handling, packaging, and transportation of food products. PRPs are at the center of the food safety management system.[1] (See Annex A for a list of the specific PRPs that BD4FS promotes through in-person and online training)

QMC: Quality Management Control

SME: Small, medium enterprise (business)

SSA: Sub-Saharan Africa

TOC: Theory of Change

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[1] Food Enterprise Solutions, 2022. Food Safety Pre-HACCP Training Course for Growing Food Businesses, P.4

USAID: United States Agency for International Development

WHO: World Health Organization

ZOI: Zone of Influence

Introduction

Food safety is a term that includes many aspects of supplying consumers with safer foods. It starts with safe inputs, fertile uncontaminated soil and feed, clean water, safe on-farm practices and 100s of other pre-requisites along the supply/value chain until it reaches consumers. Unsafe food impacts countries' economies and populations in several ways; public health, human productivity, postharvest losses, use of the natural resource base, medicine, nutrition, private sector growth, trade, and many others. It is an overwhelming and daunting issue to address and is now a major global issue as more food is commercialized and traded across the globe than ever before.

In developing countries, barriers to effective food safety systems include high costs, a lack of surveillance programs, and limited opportunities for employee education/training. There are many organizations in the nonprofit, public and private sectors addressing food safety. Most efforts target large companies who want to enter lucrative export markets or micro-level informal market vendors. Few affordable/quality services are available for small to medium food businesses (SMEs). These businesses provide a substantial amount of food for local populations. Food Enterprise Solutions' (FES) mission is to energize the global food system to better balance global needs and profit. FES leverages the powers of business, entrepreneurship, and innovation as key drivers in the global fight against hunger and malnutrition. FES partners with SMEs to provide safe, nutritious, and affordable foods that are commercially viable and environmentally sustainable.

WHO has estimated that 600 million – almost 1 in 10 people in the world – fall ill after eating contaminated food and 420, 000 die every year, resulting in the loss of 33 million healthy life years (DALYs). Furthermore, the dietary transition and associated market transformation have increased food safety risks.[2] At the local level, small to medium enterprises supply a significant amount of food/nutrition to local populations, and many are suppliers to export supply chains as well. Their role is significant to the overall contribution to consumers' health and protection and advancement of food regulations and standards. Not all food companies, particularly SMEs, are able to follow demands highlighted by international and local standards and regulatory bodies. Many developing countries lack the resources to participate in international trade because of the difficulties in complying with the requirements of food safety standards and many times, this extends to their local food supply. The broad underlying reasons for this are: outdated and/or unclear laws, lack of knowledge and training, limited coordination between the private and public sectors, food loss and waste, under-funding of national research institutes, lack of awareness of standards and quality, and inadequate infrastructure.

Feed the Future's Business Drivers for Food Safety (BD4FS), funded by USAID and implemented by FES, is a multi-country project that works alongside SMEs, or as they are referred to in the BD4FS project, growing food businesses (GFBs) to co-design and implement incentive-based strategies to accelerate the adoption of food safety practices in local food systems. The BD4FS theory of change (TOC) proposes that by co-creating with GFBs to address food safety challenges and by delivering targeted training and technical assistance, and promoting business-to-business facilitation programs, GFBs will be better prepared to adopt improved food safety practices that reduce the risk of food safety hazards. Through its applied research and implementation of BD4FS, FES has developed a preparatory stage for these companies to – eventually-be better prepared to take part in the broader, more difficult and expensive certifications to comply with both local and even international trade laws. This can enable GFBs in developing markets to reduce key risks in growing a sustainable food business to meet the ever-increasing demands, needs, expectations, and trust of government food safety regulators and consumers. By focusing on the role of local food businesses in improving food safety, the FES team has added to USAID's knowledge base about strategies and methodologies for enterprise-level assistance in food system strengthening, developed best practices and lessons learned, and generated success stories from working with entrepreneurs to improve food safety. Stakeholder engagement also raises national awareness around the issue of food safety and lays the foundation for the promotion of a food safety culture among all actors in a national food system.

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[2] https://www.who.int/news-room/fact-sheets/detail/food-safety

In December 2019, BD4FS designed and implemented a Food Safety Situational Analysis (FSSA) which was first implemented in Senegal. Utilizing the International Livestock Research Institute (ILRI) format for collecting and analyzing information, FES designed a survey/mapping tool that targets the challenges that most SMEs face in emerging economies in upgrading their food safety standards and practices. In general, the FSSA uses a business lens to look at a country's infrastructure, policies, political will, private sector approaches, and services (both agronomic and financial) targeting SMEs. The FSSA also analyzes the dynamics of specific value chain systems, especially the regulatory structure and enabling environment that affects food safety. Additionally, the FSSA touches on the main hazards, risks, and burden of public health outcomes from food-borne diseases deriving from the targeted value chains. In collaboration with the local USAID Missions, the FSSA was designed to target specific production-to-consumption corridors or zones of influence (ZOI).

Through this process, BD4FS identifies key actors/stakeholders/institutions/donors, etc. involved in food safety of targeted ZOIs. GFBs are the key stakeholders/clients who provide the business and social capacity to improve food safety. Key stakeholder surveys, meetings, and focus groups are held with public sector officials, policy and regulatory offices and agencies at different levels of government (local, regional, national), universities and food science programs, engineering/agriculture groups, food safety testing facilities/labs, civil society actors, private sector food companies & service providers, as well as financial institutions that provide financial and non-financial services, capital investors, consumer advocacy groups, etc.

This process allows BD4FS to identify the principal constraints; technical knowledge base, cultural, financial access, infrastructure, policy, business and consumer awareness, and regulations that impact GFBs. Data and information collected are analyzed and used to co-design strategies and activities that help businesses accelerate the adoption and use of technologies and practices that improve food safety and reduce food loss to retain the nutritional value of foods in the marketplace.

Brief History of Food Safety & HACCP

Broadly, HACCP is a preventive-based system for improving/assuring food product safety. Biological, physical, and chemical hazards can be prevented, reduced, or eliminated through this system. The HACCP concept was first developed in the 1960s by the U.S. National Aeronautics and Space Administration (NASA), working with Pillsbury, to ensure that crumb and pathogen-free food had extensive shelf-life properties for space travel. This was the first pathogen monitoring and measurement requirement imposed on the food industry (Lachance, 1997).

Between the 1970s and early 1990s, there were landmark food-borne outbreaks in both Europe and the United States which spawned a series of national as well as international meetings, conferences, regulatory laws, etc. In 1983, the World Health Organization (WHO) released a report on HACCP and its use to slow foodborne illness. In 1993, CODEX issued the first international HACCP guidelines. Since then, the international food trade has expanded to such an extent that food importers/exporters need a certification to gain a market share, like HACCP, as well as other audit/certification programs, like International Standards of Operation (ISO) which has various subcategories like ISO 22,000, ISO 9001, and the British Retail Consortium (BRC), etc.

The United States has fully embraced HACCP both as a part of a successful business plan as well as a regulatory requirement in meat and poultry production since the implementation of the Pathogen Reduction, HACCP Systems Final Rule in 1996. The E.U. has proactively adopted food laws for its 28 member countries that apply to other countries that trade with member nations to the E.U. The European Food Safety Authority (EFSA) was established by the General Food Law in 2002 and is responsible for risk assessment (European Food Safety Authority, 2018).

Development and adoption of food safety systems are very inconsistent among developing countries. Emerging economies are still in an evolutionary stage and there are several barriers to successfully implementing HACCP or other food safety systems. Some countries have required partial adoption of HACCP in their processing plants, whereas others have struggled. Red meat production in China has

grown at a rate of 5.8% annually. However, less than 10% of their production facilities are HACCP certified. As of now, in Latin America and the Caribbean (LAC), Africa and parts of Asia, there is limited formal reporting of outbreaks of foodborne illnesses and transparent tracking of contaminated food. Developing countries still struggle with uniform regulatory implementation of food safety standards. To continue to decrease foodborne illness worldwide, the focus needs to be expanded on increasing implementation of these proven systems in developing countries, particularly at the SME level.

BD4FS Methodology

The BD4FS FSSA discovered significant food safety challenges that GFBs confront. Some of the most critical are the need for more accessible and affordable training as well as auditing and certification services on the functional implementation aspects of food safety within an emerging economy context. This need led to the design of the BD4FS pre-HACCP Validation Badge. Based on the analysis from the FSSA, FES' knowledge of SMEs, key FES staff and food safety experts, the BD4FS team reviewed multiple food safety standards and certifications and selected certain aspects from these that GFBs could adopt and improve upon to provide safer foods for consumers without major financial investments. Knowledge of the SME context was applied as a lens to create a model that BD4S could test. The Food Safety team reviewed multiple food safety pre-requisites, standards of operations, local regulations, hazard analysis critical control points or HACCP, BRC (British Retail Consortium), good manufacturing practices (GMPs), food safety checklist from the International Finance Corporation's Food Safety Handbook, and many others, all which are based on the United Nations Codex Alimentarius requirements and best industry practices and standards. Additionally, the Senegalese policy and regulations for food safety were thoroughly reviewed and applied to the method to ensure local compliance. This methodology is used in other BD4FS countries as well.

BD4FS Audit Objectives: Evaluate the implementation of the BD4FS Pre-HACCP Validation training program and uptake by GFBs on food safety practices and applicable technologies.

BD4FS Creating Incentives to Improve Food Safety in Senegal

GFB Identification & Selection
FES uses a systematic and efficient approach in identifying growing food businesses for the BD4FS project. FES developed a series of workshops, focus groups, and surveys where companies learn about BD4FS, and the services provided. From there, companies self-determined if they want to join. Those that agreed sign MOUs with BD4FS and then participate in the BD4FS pre-HACCP Validation Badge program. Potential GFB participants are selected from:

- Contacts in BD4FS studies (e.g., FSSA),
- Networks of the BD4FS team: trade organizations, etc.,
- Research and recommendations from institutional organizations and local partners,
- Public advertisement: releasing a Request for Expressions of Interest (EOIs), reviewing EOIs and GFB qualifications against criteria, and conducting GFB structured interviews.

From there, the selection process is based on several factors but the most important being the "will" of the owner/operator to embrace food safety improvements within their business. To participate in the BD4FS pre-HACCP Validation Badge program, potential GFBs must meet the following criteria as collected in the FSSA and workshops:

- GFB must have growth potential,
- An autonomous company (no government ownership),
- Have a brand name, or building a brand name or have respected products in the market,
- Have minimum qualifications; a physical space, basic business systems (bank account, business plan, etc.) and a clientele,
- An owner/operator dedicated to improving food safety for business acumen and consumer safety,

- Have linkages with supply/value chain actors (at various levels of production, processing, distribution, and marketing),
- Working in perishable food value chains (fresh fruit & vegetables (FFVs), meat, poultry, dairy, and fish) as perishable foods face higher food safety risks, postharvest losses, and are nutrient-dense. BD4FS focuses on value chains that are chosen in partnership with local USAID Mission priorities,
- Willing and capable of investing time in trainings & audits,
- Size of company: cannot be a multinational, or a "large" company as defined by the World Bank and local financial definitions,
- Must have a domestic focus, but can include products for export,
- Staff profiles can include operator/manager, any food safety experts on staff, laboratory staff, laborers, etc.

It is important to note that the audit and gaining a BD4FS validation badge is not a certification, nor does it ensure that all products are risk-free. Rather, the audit validates that the business is implementing the correct processes to provide safer food and decrease the risk of foodborne illnesses. BD4FS staff communicates this with the GFBs prior to signing an MOU.
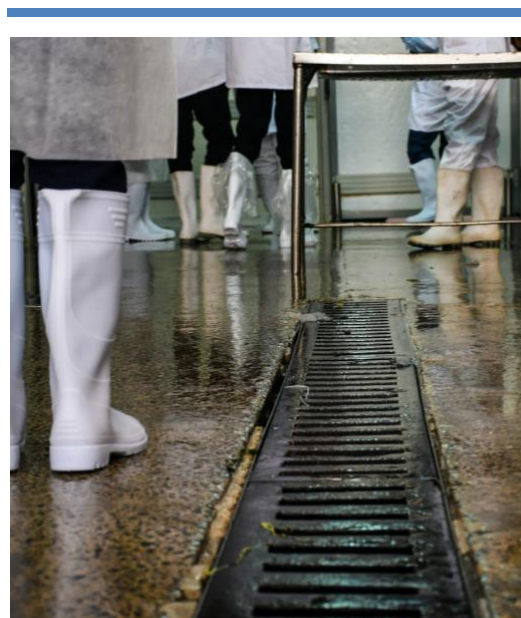
Technical Assistance Prior to Audit

The BD4FS Pre-HACCP trainings are scheduled with input by the GFBs. Training courses are a mixture of virtual, and in-person workshops and a few are one-on-one. After completing the training, the GFBs begin audit preparation. Owners and senior management must collect and analyze evidence to verify compliance and identify any existing gaps. This requires planning, preparation, communication, and follow-up to achieve the best results. After forming a partnership with a GFB interested in earning the Validation Badge, BD4FS food safety experts worked with GFBs to co-create an action plan to increase compliance.

Audit process

The BD4FS team works with our partner Brighthouse, to select a professional auditor with an extensive background working with large certification companies but who also had knowledge and experience working with GFBs in a developing economy context. The team worked with the auditor to draft the BD4FS Pre-HACCP conformity document based on standard certification audits and a pre-audit checklist for the GFBs. This was shared with the GFBs two weeks ahead of the audit to give them time to prepare. The audit calendar/schedule and allotted time for each GFB were determined and scheduled.

The BD4FS audit team carried out twenty-one audits to validate the GFBs' implementation of the BD4FS Pre-HACCP training standards as laid out in the conformity document. Each audit took between 1-4

Floor grill in processing area. Photo credit: Brighthouse Training and Consultancy

"We are satisfied because when we do in-house training, the staff tends to trivialize the training, but when it is external, the trainer is relevant and exchanges with them; we are very happy about that. Thanks to USAID for this program."

GFB owner on BD4FS technical assistance leading up to the audit

hours depending on the size of the GFB. While the audit process was difficult for some, all twenty-one companies expressed their appreciation of the auditor's professionalism and that the BD4FS training and audit process was very professional and did not make them feel like the recipient of a giveaway program.

Figure 1 Profile of the 21 Companies

Company Industry	Audit Date	Scale*
1. Fish processing	March 07	M
2. Fruit processing	March 07	MICRO
3. Fruit and veg processing	March 08	MICRO
4. Fruit and veg. processing	March 09	M
5. Fruit, veg, and cereals processing	March 09	S
6. Fruit processing	March 09	M
7. Dairy processing	March 10	Ambassador Firm
8. Fruit and veg processing	March 12	MICRO
9. Fruit processing	March 12	S
10. Fish processing	March 13	Ambassador Firm
11. Fish processing	March 13	S
12. Fruit, nuts, grains, spices processing	March 13	S
13. Fruit and veg processing	March 13	MICRO
14. Fruit and veg processing	March 14	S
15. Meat processing	March 14	MICRO
16. Fruit and veg processing	March 15	S
17. Tree products	March 15	MICRO
18. Fruit and cereals	March 15	M
19. Cereals processing	March 15	S
20. Fish processing	March 15	M
21. Fish processing	March 16	M

*BD4FS Senegal uses the African Development Bank definition of Small and Medium Enterprises as having a maximum of 50 employees

Post Audit – Validation

BD4FS gave each GFB a confidential audit report that included a grading system for each prerequisite, Standard Operating Procedures (SOPs), etc., along with pictures that showed any conformity issues the company may have had. FES partner, Brighthouse, supplied a professional photographer to document conformity issues accurately and clearly. Several conformity issues were cross-cutting:

1. Pest control; ground and aerial pests (avian & insects)
2. Product testing
3. Equipment calibration
4. Vendor (raw material supplier) management
5. Expiration dates
6. Food-grade handwashing soap
7. Glass in production areas

8. Allergen control and labeling
9. Access to sufficient clean water
10. Building/processing area conformity

The macro infrastructure issues like public water works and farm-to-market roads are, of course, out of the hands of the GFBs. Those are infrastructure issues that governments must address. In the case of water, some of the larger firms did have water filtration systems. Because of the cost of filtration systems and lack of clean water, some used seawater to clean fish, as fresh water was not always available and there are few, and very expensive, water testing companies in Senegal. Also, two companies reported that earlier efforts to test water found the water was not compliant with nationally acceptable levels of microbes, metals, etc. After accessing their tanks and pipe hygiene to check their compliance, the GFBs were reluctant to share the report results with the government as they have been penalized in the past for issues beyond their control. This leads to a lack of transparency; poor trust between the private sector and the food safety regulatory bodies and can negatively affect consumers. There is no question that public investment in water infrastructure would improve GFB's capacity to provide safer food.
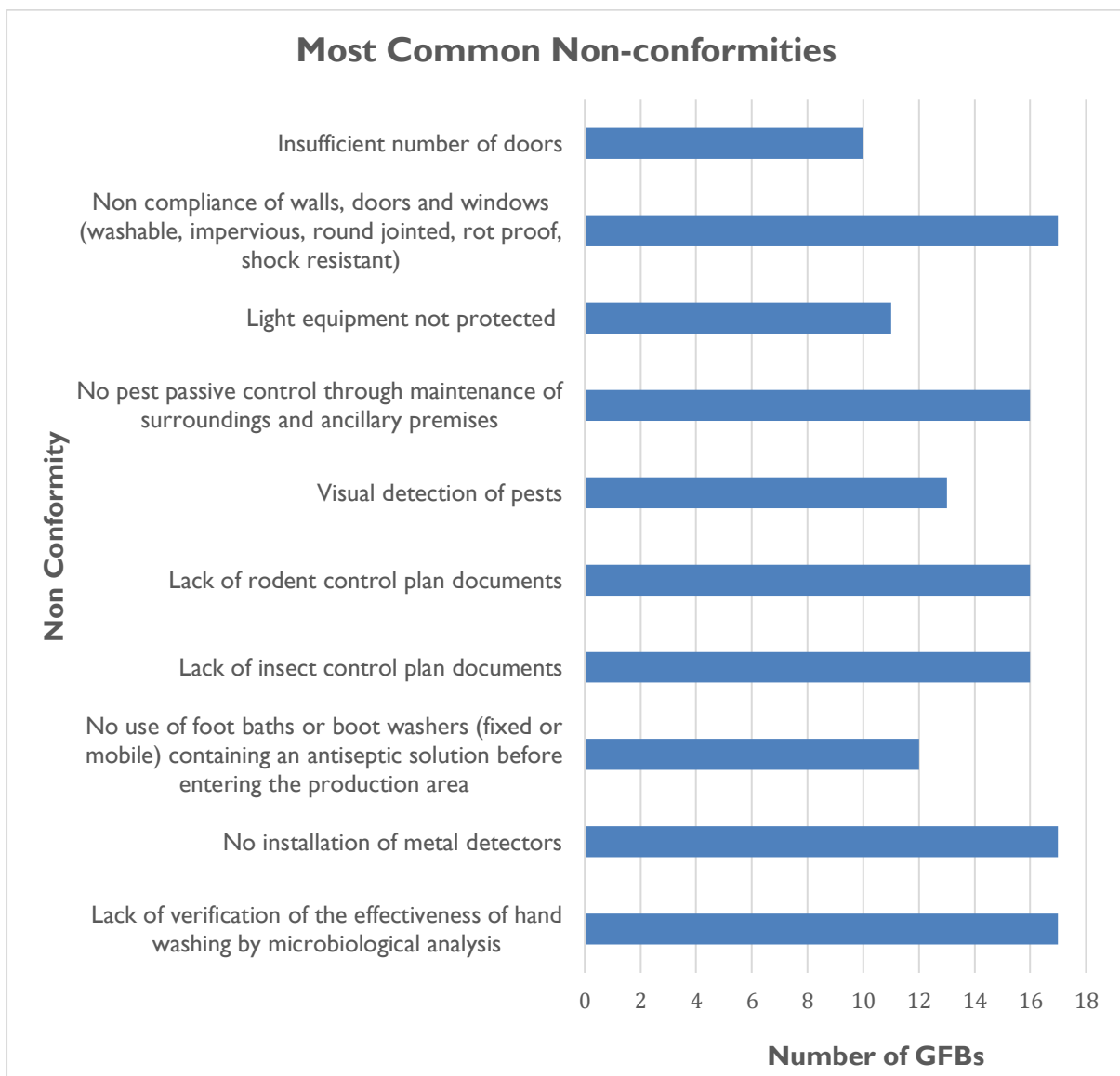

Figure 2: Most Common Non-conformities

The auditor determined that eight GFBs passed the audit and earned the BD4FS Pre-HACCP Validation Badge. This is a commendable pass rate of 38%, with eight out of the 21 participating GFBs successfully meeting the required standards. Those that did not pass were given 30 days to rectify both major and minor non-conformity issues. The Senegal Food Safety expert reviewed their updated conformities and shared this with the auditor to decide pass/fail. An additional 12 companies corrected their nonconformities and received a pass rating. This achievement is particularly noteworthy given the small size of the participating companies and the fact that most are new to this type of intensive training, as well as the developing stage of food safety regulations in Senegal and the SSA region. Comparatively, the pass rate (total of 90%) in Senegal stands favorably against global standards. As an example, in 2015, China's major food producers attained a pass rate of 29% in BRC HACCP audits. This indicates that the efforts and dedication demonstrated by the Senegalese companies in implementing food safety measures have yielded results that measure up to international benchmarks.

BD4FS Pre-HACCP Validation Badge. Photo Credit: Food Enterprise Solutions

The GFBs documented the following impacts, both immediate and forthcoming, of earning the BD4FS Pre-HACCP Validation Badge.

Benefits
- Potential to increase market share for GFBs that pass the audit. BD4FS will do a follow-up impact survey 6 months after the audit to compare baseline revenues and market share gained.
- The BD4FS Pre-HACCP audits can help prepare them for full HAACP, ISO and/or similar international-level audits.
- To increase market confidence for consumers, the badge helps consumers identify businesses that have passed a BD4FS audit. This can allow GFBs to measure increased consumer preference.
- The badge confirms the training uptake by GFBs, and they can be recognized as local leaders, increasing visibility for their commitment to food safety.
- The term "Pre-HACCP" is very rewarding for GFBs as it refers to the achievement of a certain level of quality compared to their competitors.
- Using Pre-HACCP in the name reduces liability risk to BD4FS as it makes it clear that the validation was not for the entire value/supply chain.
- Receiving a Badge demonstrates a high level of commitment to a quality management system which can translate into, not only increased income, but can also attract investors.

Risks
- Consumers are not always aware of HACCP or Pre-HACCP, so this term may not encourage consumer preference.
- Pre-HACCP might not be seen as important as a full fledged certification.
- Some consumers may interpret this as an incomplete process that should include two steps which (pre-HACCP and HACCP). They may feel the company is in a process where the pre-HACCP is only the first step, the second step being the implementation of HACCP, giving the impression of an unfinished process.
- However, GFBs noted that they can mitigate the lack of consumer understanding of the specifics of the badge through good branding and marketing. Also, BD4FS has an mSafeFood platform[3] that provides business and consumers with positive messaging on food safety practices.

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[3] mSafeFood: A mobile learning platform

Analysis

As stated, the aim of the BD4FS Pre-HACCP Badge program is to train GFBs in basic food safety PRPs, SOPs, use of technologies and verify the level of implementation via a professional audit. BD4FS awarded successful GFBs a badge that they can display on their storefront and in branding/promotional material. Because a typical certification was found to be out of the financial reach of most GFBs. The BD4FS Pre-HACCP Validation process provides a preparatory phase to better prepare, understand and correct major food safety non-conformities. The badge serves as a sign of accomplishment for the GFB and can inform consumers that the GFB has been verified to produce safer products compared with competitors. Again, it's important to note that the BD4FS validation badge is NOT a certification, nor does it ensure that all products are risk-free. Rather, the badge signifies that the business is implementing the correct processes to provide safer food and decrease the risk of foodborne illnesses. The BD4FS Pre-HACCP Validation program addresses Senegal's need for validation and training but does not usurp the authorities in the country.

The Senegal Ministry of Health and Social Action chairs the National Codex Committee. It is composed of representatives from the Ministries of Agriculture, Animal Husbandry, Environment, Fisheries, and Trade, Association Sénégalaise de Normalisation (ASN) or Senegalese Standards Association, and several research institutions, such as the Food Technology Institute (ITA), and university scientists are involved in food safety applications, private sector, professional, and consumer organizations. Prior to the audits, the BD4FS Food Safety team had several meetings with the representatives from CODEX and ASN. They stated that they are supportive of BD4FS' efforts in preparing GFBs for certifications. ASN hires private third-party service providers, like Bureau Veritas and others, to train and do certifications. The Codex Committee and ASN stated that the GFBs should pay for services to ASN directly, not the third party. In many countries, this is a common practice for Ministries with limited resources to hire third parties to do audits, training, and certifications. GFBs should pay fees for service for audits/certifications to trained and certified private sector companies with no political agendas. The government's role is to set policies, food safety standards, regulations, and when necessary, inspect and recall unsafe foods to protect consumers. There can be a conflict of interest if governments both certify and enforce food safety laws. Governments should work in concert with the private sector to build a food safety culture. The BD4FS team is having more discussions with ASN & CODEX to present findings and discuss the potential of creating a local Senegal SME GMP Certification like FES' partner Brighthouse did in Egypt. The BD4FS team is also having conversations to build this product with a private-sector Senegalese company to ensure sustainability post-project. This will also be part of the BD4FS programs in Nepal and Ethiopia.

Financing

As discovered in the FSSA, financing for investing in equipment and other necessities for GFBs is expensive. BD4FS created a capital mobilization program for qualifying Senegalese GFBs. Working with a capital investment partner, BD4FS started on February 1, 2022, with the objective to connect international investors to Senegalese food SMEs that are working to improve their food safety standards. This was one of the decisive factors for many of the investment firms as part of the "investment ready" due diligence in reviewing GFB business plans and looking for product success and increasing revenue. Understanding and accepting the need to invest in food safety for a food company owner/manager can be a confidence signal and security for investors. The ability to provide basic quality management controls (that includes food safety) can provide GFBs with extensive leverage to expand or enter new markets, and therefore attract financing.

> SENEGAL ADHERES TO THE CODEX ALIMENTARIUS' STANDARDS AND HAS A NATIONAL CODEX COMMITTEE RESPONSIBLE FOR REPRESENTING SENEGAL AT CODEX MEETINGS AND NEGOTIATIONS, ADVISING, AND SENSITIZING THE GOVERNMENT AND PRIVATE SECTOR INTEREST GROUPS TO CODEX FOOD SAFETY STANDARDS AND THEIR APPLICATIONS.

Company Feedback

Assistance prior to audit

Participating GFBs told BD4FS they were interested in the badge program to access the export market or expand their current export reach. The larger companies intend to use the badge as a preparation to a full HACCP certification. Based on the food safety training BD4FS provided, GFBs reported that they were better positioned to improve product quality. The responses indicated that GFBs expected the badge to provide them with a competitive edge in both domestic and international markets, leading to increased income. BD4FS has counseled the companies that they cannot use the BD4FS Validation Badge as a replacement for certifications like HACCP, BRC, GMP, etc. However, if they are a raw material supplier to an exporter, this can signal to the exporter that these smaller suppliers and doing some due diligence and are serious about providing a quality product.

In response to BD4FS training and technical assistance, many businesses participating in the audit have already made investments to improve their food safety practices. The improvements included new testing laboratory equipment, standardized uniforms, proper handwashing areas, proper equipment calibration, etc. Some investments were less expensive but still highly effective; these included reorganizing a facility's workflow to prevent cross-contamination, following a strict recipe to ensure batch uniformity, and controlling temperatures during cooking. Many are also interested in getting annual validation (certifications) and are willing to pay for an affordable annual auditing.

Juice production machines. Photo credit: Brighthouse Training and Consultancy

"My employees credit the BD4FS training for giving them a practical understanding of food safety, proper equipment usage and the understanding that food safety is not only for the benefit of the consumer, but also for the benefit of the company itself."

GFB owner on how her team benefited from the BD4FS training and audit

Improving the BD4FS Pre-HACCP Audit Process

After the audit, the audit team reviewed the audit process and experience with GFBs. In post-audit interviews, most businesses emphasized how helpful BD4FS training was for improving compliance with the PRPs. One owner mentioned that she frequently calls BD4FS food safety experts for advice outside training sessions. Some businesses requested further training to address specific areas, such as implementing a FEFO and FIFO system[4] and creating a traceability system for raw materials. Many GFBs have plans to expand their premises and are including food safety infrastructure recommended by BD4FS.

In the preliminary trainings, some GFBs did not benefit fully from the technical assistance because they were not as prepared as they should have been. Daily workloads and surges for small companies are always an issue. As such, they had to learn to balance the needs of daily production and the longer-term process of implementing a QMC. BD4FS is working on a digital platform where GFBs can access a QMC on a daily basis more easily through their smartphone. This could help mitigate this issue and provide fuller accessibility by providing GFBs with additional in-person training, additional food safety education materials (handouts and posters with visual guides), and/or training modules on 3G mobile technology. Since the audit, BD4FS Senegal has started implementing virtual trainings for GFBs but will continue the post-audit technical assistance with businesses. The amount of time it took to properly translate the audit

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[4] "First Expiration First Out" FEFO and "First in First Out" FIFO are inventory management terms and methods.

findings was another issue. Future audits will be done with local language capabilities. Since the audit process was new to the GFBs, the auditor took time to carefully document all nonconformities and commentary. Moving forward, this stage will be shortened to two weeks to inform business results as soon as possible, as is common industry practice.

Testing lab at a GFB. Photo credit: Brighthouse Training and Consultancy

"The badge will greatly comfort customers. I am optimistic to gain new markets. One more USAID badge on top of what we've already done will add a new trust tool for clients for better access to the US market"

GFB owner on how the BD4FS Badge will impact her business.

Overall, the BD4FS Pre-HACCP Validation Badge training program was well received by the GFBs. Scheduling training sessions and follow-up takes commitment from both the BD4FS Senegal staff and the GFBs. Rolling out the training schedule was sometimes challenging due to the nature of small businesses; small staff, work surges, power outages, blocked farm-to-market roads to receive supplies, etc. GFBs were not always available when they registered for training and schedule shifting and delays were common. Recruiting the food safety auditor also took some time. BD4FS is committed to producing a product and service as close as possible to a real private sector setting, so finding an available accredited auditor was paramount. In the future, an auditor with local language ability will be a priority. To date, an affordable HACCP that targets low-resource SMEs is not available in most African countries. FES is also committed to finding local accredited certification companies in collaboration with local regulatory bodies that are interested in working with FES to further design and adapt the BD4FS Pre-HACCP Validation Badge program.

On a macro level, public-private dialogue building is lacking and necessary. Many times, the relationship between the public and private sector is adversarial with the regulatory agencies giving punitive actions against struggling SMEs for non-compliance. This is a relationship-building exercise that must happen so that the end client - consumers - can have some semblance of trust that the private and public sectors are working in concert to provide them with safer food.

Educating the broader audience on the design and goals of the BD4FS Pre-HACCP Validation Badge took time. The businesses themselves intuitively understood the need, as many of them had either worked at companies that underwent a HACCP, or they had self-educated. Participating and implementing the training modules was more challenging for them due to the many factors we have described in this paper.

The BD4FS Pre-HACCP Badge program illustrates the fact that SMEs working in food systems value having some form of standard or validation that recognizes their investment into their quality management systems. It also illustrates the lack of a "right sized" or affordable certification program for these target businesses. GFBs also recognize they will benefit financially in the marketplace by having this validation. In this way, GFBs that invest in food safety practices and technologies are becoming the drivers for delivering safer nutritious foods to local consumers.

APPENDIX A
BD4FS Pre-HACCP Validation Badge PRPs

PRP is the term used for food safety prerequisites. Below is the list of PRPs that are provided in the BD4FS training (each is supply/value chain specific):

- Module 1: Cleaning and Disinfection Procedures
- Module 2: Preventing Cross-Contamination
- Module 3: Personal Hygiene and Employee Facilities
- Module 4: Equipment Cleaning and Maintenance
- Module 5: Waste Disposal
- Module 6: Utilities: Clean Water, Air, and Energy
- Module 7: Premises and Workspaces
- Module 8: Design and Construction of Establishments
- Module 9: Supplier Management
- Module 10: Pest Control
- Module 11: Reprocessing
- Module 12: Withdrawal and Recall of Products
- Module 13: Warehousing and Storage
- Module 14: Product Information
- Module 15: Food Defense, Vulnerability and Threats
- Module 16: Cold Chain Technology, Heat Treatment Technology, Food Formulation
- Module 17: Allergens Control
- Module 18: Control of Foreign Bodies
- Module 19: Document Management

Presentation of the GFB

Name of company:
Business sector:
Owner's name:
Manager's name:
Full Address:
Telephone: - email address:
Number of employees: female: male:

Audit Details

Date of the audit:
Scope of audit:
Auditor's name:
Start time: End time:

Audit objectives

1. Evaluate the implementation of the BD4FS pre-HACCP prerequisites program
2. Identify major non-conformities and minor non-conformities
3. Identify corrective actions

People met during the audit:

Full name	Function

Characterization of findings:

- ▪ <u>Minor Non-conformity:</u> Where a clause has not been fully met but based on objective evidence, the safety of the product is not in doubt.
- ▪ <u>Major Non-conformity:</u> When there is a substantial failure to meet the requirements of any clause of the training standards or a situation is identified which would; based on available objective evidence; raise significant doubt on the conformity of the product being supplied (in orange on the grid).

The criteria applied are derived from:
- ▪ *Applicable Senegalese hygiene regulations,*
- ▪ *Codex Alimentarius CAC/RCP 1-1969, Rev 4-2003*

Food Safety Badge Grading Criteria

This grading criterion is used in conjunction with the BD4FS Food Safety Audit Checklist, to validate that a GFB, upon receiving HACCP PRP training by FES, has understood, and implemented safety standards to a level that warrants awarding a BD4FS Pre-HACCP Validation badge. The grade is determined by the number and severity of non-conformities identified at the time of the audit.

Grading system

STANDARD	NON-CONFORMITIES	
	MAJOR	**MINOR**
Pass – Gold Level	0	≤16
Pass – Silver Level	2	≤ 16
No Pass Improvements needed	^ 2	^ 16

Procedures for handling non-conformities and corrective actions

Following the identification of any non-conformities during the audit, the GFB must take corrective action to remedy the immediate issue (correction). Then, the GFB must undertake an analysis of the underlying cause of the non-conformity (root cause) and develop a preventative action plan to address the root cause and prevent a recurrence.

In the case of GFBs not meeting the passing criteria, they shall implement corrective action and close out the non-conformities within a minimum of 28 calendar days. Confirmation of non-conformity closeout can be presented to FES in the form of evidence (photos, video, records, updated procedures or invoices of work undertaken) or by a follow-up site visit by FES staff.

BD4FS PREHACCP AUDIT GRID

I. Premises and workspaces

	Items to check	Findings and objective evidence	Compliance level	
			C	**NC**
1.	**1.1. Conformity of the premises: general organization** *Conformity of the establishment's immediate surroundings* *Areas subject to flooding or pest infestation* *The presence of solid or liquid waste that is difficult to dispose of*			
2.	**1.2. Doors in sufficient number:** *Raw material door* *Worker door* *Finished products door* *Waste door*			
3.	**1.3. Compliance with the onward flow principle** *Products move forward with no turning back* *From 'less developed' to 'more developed' and from less safe to safer zone*			
4.	**1.4. No crisscross of the production lines**			
5.	**1.5. Separation of cold zone and hot zone**			

C= compliant; NC= Not compliant ; NA= Not Applicable

I. Premises and workspaces

	Items to check	Findings and objective evidence	Compliance level	
			C	**NC**
6.	**1.6. Separation of clean sector and unclean sector** *Immediate and direct disposal of the waste to its storage area (bin room).* *Immediate transfer after use of materials to the dishwasher*			
7.	**1.7. Water supply potability** *-In sufficient quantity* *-Of quality satisfied* *-Potable and non-potable water are clearly separated and identified*			
8.	**1.8. Sewage disposal system**			
9.	**1.9. Floors:** *-Floor covering: smooth, light-colored, washable, resistant* *-waterproof* *-Anti-slip* *-Rot proof* *-Slightly inclined to facilitate the removal of wash water to a drainage system with grids and traps* *-Floor grids and U-bends to collect wastewater*			

I. Premises and workspaces

	Items to check	Findings and objective evidence	Compliance level	
			C	**NC**
10.	**1.10. Walls**			

	-Wall coverings: smooth, light-colored, washable, impervious -Floors and walls jointed by round gorge assemblages -Rot proof -Shock-resistant -Compliance of doors and windows		
11.	**1.11. Ceilings:** -Washables -smooth		
12.	**1.12. Ventilation devices** -Ventilation devices ensure steam and smoke elimination		
13.	**1.13. Lighting:** -Bright Neutral in color		
	Number of MINOR non-conformities		
	Number of MAJOR non-conformities		

II.   EQUIPMENT SUITABILITY CLEANING AND MAINTENANCE

	Items to check	Findings and objective evidence	Compliance level	
			C	**NC**
14.	**2.1. Material:** *-Smooth* *-Washable* *-Rot proof* *-Inalterable* *-Authorized without prohibited items*			
15.	**2.2. Work surfaces:** *-Smooth* *-Light colored* *-Washable* *-Rot proof* *-Inalterable* *-Impervious* *-Authorized without prohibited items*			
16.	**2.3 Furniture:** *-Inalterable* *-Authorized without prohibited items*			
17.	**2.4. Machines:** *-Made with durable materials* *-Easy to disassemble* *-Easy to clean and disinfect*			

II.   EQUIPMENT SUITABILITY CLEANING AND MAINTENANCE

	Items to check	Findings and objective evidence	Compliance level	
			C	**NC**
18.	**2.5. Maintenance plan** *-Cold installations-preventive maintenance* *-Equipment-preventive maintenance and calibration* *-Operators have skills to identify maintenance tasks to plan*			

	-Predictive and corrective maintenance saved		
	Number of MINOR non-conformities		
	Number of MAJOR non-conformities		

III. PEST CONTROL

	Items to check	Findings and objective evidence	Compliance level	
			C	NC
19.	3.1. **Pest Passive control through maintenance of surroundings and ancillary premises** *- Insulated storage of unused materials and equipment* *- Tidy and clean outdoor spaces* *- Interior surfaces kept tidy and cleaned so as not to be used by nutrients for insects* *- Installation of screens on doors and windows* *-Strict management of waste containers (frequently washed and maintained closed even full)*			
20.	**3.2. Pest Active control*** **Visual detection of pests** *Insects* *Rodents*			

*Visual detection of pests can be classified as major or minor NC at the discretion of the auditor and the country guidelines

III. PEST CONTROL

	Items to check	Findings and objective evidence	Compliance level	
			C	NC
21.	**3.3. Rodent control plan documents** *-Technical data sheet of products used*			

	-Mapping of the trap -Follow-up procedure -Corrective action procedure		
22.	**3.4. Insect control plan documents** -Technical data sheet of products used -Mapping of the insect killer devices -Control procedures of the operations -Corrective action procedure		
	Number of MINOR non-conformities		
	Number of MAJOR non-conformities		

IV. SUPPLIER MANAGEMENT

	Items to check	Findings and objective evidence	Compliance level	
			C	**NC**
23.	**4.1. Raw material specifications** *-Criteria for acceptance of batches* *-Supplier evaluation* *-Labelling requirements* *-Microbiological standards* *-Toxicological standards* *-Purity standards (foreign object control)*			
24.	**4.2. Control of raw materials received** *-Temperature control of raw materials (Compliance with specified criteria for each product)* *-Receiving records* *-Respect of shelf life* *-Labelling compliance with official food safety marking rules (authorization FRA)* *-Coding procedure for traceability system* *-Cleanliness of the delivery vehicles*			
	Number of MINOR non-conformities			
	Number of MAJOR non-conformities			

V.   EMPLOYEE HYGIENE

	Items to check	Findings and objective evidence	Compliance level	
			C	NC
25.	**5.1. Annual medical follow-up and availability of first aid boxes**			
26.	**5.2. Sanitary facilities** *Toilets designed to provide good hygiene* *Changing rooms with showers for the production staff*			
27.	**5.3. Hand hygiene** **Washstands:** *In sufficient numbers* *Placed near work stations* *Equipped with non-manual operating valves* *Equipped with a bactericidal soap dispenser* *Equipped with a synthetic nail brush* *Equipped with a disinfectant dispenser* *Equipped with a single-use drying system* *Accompanied by a poster reminding people of the hand washing rules*			

V.   EMPLOYEE HYGIENE

	Items to check	Findings and objective evidence	Compliance level	
			C	NC
28.	**5.4. Hand washing procedures** *-Clearly written* *-Presented and explained to all the staff*			
29.	**5.5. Other hygiene restrictions** *-Smoking in work clothes* *-Eating or chewing gum while in work clothes*			

			Compliance level	
	-Wearing watches, rings, or jewellery in the production area -Wearing long nails or nail polish			
30.	**5.6. The use of foot baths or boot washers (fixed or mobile) containing an antiseptic solution before entering the production area**			

V.   EMPLOYEE HYGIENE

			Compliance level	
	Items to check	**Findings and objective evidence**	**C**	**NC**
31.	**5.7. Clothing hygiene** -standard work clothing supplied by the company -washing of clothing by the company or under its responsibility -management of clean and dirty clothes –lockers with two compartments -boots/shoes washstands in conformity with standard			
	Number of MINOR non-conformities			
	Number of MAJOR non-conformities			

VI.   CLEANING AND DISINFECTION

			Compliance level	
	Items to check	**Findings and objective evidence**	**C**	**NC**
32.	**6.1. Material hygiene: the cleaning and disinfection plan**			
33.	**6.2. Establish written cleaning and disinfection procedures**			

34.	**6.3. Cleanliness of tools during production** *Tools are regularly replaced in hot water (82°C) or cleaned at regular fixed intervals by an equivalent method*		
35.	**6.4. List the detergents and disinfectants used (datasheet)**		
36.	**6.5. Separate lockable storage of detergent and disinfectant**		
37.	**6.6. Recording of operations and verification of cleaning efficiency** (visual cleanliness and microbiological control of surfaces)		
	Number of MINOR non-conformities		
	Number of MAJOR non-conformities		

VII.   COLD CHAIN

	Items to check	Findings and objective evidence	Compliance level	
			C	**NC**
38.	**7.1. Refrigeration** *-Compliance with the temperature of refrigerated products (raw materials, partially processed products, finished products)*			
39.	**7.2. Good manufacturing practices for the use of positive cold rooms** *-Protective packaging of stored goods* *-No stacking of unprotected foods* *-Storage of raw materials and finished products in separate refrigerators* *-Respect of the FIFO ("first in – first out")* *-Strict adherence to expiry date* *-No ground storage* *-Regular cleaning of ventilation systems (refrigeration units and sleeves)* *-Regular monitoring and recording of temperatures*			

VII.   COLD CHAIN

	Items to check	Findings and objective evidence	Compliance level	
			C	**NC**
40.	1.3 **Products cooled rapidly by the freezing operation** *-Frozen products kept at -18°C (or other T° for certain products) +/- 2°C*			

41.	**7.4. Good manufacturing practices for the use of negative cold rooms:** *-Regular monitoring and recording of temperatures* *-Respect of the FIFO "first in-first out"* *-Do not freeze products in negative cold storage*		
42.	**7.5 Thawing procedure to avoid any temperature rise that may cause a health risk**		
	Number of MINOR non-conformities		
	Number of MAJOR non-conformities		

VIII. HEAT TREATMENT

	Items to check	Findings and objective evidence	Compliance level	
			C	NC
43.	**8.1. Rules specific to cooking:** *-Temperature and cooking time defined and controlled for each product* *-Core temperature of products ≥ 63°C*			
44.	**8.2. Rules common to pasteurization and sterilization** *-Definition of a scale (time and T°) previously validated for all products to obtain a sufficient "sterilizing value"* *-Control and recording of the application of the sterilization scale for each production batch* *-Control of the tightness of the seals and packaging*			
	Number of MINOR non-conformities			
	Number of MAJOR non-conformities			

IX.   SELF CHECK

	Items to check	Findings and objective evidence	Compliance level	
			C	NC
45.	**9.1. Prevention of physical contamination by foreign items:** *-Installation of metal detectors (metal particles)*			
46.	**9.2. Prevention of contamination by packaging:** *-Selection of non-toxic materials (see also point 4.1)*			
47.	**9.3. Verification of the effectiveness of hand washing by microbiological analysis.**			
48.	**9.4. Checking the effectiveness of cleaning and disinfection**			

IX.   SELF CHECK

	Items to check	Findings and objective evidence	Compliance level	
			C	NC
49.	**9.5. Sampling and analysis plan** *-Establish and carried out under contract with a laboratory* *-Applied to finished products (and possibly raw materials and in-process products)* *-Referring to microbiological criteria (qualitative and quantitative)*			
50.	**9.6. Microbiological control plan for water and ice**			
51.	**9.7. Temperature control of products during the process**			

	Number of MINOR non-conformities		
	Number of MAJOR non-conformities		

X. TRAINING

	Items to check	Findings and objective evidence	Compliance level	
			C	NC
52.	10.1. Staff training plan			
53.	10.2. Timetable and contents of training activities			
54.	10.3. Provisional timetable for implementation			
55.	10.4. An individual sheet per operator, summarising the training received			
56.	10.5. Definition and periodic implementation of a simplified written "routine evaluation" procedure of the effective and efficient application of GMP/GHP			
	Number of MINOR non-conformities			
	Number of MAJOR non-conformities			

XI. TRACEABILITY

	Items to check	Findings and objective evidence	Compliance level	
			C	NC
57.	**11.1. The labelling shall comply with Codex requirements** for pre-packaged foodstuffs, and with the regulatory requirements of the country where it is marketed with at least: *The components of the product in descending order* *The registration number of the establishment (agreement, FRA...)* *The use-by date or the expiration date* *The production batch number*			
58.	**11.2. Finished products containing declarable allergens must be declared** in accordance with the legal provisions in force. The labelling of incidental and trace allergens must be based on a risk analysis			
59.	**11.3.A traceability system shall be in place**, allowing for the identification of product batches and their relationship to raw material batches, packaging in direct contact with food, and packaging intended for or intended to be in direct contact with food. The traceability system should include all relevant production and distribution records			
60.	**11.4. Traceability must be guaranteed at all stages**, including			

	in-process production, reprocessing, and recycling			

XI. TRACEABILITY

	Items to check	Findings and objective evidence	Compliance level	
			C	NC
61.	**11.5. Periodic procedures to verify the effectiveness and efficiency of the traceability system:** *Carrying out upstream traceability simulations* *Carrying out downstream traceability simulations*			
62.	**11.6. Procedures of the withdrawal and recall of foodstuffs that may present a risk to the consumer** *Drafted in advance and available in the establishment* *Know and understood by operators concerned and by the management*			
	Number of MINOR non-conformities			
	Number of MAJOR non-conformities			

Summary

Total number of MINOR non-conformities	
Total number of MAJOR non-conformities	
DECISION	

Corrective actions or follow-up plan (see an example on the following page)

OBSERVATION	ACTION PLAN	P	TIME
Floor, wall, ceiling is constructed of cement easy to clean but some cracks existed in the floor.			
Wall/floor junction of the processing area and receiving area was not curved.			
Garbage bin does not exist and the only one is not covered and not identified.			
Hand washing area is available for the company, soap or sanitizer was not available.			
Water taps were hand-free and sanitizer not available			
Water tanks are not available, their usage is rarely and water from is government sources but no analysis for water.			
Inspection programs were not available, and their records non-existent.			