Addendum to the proposal for
Establishing of Food Safety Professional as a Regulated Profession

1) Background and purpose

At the start of the Working Group on Ethics in Food Safety (WG) of the Global Harmonization Initiative (GHI), in November 2017, the WG was asked to make clear and actionable proposals on "Ethics in the Food Industry". As this scope potentially included topics like working conditions, child labour, forced labour, fair trade/workers' wages, food miles, de-forestation/ overfishing/ depletion of natural resources, animal welfare, misleading marketing/label claims, etc., initially we narrowed it to "Ethics in Food Safety Practices".

We then considered that what constitutes "Ethics" may be understood differently in different environments and as a result we decided that for our purposes it should be understood to be a "scientifically informed awareness of what food safety is (you cannot act ethically, if you do not know what you are talking about), combined with an explicitly stated commitment to always act accordingly".

In terms of practical measures, we then recognized:
- Preventive measures: organizing and mandating scientifically informed awareness and explicitly stated responsibilities. This led to the Food Safety Professionals proposal.
- Corrective measures: when things have gone wrong. This leads to the topic of whistle-blowing. This topic is ongoing and is not part of the current proposal.

A year ago, a proposal was submitted to the GHI Board, recommending that an initiative be started to seek recognition of "Food Safety Professional" (FSPro) as a regulated profession around the world.

In various countries, there already is a requirement that those responsible for food safety in a production, handling, inspection, etc. environment be trained, although the content of the curriculum and the academic level of the training mostly remain unspecified, and FSPro is not a regulated – and thereby protected – profession like medical doctors or lawyers[1].

The GHI Board requested that we further clarify the recommended content of an FSPro curriculum and expand on the responsibilities of this function.

Over the last few months, members of the WG on Ethics in Food Safety Practices and many GHI members have reacted to a call for additional information and ideas. Many members have expressed an active interest in this topic and many mentioned that they are already involved (or have been involved) in teaching food safety related topics.

As we move further with the FSPro proposal, this addendum remains open for additional input.

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[1] The EU regulated professions database lists food-related professions in Switzerland, Portugal, Iceland, Slovenia, Czech Republic, Poland and Hungary, but the overview of European Skill/Competences, Qualifications and Occupations does not specifically mention food related professionals. Involving veterinarians is the work-around for this situation in many countries, as they represent a regulated profession with adequate knowledge of the hygiene and technology involved in the production, manufacture and putting into circulation of animal foodstuffs or foodstuffs of animal origin intended for human consumption as well as adequate knowledge of the laws, regulations and administrative provisions relating to the subjects listed above. We would argue that the main focus of their training is not on the broader topic of food safety and they are not ideally suited to be a FSPro.

2) Overview of existing Food Safety training programs

Food Safety training is available in many places, at various levels – from short courses (a few hours to 3 months) to University level programs. Some examples (not an exhaustive list), are summarized below.

2.1) Short and online training courses and examinations

- Illinois Institute of Technology (USA); Food Safety Preventive Controls Alliance. FSPCA covers US regulatory needs and is looking for ways to engage with small and medium-sized enterprises (SMEs) and bring them up to speed with GMPs, etc.: https://www.ifsh.iit.edu/fspca/fspca-preventive-controls-human-food. It should be noted that: This course developed by the FSPCA is the "standardized curriculum" recognized by FDA; successfully completing this course is one way to meet the requirements for a "preventive controls qualified individual." The FSPCA training materials are designed to meet the requirements for training under US Title 21 Code of Federal Regulations Part 117.180(c)(1) for the preventive controls qualified individual who undertakes certain Food Safety Plan activities. (Valid only for food plants subject to FDA inspection. Meat, poultry and liquid eggs are not covered.)
- FSPCA training courses have also been widely used in South and South-East Asia.
- Food Safety Training programs are organised by the Cayman Islands Government for all persons involved in the sale, handling, preparation, storage and delivery of food for public consumption (6 hours at a cost of $15 per participant): http://www.deh.gov.ky/portal/page/portal/dehhome/foodhygiene/safetytraining.
- Texas A&M University (USA): International HACCP Alliance training programmes.
- Wageningen (The Netherlands): Governance and Food Safety in International Food Chains 2021 (12 weeks).
- Certified in Comprehensive Food Safety, CCFS - A National Environmental Health Association (NEHA) (USA) credential for manufacturers: https://www.neha.org/professional-development/credentials/ccfs-credential.
- Certified Professional in Food Safety, CPFS - A NEHA (USA) credential for those in the retail food environment: https://www.neha.org/professional-development/credentials/cp-fs-credential.
- Australian Institute of Food Safety: https://www.foodsafety.com.au/blog/food-safety-programs-an-overview.
- GMA (Grocery Manufacturers of America) online HACCP courses
- IFT (Institute of Food Technologists) Certified Food Scientist (CFS): https://www.ift.org/career-development/certification/get-your-cfs.
- The Sri Lanka Standards Institute conducts various training courses related to the food safety for Sri Lankan interested parties in the food industry: https://www.slsi.lk/images/Advertisements/Training/Training_Prospectus-2021.pdf.

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- The Food Safety and Standards Authority of India (FSSAI) set up the Food Safety Training & Certification (FoSTaC) system with an aim of creating a pool of supervisors trained in good hygiene and manufacturing practices as per Schedule 4 requirements of FSS (Licensing & Registration of Food Businesses) Regulation, 2011. FSSAI mandates at least one trained and certified Food Safety Supervisor (under FoSTaC) for every 25 food handlers in each premise. Nineteen types of competence based (Food Safety Supervisor) certification programmes and one awareness course on Covid19 Guidelines for Food Industry are available from FoSTaC: https://fostac.fssai.gov.in/fostac/index.
- SGS Academy, Switzerland. Its food safety and hygiene training portfolio covers industry regulations necessary to develop and maintain a food safety culture. Delivered as Virtual Instructor Led Training (VILT), Face to Face or eLearning, their courses are accessible anywhere in the world. SGS delivers trainings for China, countries in Africa and South America: https://www.sgs.com/en/news/2020/11/sgs-academy-courses-enable-you-to-maintain-food-safety-and-hygiene-standard.
- The UK-based BSI Group offer courses on food safety all over the world in various languages: https://www.bsigroup.com/en-US/Industries-and-sectors/food-and-drink/food-training-courses/.
- Omni Academy & Consulting, a Pakistani company, provides in Pakistan and many other countries across the globe a Food Safety Manager Training – Food Safety Certification:
- https://www.omni-academy.com/course/fun-food-safety-sanitation-course/.

2.2) Academic level Food Safety courses

- In 2011, Ms. Rozita Spirovska Vaskoska (Wageningen University) prepared a document World-Wide "Master Programs of Food Safety; Comparative Analysis", covering universities in Europe, USA, West Indies, Kenya, India, China and Australia. Not all courses are still available, and new ones have been developed and are being delivered. Still, many of the topics listed above were derived from this overview.
- An international Master programme "Safety in the Food Chain" (MSc) at BOKU (Universität für Bodenkultur, Wien, Austria): https://boku.ac.at/en/studienservices/studien/master-int/uh066451?selectedTypes=group, https://www.safetyinthefoodchain.com/en) in cooperation with Wageningen, Copenhagen, Hohenheim and Prague universities.
- Johns Hopkins University (USA), Master of Science in Food Safety Regulation
- The University of Edinburgh - An online MSc programme in Food Safety
- From China there was mention of Food Quality and Safety studies, from Bachelor to PhD (no further details available).
- In Romania there are different study programs from Bachelor to PhD focused on food quality and safety (e.g., control and expertise of food products – Bachelor (e.g at Lucian Blaga University of Sibiu, University of Agronomic Sciences and Veterinary Medicine of Bucharest (USAMV Bucuresti) and the University of Iasi (USAMV

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Iasi), Master degree (Food Control and Safety (UGAL), Biotechnology and Food Safety - (USAMV Bucuresti).

- The North-Caucasus Federal University (NCFU) - NCFU is the first institution to offer training with a Master's program in Hygienic Engineering and Design that has been designed with support of EHEDG and its Regional Sections in Macedonia and Russia.
- In Sri Lanka, food safety and related topics in several academic degrees (e.g., Department of Microbiology, University of Kelaniya. Department of Food Science and Technology, University of Sri Jayawardenapura and University of Peradeniya.)
- Academic courses in Quality and Food Safety from many universities are listed at: https://www.educations.com/search/food-safety-quality/c4457.

3) Curriculum

- Food Processing, Packaging and Logistics:
    - Basic Good Manufacturing Practices
    - Hygiene and Sanitation (including hygienic design of equipment and buildings, cleaning methods/chemicals, and validation and verification methods)
    - Thermal and Non-Thermal Processing
    - Novel Food Safety Interventions` (Pulsed Electric Field processing of juices, High Pressure Processing - HPP, Cold Atmospheric Plasma - CAP, etc.)
    - Packaging of Foods (including functional packaging, modified atmosphere, etc.)
    - Transport, Storage and Traceability
    - Foodservice, Restaurants and Catering

- Sustainable Food Systems
    - Food Security
    - Land Use, Land Rights and Fisheries
    - Food Economics
    - Food Miles
    - Environmental Impact of Agricultural Systems, Biotechnology
    - Food- and Food Safety-related Ethics
    - Cooperate Social Responsibility
    - Communication Skills and Working with Communities (on the above topics)

4) Existing Responsibilities and Levels

While HACCP plans are mandatory in many countries, there are in practice few formal education requirements for the people who design and manage them – with some exceptions. A university-level education is not required anywhere (with the possible *de-facto* exception of the "Processing Authority" in the USA).

In the USA, the Code of Federal Regulations requires qualified individuals to undertake certain Food Safety Plan activities – and recognized training courses have been developed (see below). The US FSMA (Food Safety Modernization Act) has introduced new requirements that span across the food chain (outside those required by the US Department of Agriculture). Although the requirements are specific to food categories, in general food facilities that process, manufacture, pack or hold food for human consumption in the US must

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have a Preventive Control Qualified Individual (PCQI) to prepare a Food Safety Plan (FSP) in accordance with the Hazard Analysis and Risk-Based Preventive Controls methodologies, including: 1) preparation of the Food Safety Plan, 2) validation of the preventive controls, 3) records review and 4) reanalysis of the Food Safety Plan. (There are modified requirements for facilities producing seafood, juice, low acid canned food, acidified food, and fresh produce because of previous regulation). The design of Low Acid Canned Food (LACF) processes must be overseen by a "Processing Authority". These are high-level experts, although there are no strictly defined education criteria.

The FDA 2017 Model Food Code (https://www.fda.gov/media/110822/download) requires for some (but not all) food establishments to have a "Certified Food Protection Manager" (CFPM) in charge of the food establishment's food safety team (see also https://www.health.state.mn.us/communities/environment/food/cfpm/cfmfs.html). In a 2018 report: *Occurrence of Foodborne Illness Risk Factors in Fast Food and Full-Service Restaurants*, 2013-2014 (https://www.fda.gov/media/117509/download), the FDA concluded that: "Restaurants that had a Certified Food Protection Manager (CFPM), who was the person in charge at the time of data collection had significantly better Food Safety Management Systems (FSMS) scores than those restaurants that did not have a CFPM present or employed….. This suggests that having a CFPM present at all hours of operation enhances food safety management systems and reduces the number of out-of-compliance food safety behaviors/practices."

The EU specifies that: "Staff should be supervised and instructed and/or trained in food hygiene matters appropriate to their role, and those responsible for developing and maintaining the food safety management system should be suitably trained in the application of PRPs and HACCP principles," but does not specify exactly what (level of) training would be required.

The EU project "TRACK_FAST" developed criteria to qualify a Food Quality and Safety Professional at 3 levels:

- Certified Food Quality & Safety Technologist, a professional with work experience in quality functions (e.g., part of a HACCP team).
- Certified Food Quality & Safety Supervisor, a professional with work experience in quality functions as well as in supervision of a crew of employees (e.g., managing, developing and motivating a HACCP team).
- Certified Food Quality & Safety Manager, a professional with work experience in positions of higher responsibility in the area of food quality (e.g., management of quality systems).

In Australia, by law, most food businesses must employ at least one Food Safety Supervisor on their premises, but one can qualify in an online course "in just a few hours" (see reference below).

ISEKI Food Association (ISEKI is an acronym for "Integrating Food Science and Engineering Knowledge into the Food Chain")

has defined levels of expertise:

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- **Technologist**: A degree in Food Science and Technology (FST) or food-related area plus 2 years of working experience in the selected area (Quality & Safety (Q&S), or Product Development). Demand for working experience will be lower for higher university qualifications and higher for non-food related degrees or no higher education.
- **Supervisor**: A degree in FST or food-related area plus 4 years working experience in the selected area (Q&S or Product Development), one of the years in supervision activities. Demand for working experience will be lower for higher university qualifications and higher for non-food related degrees or no higher education.
- **Manager**: A degree in FST or food-related area plus 8 years working experience in the selected area (Q&S or Product Development), two of the years in management activities. Demand for working experience will be lower for higher university qualifications and higher for non-food related degrees or no higher education.

As the level of education required must be linked to the job responsibilities, it might be helpful to organize the education along the lines of what is typically required in terms of HACCP plans:

- Smaller and simple operations are in most cases not required to develop their own HACCP plan, but may implement a standard plan for their type of business – A basic level of training might be sufficient (Australian type course, see below).
- Larger operations that are typically required to develop their own HACCP plans. **Proposal**: These HACCP plans need to be signed and managed by a qualified professional (BSc or higher level).
- Low Acid Canned Food processes to be approved by a "Process Authority" – Qualified at an MSc "thermal processing" level (see below).

5) Additional Resources

- International Food Council (IFC) Handbook: https://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/agribusiness/resources/food+safety+handbook.
- Global Food Safety Initiative (GFSI) global markets program - GFSI has a stepwise program and is a pathway for many processors to work through the basic and intermediate levels: https://mygfsi.com/how-to-implement/global-markets/.
- ISEKI certifications: https://www.foodcareers.eu/professional-certifications.
- UK Food Standards Agency: https://www.food.gov.uk/.
- Penn State University Extension: https://extension.psu.edu/food-safety-and-quality.
- Penn State College of Agricultural Sciences in the US is having a project that aims to close the gaps in the assessment of food safety in food testing laboratories in East and Southern Africa by providing training services to food testing laboratory personnel. Targeted countries are Ethiopia, Uganda, Mozambique, Rwanda, Kenya, Namibia, Zambia and Malawi: (https://agsci.psu.edu/international/ifsi/projects/food-safety-training-fst-east-africa-food-safety).
- Cornell University: https://foodscience.cals.cornell.edu/extension/food-safety-programs/#:~:text=%20Food%20Safety%20Programs%20%201%20Institute%20for,tools%20to%20prevent%20and%20reduce%20microbial...%20More%20.

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"Achieving consensus on the science of food regulations and legislation to ensure the global availability of safe and wholesome food products for all consumers"

- European Hygienic Engineering and Design Group (EHEDG) courses: https://www.ehedg.org/training-education/ include a master course organised in Russia.

About 5 years ago, the World Bank chose the International Union of Food Science and Technology (IUFoST) to develop a food safety curriculum at the Bachelor's level and a Master's in Food Safety Leadership. IUFoST has a Task Force on Food Safety Curricula.

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22 March 2021

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