

HACCP

Past, Present, and Future

Part 1, Section 1: History of HACCP and FAO Involvement



Jenny Scott
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An Overview

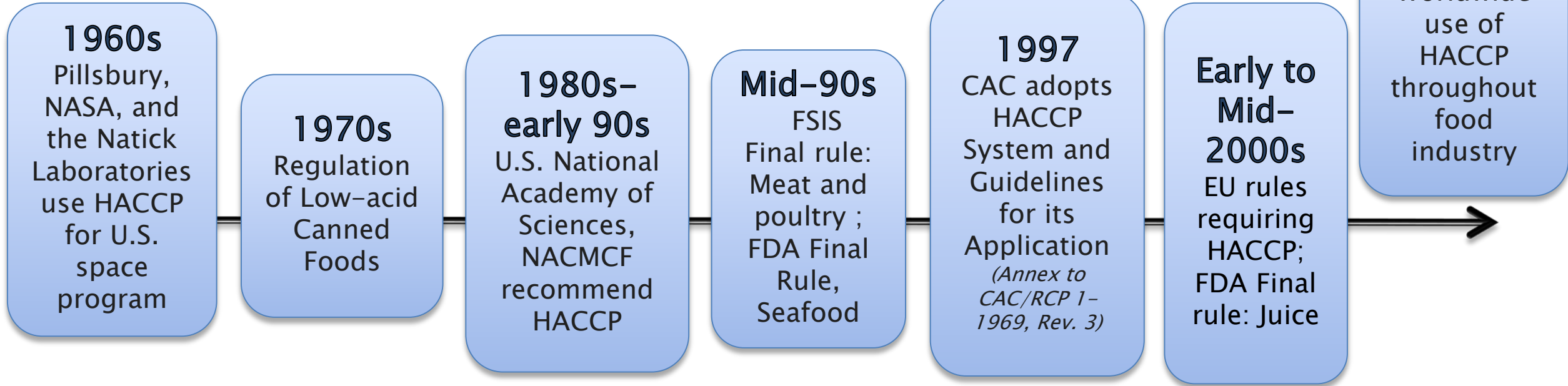


- I. What is HACCP?
- II. History
- III. Applications
- IV. Objectives
- V. The Seven Principles
- VI. Prerequisite Programs

What is HACCP?

Hazard Analysis and Critical Control Points (HACCP) is a science-based, systematic, and preventive approach to food safety management that addresses the identification, evaluation, and control of biological, chemical, and physical hazards throughout the chain of food production.

History of HACCP



Applications

- ▶ Basic Agriculture
- ▶ Food Processing
- ▶ Retail Operations
- ▶ Food service/catering
- ▶ Street Vendors



Objectives

- ✓ Eliminate or significantly reduce hazards in food
- ✓ Prevent/minimize microbial growth & toxin production
- ✓ Control contamination

The Seven Principles of HACCP

1. Conduct a hazard analysis.
2. Determine the Critical Control Points (CCPs).
3. Establish critical limits.
4. Establish a system to monitor control of the CCP.
5. Establish corrective actions.
6. Establish verification procedures.
7. Establish recordkeeping procedures.

Prerequisite Programs

Basic environmental and operating conditions needed before applying HACCP, including GHPs

- Sanitary design: equipment/facility
- Personnel hygiene practices
- Sanitation of equipment /facility
- Preventive maintenance
- Training of employees



HACCP Plan

Describe Product

Diagram process flow

List

Step	Hazard(s)	Control Measure(s)	CCPs	Critical Limit(s)	Monitoring Procedures	Corrective Actions	Records

Verification

Part 1, Section 2:
History of HACCP and FAO
Involvement
HACCP In Codex

Verna Carolissen, Codex Secretariat

HACCP in Codex

- ▶ General Principles of Food Hygiene adopted in 1969
- ▶ 1980s – HACCP approach taken up in different codes of hygienic practice
- ▶ No single reference for HACCP
- ▶ 1984 – CCEXEC requested CCFH to address this:
 - ❖ How to introduce HACCP approach in different COHPs

Development of HACCP

Principles and Guidance

- ▶ In 90s CCFH discussed different approaches:
 - Single statement / guidance
- ▶ Developed principles and definitions
- ▶ Adopted in 1993 – Annex to RCP1

HACCP Revisions

- ▶ Continued discussions on implementation in small and/or less developed businesses
- ▶ Agreed that HACCP principles were applicable to all businesses including SMLD businesses
- ▶ HACCP Principles should remain untouched but to add limited text to certain parts to provide flexibility (adopted 2003)
- ▶ Now new work to update RCP1 (including HACCP annex)

Use of Codex RCP1 (Including HACCP Annex)

- ▶ Survey on use of Codex standards in different regions showed:
 - RCP1 and its HACCP annex is widely used by 60% of respondents in 4 regions (to date)
 - Of which approximately 90% have their national legislation aligned with RCP1 and 60% aligned with HACCP
 - Indicates the importance placed on this text and that care should be taken in the update of the text to avoid discrepancy / added burden to harmonize legislation

Issues

- ▶ Showing clearer link with main body of RCP1
- ▶ Retain the current HACCP principles
- ▶ How to reflect new developments
- ▶ Difficulties experienced by small and/or less developed businesses

CCFH needs to carefully consider the update of RCP 1
and its HACCP annex

(implications for other Codex texts / national legislation)
can we address all the concerns for SLDB or should be
addressed through capacity development?

Part 1, Section 3:
History of HACCP and FAO Involvement
*Adopting and Implementing the
GPFH/HACCP:
How FAO provides support to countries*

Sarah Cahill, FAO



1. Understanding the challenges countries face

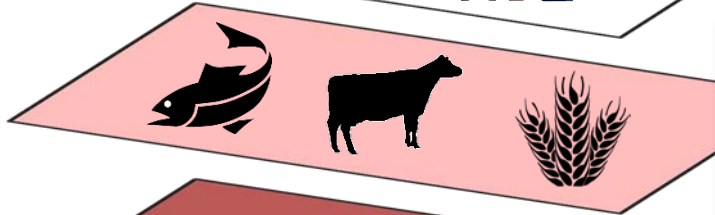
2. Supporting countries to improve levels of GHP

3. Developing practical resources that can be adapted

Adoption of GHP/HACCP in Developing countries



Weak adoption by food businesses (domestic market)



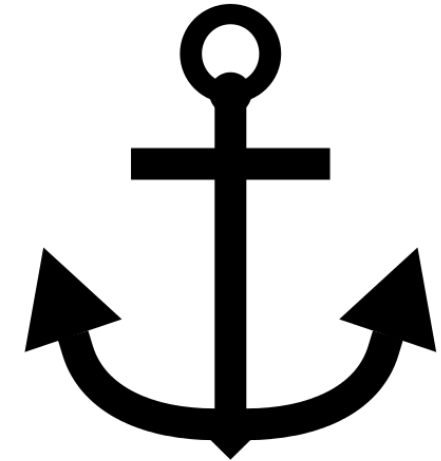
Varied levels of adoption for food sectors



Some adoption into general food legislation

The Codex GPFH/HACCP Enable Us to Speak a Common Language

<p>GENERAL PRINCIPLES OF FOOD HYGIENE <i>CAC/RCP 1-1969</i> TABLE OF CONTENTS</p>	<p><i>CAC/RCP 1-1969</i> <i>Page 2 of 31</i></p>
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<p>Adopted 1969. Amendment 1999. Revisions 1997 and 2003.</p>	

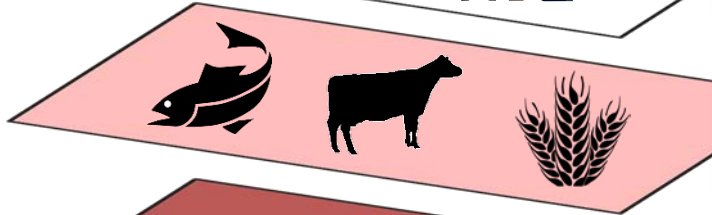


Having a Common Standard Is Key, But ...

Training on GHP and HACCP
– one part of the solution



Documentation is a challenge



Lack of/insufficient infrastructure



Lack of food safety policy, risk-based legislation, legislation based on their context

Two examples of success stories

In Zanzibar

- Trainees realised that their food legislation was not adequate
- They have worked with the government to develop a new food safety legislation
- It has been adopted and implementation is ongoing

In Mwanza

- ▶ Trainees understood that infrastructure for butchers was inadequate
- ▶ Petitioned local government for funds
- ▶ Have built new small butcher shops according to GHP

Working With Countries – Building Sustainable Systems

Selection of participants was done together with the relevant ministries

Geographic representation was ensured

Important value chains considered (meat, cashew, maize, fruit & veg)

The FAO team visited each of the organizations for which the participants work



Tanzania Food Safety Team Members: Collaborating Since 2010 with a Common Goal



Food safety is part of their day-to-day jobs

They shared their training knowledge with their work colleagues

Organizations committed to have their staff participate



Working With FAO = Reporting To Us

Practical Training Logbook

Non-Meat Value Chain Group (T2)
Training of Trainers (TOT) project on 'Food Hygiene and Quality Assurance' in Tanzania

The purpose of the Practical Training Logbook is to

- provide participants in the training programme with a template to record the food safety activities that were undertaken after the Workshop in Dar-es-Salaam from 7 – 15 May 2012;
- help each participant to show how she/he has used the knowledge gained from the last workshop; and,

to enable the FAO and the National Food Safety Task Force to assess the impact of the training and to identify areas for improvement.

It is important that you clearly understand the learning objectives that you are expected to achieve during your practical training and set out your own programme for achieving them.

Your planning should involve your supervisor at the institution you work for.

Completion of the Logbook is an **important step** towards attaining a certificate to confirm successful and satisfactory completion of the training programme. Guidance on how to complete the Logbook can be found on **Page 4**.

If you need any further information or guidance, please contact:
(T1: patrick.otto@fao.org, for T2: cornelia.boesch@fao.org).

[Please complete the following table]

Personal Details
Name: MRS-SCOLLA J. MARCUS
Employer's Name
Address: PO BOX 162, IRINGA
Tel No: 0715-520641/0769231034
Job Title FOOD AND NUTRITION OFFICER
Describe your role/responsibilities: Training and advice in all matter concerning food consumption, preservation and security

Total Number of farms/food businesses advised or visited in the last 9 months (since the workshop): 15 food businesses were advised

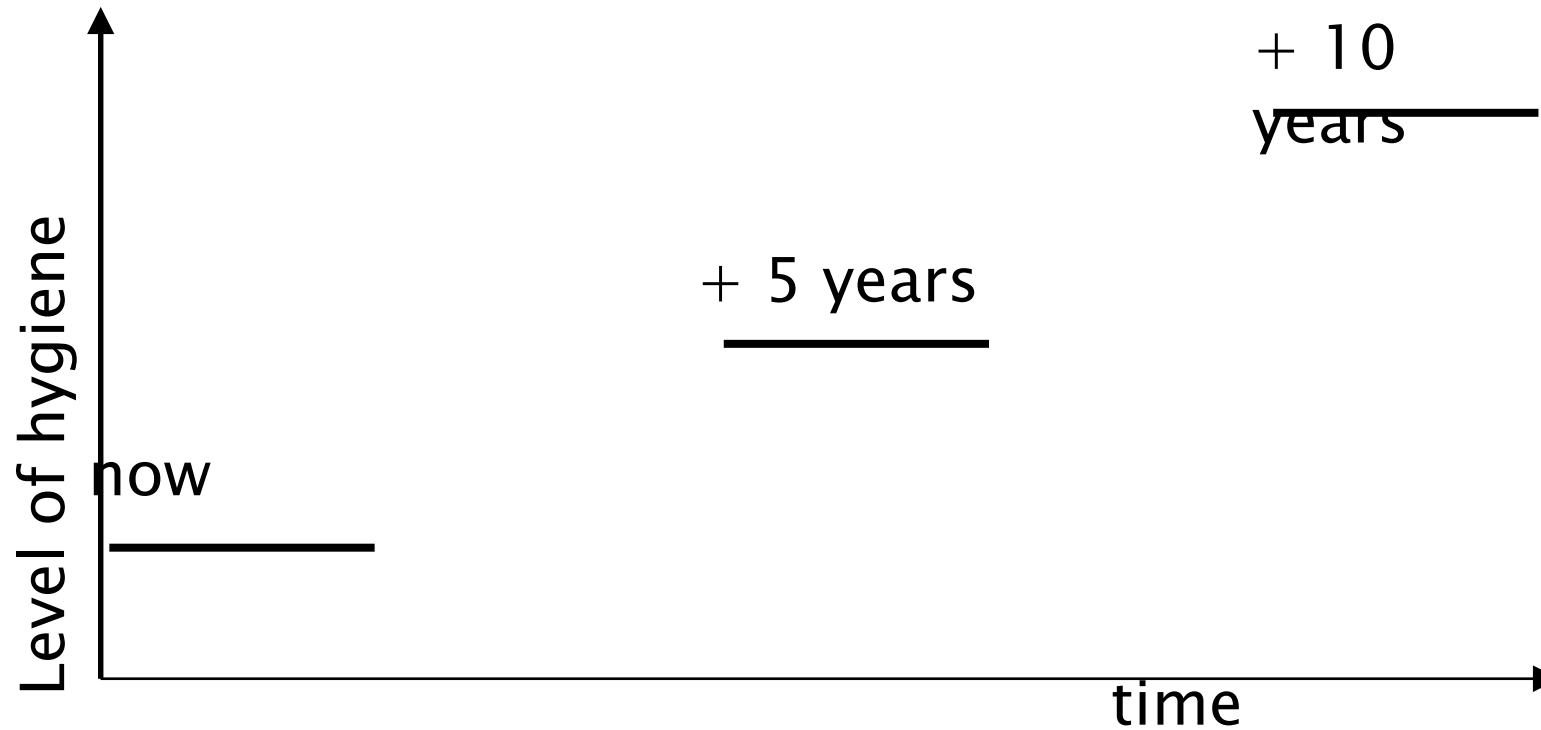


Submitting logbook for review

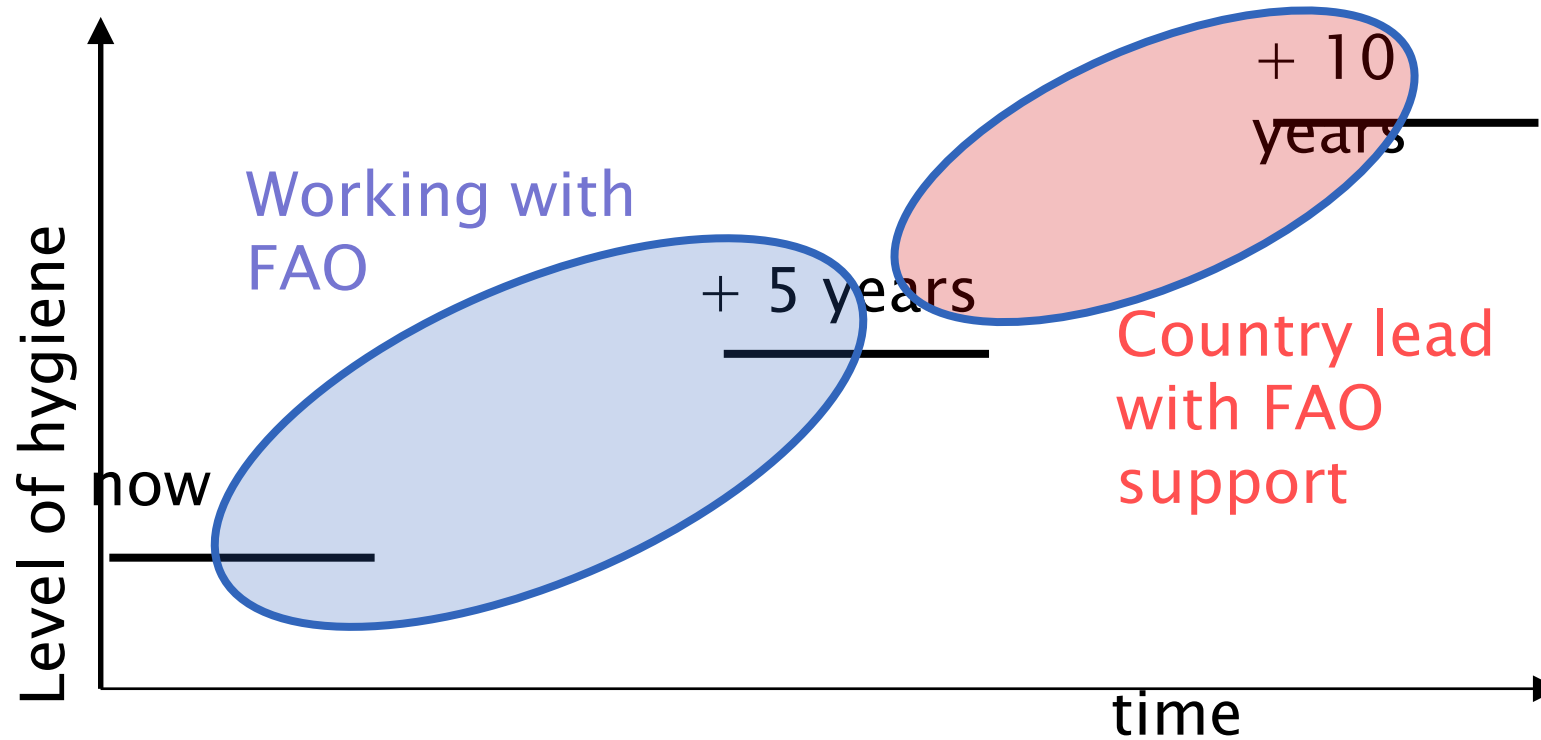
Receiving feedback from training team/colleagues

Interacting with their colleagues – WhatsApp

Considering Their Reality: Change Will Take Time



Working Over a Longer Period of Time



FAO Is Building A Webpage Good Hygiene Practices (GHP) Toolbox

The screenshot shows the FAO Good Hygiene Practices (GHP) Training Toolbox webpage. At the top, there is the FAO logo and navigation links. The main heading is "Good Hygiene Practices (GHP) Training Toolbox". Below this, there are tabs for "Background", "Modules", "Applications", "Glossary", and "Links". A large banner image shows a field of colorful vegetables with the text "Explore the GHP Training Toolbox". Below the banner, there are three columns: "Modules" (overview of courses), "Glossary" (description of GHP terms), and "Applications" (examples in the real world). The page is divided into sections: "What is the GHP Toolbox?" (introduction to the toolbox), "Foundation" (modules on training and context), "Applying GHP" (practical guidance), "Further reading" (regional guidance for Asian countries), and "Related Links" (Food Safety and Quality, School Food, The Right to Food). A "contact" section at the bottom provides the email address GHP-Toolbox@fao.org.

Closely follows Codex GPFH/HACCP

Based on FAO training experiences

Materials available for download

Three (3) Sections Each With a Number of Modules

Foundation

This Foundation Section contains two modules: Effective Food Safety Training aims to enable users to develop effective food safety training using the materials of the GHP Training Toolbox; and Putting Food Hygiene into Context explains about driving forces behind policies and the regulatory environment at the national and international level.



Putting Food Hygiene into Context




Effective Food Safety Training


Foundation: putting food safety into context

Applying GHP


The modules of this section provide practical guidance on how to implement and manage Good Hygiene Practices (GHP) in food businesses. The modules cover areas of concern that are outlined in the Codex General Principles of Food Hygiene and illustrate the relevance of its provisions.




Introduction to Food Safety Management and GMP



GHP: Primary Production and Establishment




GHP: Control of Operations




Applying GHP

HACCP

This section introduces HACCP as the preventative system to control food safety in a food operation. The modules of this section explain how HACCP can be applied and are aimed at trainers with a solid understanding of GHP.



HACCP: Intro and getting started



HACCP: Principles 1-7

Applying HACCP

Each Module Contains Courses

The screenshot shows the homepage of the Good Hygiene Practices (GHP) Training Toolbox. At the top, there is the FAO logo and navigation links. Below the header, there is a search bar and a main title. A navigation menu includes 'Background', 'Modules', 'Applications', 'Glossary', and 'Links'. The 'Modules' section features a large image of a training session and a list of modules: 'Putting Food Hygiene into Context', 'Providing effective training', 'Introduction to Food Safety Management and GMP', and 'GHP: Primary Production and Establishment'. Each module has a brief description and a list of key topics.

Food and Agriculture Organization of the United Nations

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English

Good Hygiene Practices (GHP) Training Toolbox

Background Modules Applications Glossary Links

Modules

The GHP Training Toolbox has 8 modules, each of which contains a number of courses. Modules can be accessed by clicking on the colour-coded headings below. Users may also access a course directly by clicking on its title. We recommend that users first get an overall view of the contents of this training tool before focusing on those parts of particular relevance to their needs. The starting point for users, once they find the course of their choice, should be the power point presentation. The supporting documentation, links and photographs can then be used to go more deeply into selected issues.

Foundation

Putting Food Hygiene into Context

- Food Safety within the international framework
- Food Safety in the national context
- Private sector requirements for food safety
- Small-scale food businesses: their special needs and role

Providing effective training

- Understanding the broader picture
- Developing the training programme
- Implementing the training programme
- Evaluating the training programme

Applying GHP

Introduction to Food Safety Management and GMP

- Introduction to Food Safety Management and GMP
- Key concepts of Food Microbiology
- Key Concepts of Chemical Hazards in Foods

GHP: Primary Production and Establishment

- Primary Production
- Personal Hygiene
- Design and Facilities
- Maintenance
- Storage
- Transport

The screenshot shows the page for the 'Module GHP: Primary Production and Establishment'. It features a navigation menu and a table of contents. The 'Supporting materials' section is expanded, showing a list of resources for 'Primary Production', 'Animal Feed', and 'Explaining MRLs in more detail'. The 'Supporting materials' section also includes a list of resources for 'Fisheries and Aquaculture'.

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Good Hygiene Practices (GHP) Training Toolbox

Background Modules Applications Glossary Links

Module GHP: Primary Production and Establishment

Primary Production

- Overview
- Presentation
- Supporting materials**
- Things to think about
- Photographs

Personal Hygiene

- Design and Facilities
- Cleaning and Sanitation
- Maintenance
- Storage
- Transport
- Pest Control and Waste Management

Supporting materials for Primary Production course

This section provides selected resources of relevance to hygiene in primary production in addition to those mentioned in the presentation. The following collection of materials should provide trainers with valuable information to either share with their audiences or to use as a starting point for further online research on primary production.

There are a number of very useful Codex text that are relevant for GHP in primary production and that have been mentioned in the presentation. Some additional Codex texts are listed below, however, users are encouraged to visit the Codex standards webpage and browse for standards that they are interested in.

Animal Feed

- Codex Code of Practice for the Prevention and Reduction of Dioxin and Dioxin-like PCB Contamination in Food and Feeds (CAC/RCP 62-2006)
- Codex Code of Practice for the Reduction of Aflatoxin B1 in Raw Materials and Supplemental Feedingstuffs for Milk-Producing Animals (CAC/RCP 45-1997)
- Codex Code of Practice on Good Animal Feeding (CAC/RCP 54-2004)
- Codex Guidance for Governments on Prioritizing Hazards in Feed (CAC/GL 81-2013)
- Codex Guidelines on the Application of Risk Assessment for Feed (CAC/GL 80-2013)
- Feedpedia
- UK Food Standard Agency - Record Keeping Requirements for Farmers in Northern Ireland - Guidance on how to adopt the EC Feed Hygiene Regulation (183/2005)

Explaining MRLs in more detail

The topic of MRLs can be a challenge to understand and we have therefore written a document [[link to be provided](#)] that provides an overview of the Codex international recommendations on maximum limits for residues and contaminants.

Fisheries and Aquaculture

- FAO Food and Nutrition Paper no. 80 on Marine Biotoxins
- FAO/NACA/WHO report "Food Safety Issues Associated with Products from Aquaculture"

GHP Toolbox Slides are Available for Download from Slideshare

The screenshot shows the SlideShare website interface. At the top, there is a navigation bar with the SlideShare logo, a search bar, and buttons for 'Upload', 'Login', and 'Signup'. Below the navigation bar, there are category links: 'Home', 'Technology', 'Education', and 'More Topics'. On the right side of this bar, there are links for 'For Uploaders' and 'Collect Leads'. The main content area is divided into two sections. On the left, the profile for 'FAO' is displayed, featuring the FAO logo, a 'Follow' button, and statistics: '2516 SlideShares', '815 Followers', and '0 Clipboards'. On the right, a section titled 'Content tagged "ghp"' shows four search results. Each result is a slide thumbnail with a title, a small grid of icons, and metadata including the upload date, views, and comments.

FAO

[Follow](#)

2516 SlideShares
815 Followers
0 Clipboards

Content tagged "ghp"

- Design and Facilities**
2 months ago,
308 views, 0 comments
- Sanitation in food premises**
2 months ago,
242 views, 0 comments
- Personal Hygiene in Food…**
2 months ago,
364 views, 0 comments
- Food Hygiene Issues in P…**
4 months ago,
662 views, 2 comments

We Are Working on Getting Our Materials Out There

January 2017 going live for webpage

<http://www.slideshare.net/FAOoftheUN/tag/ghp>

Questions: Food-quality@fao.org

A wide-angle photograph of the FAO Headquarters building in Rome, Italy. The building is a large, modern, multi-story structure with a grid of windows. In the foreground, there is a tall flagpole with the FAO flag (a blue flag with a white globe) flying. To the left, a large, mature pine tree stands prominently. The sky is clear and blue. The overall scene is bright and sunny.

Thank you

www.fao.org/food/food-safety-quality

Part 2, Section 1:
HACCP – The Road Ahead
Issues Raised at the Finland Meeting
June 2014

Jenny Scott
Senior Adviser, Office of Food Safety
US Food and Drug Administration
USA

Reason for the Colloquium

- ▶ Colloquium held in Majvik, Finland held 4–6 June 2014
- ▶ Proposed by Finland at the 45th Session of CCFH in Hanoi, Viet Nam (2013)
- ▶ Need to update the *General Principles of Food Hygiene* (CAC/RCP 1–1969), and especially its Annex on HACCP, in light of implementation experience and other ongoing initiatives
 - ❖ Need to retain usefulness and relevance
 - ❖ Need to clarify, provide more guidance

Issues

- ▶ Consistent understanding and practical implementation of some aspects of HACCP have proven to be difficult
- ▶ Especially true for small and less developed businesses (SLDBs), as well as for developing countries, which often lack access to appropriate technical assistance in the practical application of all the principles

Conclusions of Majvik Colloquium

1. Need to clarify the relationship of GHPs and HACCP in light of commonality of many activities to both, e.g., verification, corrective action, documentation.
2. Hazard analysis should precede determining whether hazards are addressed within GHP or as HACCP CCPs.

Conclusions of Majvik Colloquium

3. More guidance is needed on how to conduct a hazard analysis.
4. More focus is needed on chemical hazards(e.g., food allergens) and physical hazards.
5. More guidance is needed on CCP determination, defining critical limits, corrective actions (e.g., preventive actions for reoccurrence).

Conclusions of Majvik Colloquium

6. Need to more clearly distinguish validation from verification.
7. Figures need to be more “user-friendly.”
8. Consider including examples rather than empty tables to clarify expectations for what is expected in a HACCP plan.

Overall Conclusion

- ▶ The current HACCP text is essentially adequate and is well accepted internationally.
- ▶ The seven principles of HACCP should remain intact, as they are widely recognized and well established.
- ▶ Full support to better clarify the relationship between the General Principles of Food Hygiene and HACCP by restructuring and supplementing the existing HACCP guidance text where necessary.

Key Recommendations to CCFH

- ▶ Review the GPFH and its HACCP annex in terms of providing more guidance for many of the key parts of the current HACCP text.
- ▶ Consider an approach that clarifies the relationship between GHPs and HACCP as part of a Food Safety Management System (FSMS).

Key Recommendations to CCFH

- ▶ Consider the amount and nature of guidance proposed for many aspects of the current HACCP texts, mechanisms to better disseminate guidance, and successful approaches implementing the current HACCP texts to promote consistency of application across the food chain, user-friendliness and proportionality to size of business.



Part 2, Section 2:
HACCP – The Road Ahead
*Issues Raised by the First CCFH
electronic Working Group*

Louise Dangy, France

Following up on the Finland meeting

- ▶ Worldwide use of the HACCP system as described in CAC/RCP 1–1969
- ▶ Nevertheless, some issues need to be clarified:
 - The relation between the 2 parts (GHPs and HACCP)
 - Some HACCP Principles are horizontal in nature (not specific to the implementation of the HACCP part)
 - Diverging interpretations of some concepts: *validation vs. verification, condition of food* in the definition of « hazard », etc.
 - The scope: is primary production involved? What about the management of quality?

Following up on the Finland meeting

- ▶ Some gaps have been identified:
 - The need to elaborate guidance to allow for a better implementation of the hazard analysis
 - Additional guidance could help actors to elaborate critical limits for validation
 - The need to take into account non-microbiological hazards
 - Specificity of emerging hazards (mycotoxins, bioterrorism)
- ▶ Efforts should be made to actively imply all stakeholders:
 - Respective function of competent authorities and food business operators
 - Flexibility for innovative businesses
 - Specificity of emerging & developing countries
 - Improve the tool by making it more user-friendly

Initiating the revision of CAC/RCP 1-1969

- ▶ CCFH 46 agreed to undertake the revision of GPFH and its HACCP Annex
- ▶ Objectives:
 - Provide further guidance for the implementation of the HACCP system
 - Encompass all types of businesses/hazards
 - Improve the redaction to be more user-friendly
- ▶ Requirement: keeping unchanged the definition of CCP and the seven principles of HACCP

Initiating the revision of CAC/RCP 1-1969

- ▶ CCFH 46 established an eWG:
 - Led by France and Thailand & working in English
 - Terms of reference:
 - Review the General Principles of Food Hygiene (GPFH) and identify any need for updating (e.g. clarification on the use of potable water vs clean water);
 - Review its Annex on HACCP and recommend updates, as necessary;
 - In doing so, consideration should be given to the appropriateness and possibility of combining the GPFH and its HACCP Annex into one document;
 - In addition, to look at current food hygiene texts (e.g. the validation, micro-criteria, MRM documents) and their relationship to the above, and recommend appropriate references to relevant adopted texts.
- ▶ First year of work: prepare, if appropriate, the revision of CAC/RCP 1-1969

The First Round of the Revision Process: The Achievements

- ▶ Worldwide interest and involvement:
 - 30 Codex MS, 1 Codex member intergovernmental organization, 8 Codex observer organizations
- ▶ Agreement between CCFH members:
 - To undertake the revision of GPFH & HACCP
 - To reorganize the document: One general introduction (encompassing horizontal aspects), Part I– GPFH, Part II–HACCP
 - To begin with the revision of the General introduction (*i.e.* to focus on definitions and concepts common to both parts)
 - In recognizing that the management of certain CCPs can be challenging

The First Round of the Revision Process: The Pending Issues

- ▶ Some technical questions were pointed out:
 - Significance of « clean water » => FAO assistance required
 - Meaning of the words « condition of food » (hazard definition)
 - Relevance of the HACCP system for primary production
- ▶ Discussion on the timely application of the HACCP system:
 - Is it always possible to implement a sequential process while in FBOs, GHPs and HACCP take place at the same time?
 - Need to have a first HA, then consider the implementation of GPFH, and address a short list of relevant hazards when elaborating HACCP.
- ▶ Need to examine existing concepts:
 - Corrective actions, critical limits, validation *vs.* Verification

Where are we now?

- ▶ CCFH 47 initiated the actual revision in November 2015
- ▶ An innovative eWG was established to that goal:
 - Working in English, Spanish and French and active through the Codex e-platform
 - Co-chaired by Chile, France, Ghana, India and the United States of America
- ▶ The co-chairs elaborated and distributed a proposal submitted for comments in June 2016
- ▶ Wide participation: 35 Codex members, one Member organization, and 8 Observer Organizations
- ▶ Focus on the General Introduction (definition and concepts)

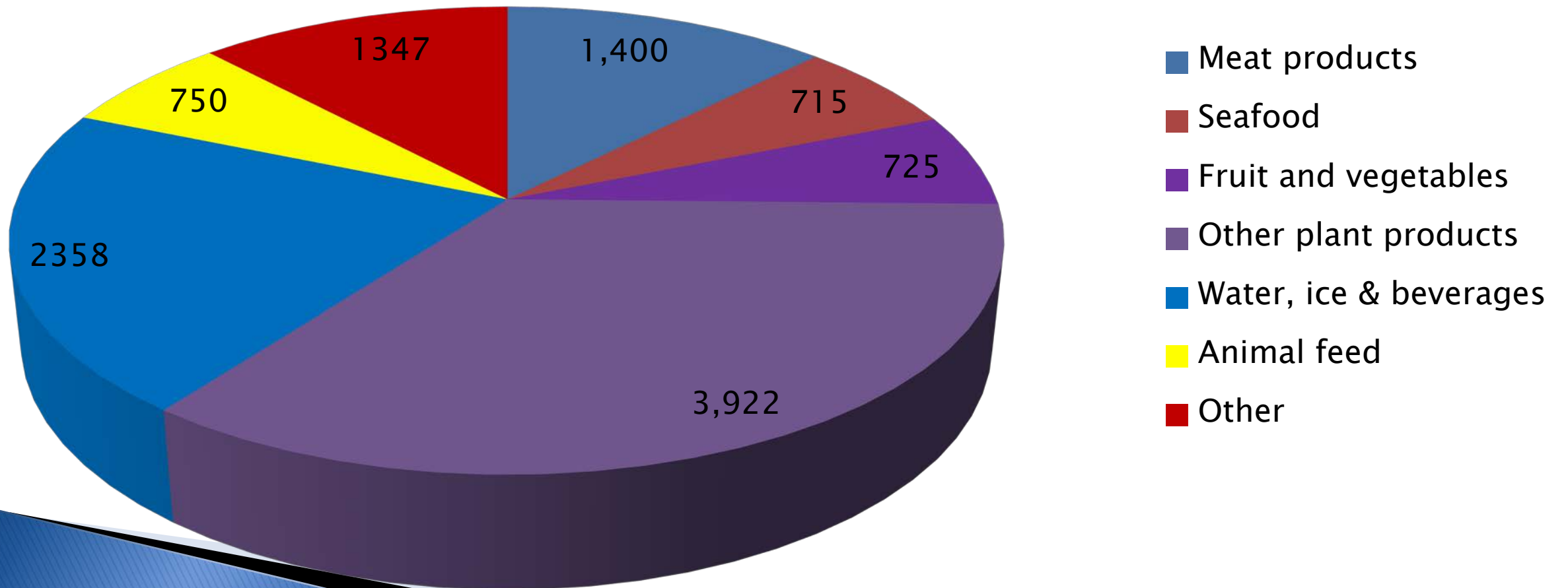
Part 3: Implementing HACCP in Small Business: A Developing Country Perspective

Pisan Pongsapitch
National Bureau of Agricultural Commodity and Food Standards,
Ministry of Agriculture and Cooperatives,
Thailand

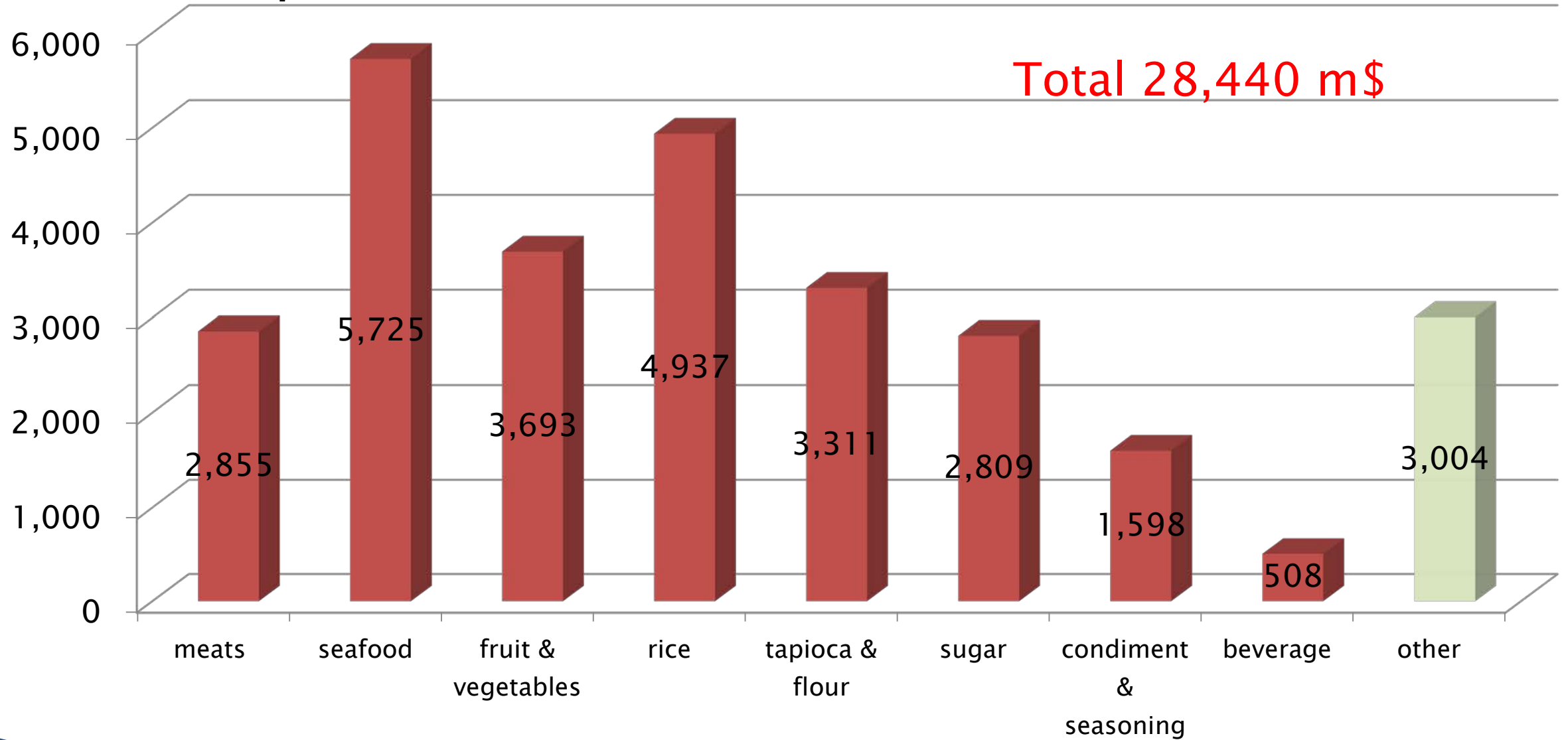
Number of Thai Food Producers and Processors

- ▶ **Food & drink industries: 10,500**
- ▶ Rice mills: 38,500
- ▶ Feed industries: 750
- ▶ SMEs not categorized as industry: several thousands
- ▶ Farms: 6.5 Million

Number of Food & Feed Industries



Export Value of Thai foods in 2015 (million \$)



Thai GHP/HACCP Regulation: Mandatory

- ▶ Basic Good Hygienic Practice (modified from General Principles of Food Hygiene; RCP1) is a mandatory standard for most of food industries in Thailand
 1. Establishment
 2. Equipment
 3. Control of operations
 4. Sanitation
 5. Maintenance and cleaning
 6. Personnel and personal hygiene
- ▶ Enforced by Thai FDA

Thai GHP Regulation: Mandatory

Required for processing of 54 types of foods such as:

- Infant formula
- Dairy products
- Canned foods
- Frozen foods
- Meat products
- Beverages
- Tea, coffee
- Fish sauce, seasoning
- Chocolate, jam, jelly, marmalade
- Confectionary

Thai GHP/HACCP Standard: Voluntary

- ▶ Codex GHP and HACCP (General Principles of Food Hygiene and its HACCP Annex; CAC/RCP1) is largely used for larger sized food business operators, specifically those manufactured products for export.

Codex GHP & HACCP

- ▶ Codex GHP and HACCP is translated to Thai
- ▶ Adopted identically to Thai standards
 - *Thai Agricultural Standard (TAS) : Code of Practice – General Principles of Food Hygiene (TAS 9023–2007)*
 - *Thai Agricultural Standard (TAS) : Hazard Analysis and Critical Control Point (HACCP) System and Guidelines for Its Application (TAS9024–2007)*
- ▶ Voluntary basis (implementation and certification)

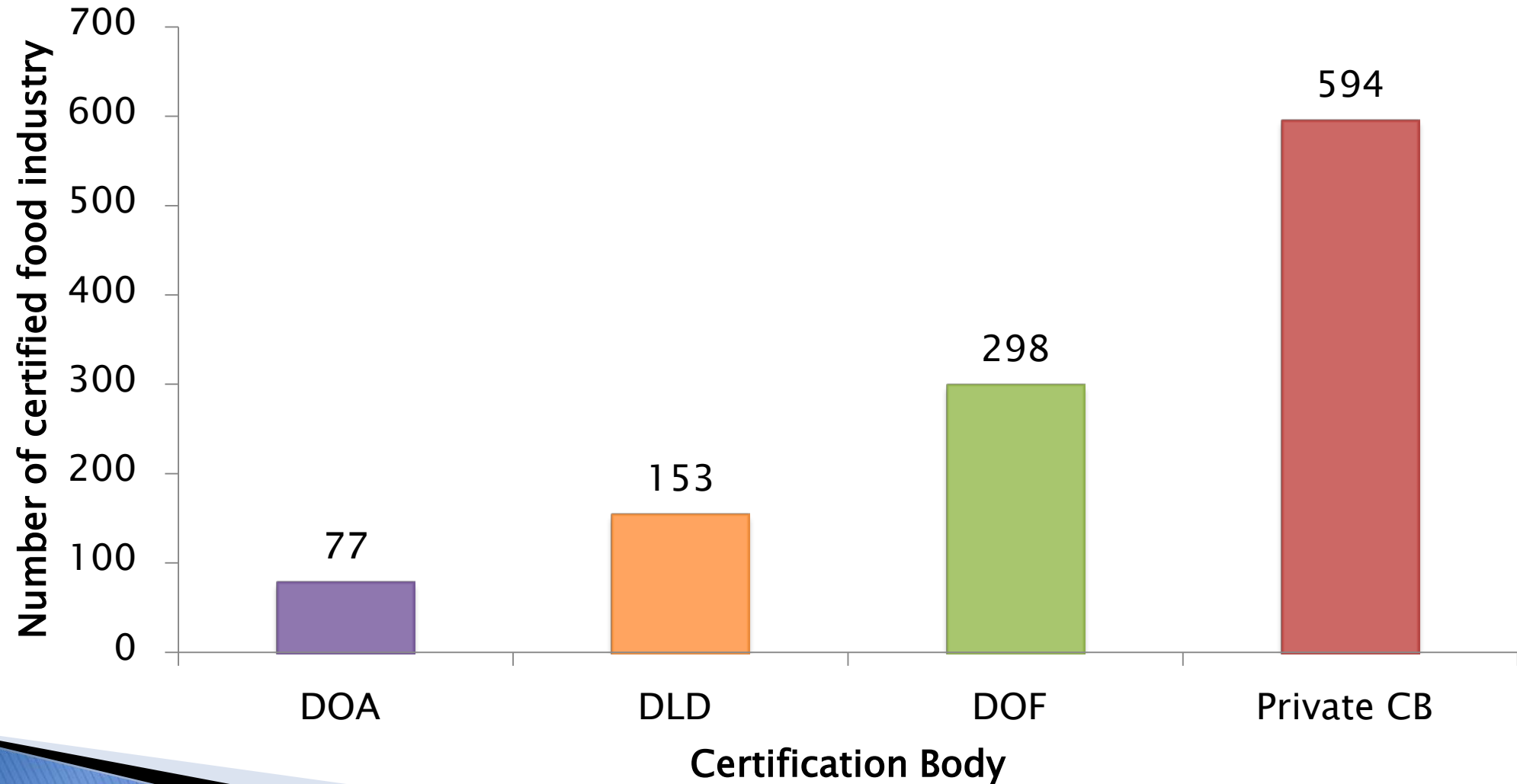
Start of HACCP at International Level

- ▶ **1988:** ICMSF Microorganisms in Foods 4: Application of the HACCP System to Ensure Microbiological Safety and Quality
- ▶ **1993:** The first version of Codex Guidelines for the Application of the HACCP System
- ▶ **1993:** EU Directive on the Hygiene of Foodstuffs
- ▶ **1995:** US Seafood HACCP Regulation
- ▶ **1997:** HACCP incorporated as Annex to RCP1
- ▶ **1998:** FAO Training Manual on Food Hygiene and the HACCP System
- ▶ **2003:** Revision of Codex HACCP Guideline

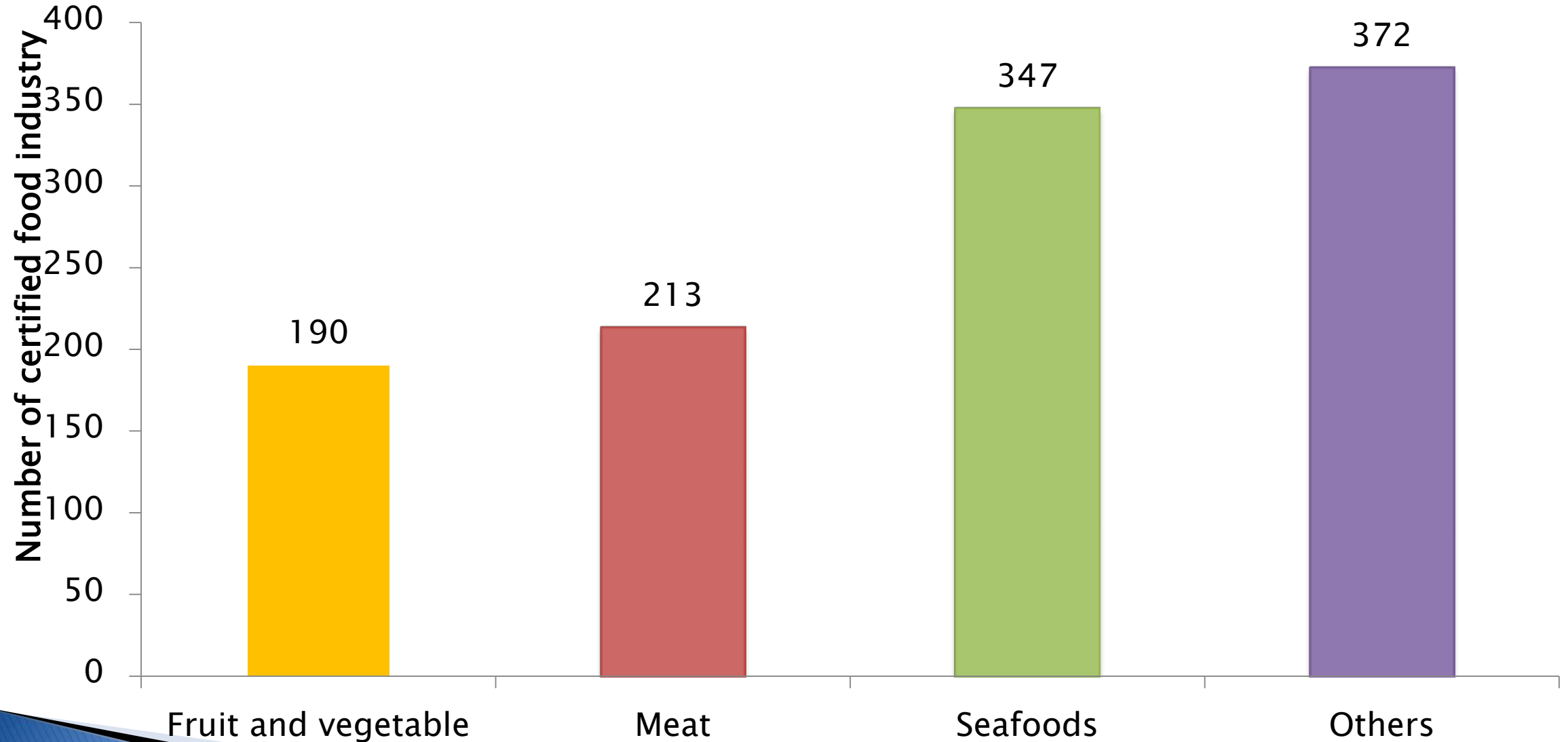
HACCP Implementation in Thailand

- ▶ **Before 1990: What is HACCP?**
- ▶ **1990–1993: HACCP is good but How???**
- ▶ **1993–1995: We need to start HACCP!**
- ▶ **1995: FAO Training-of-Trainers in the Application of HACCP in Thailand**
- ▶ **1995–2010: A number of training programmes, training providers (government, private, academics)**
 - **CBs start HACCP certification programmes**
- ▶ **1996–2010: Thousand of food industries got HACCP certification**
- ▶ **2010–present: Expansion/improvement of HACCP implementation/certification**

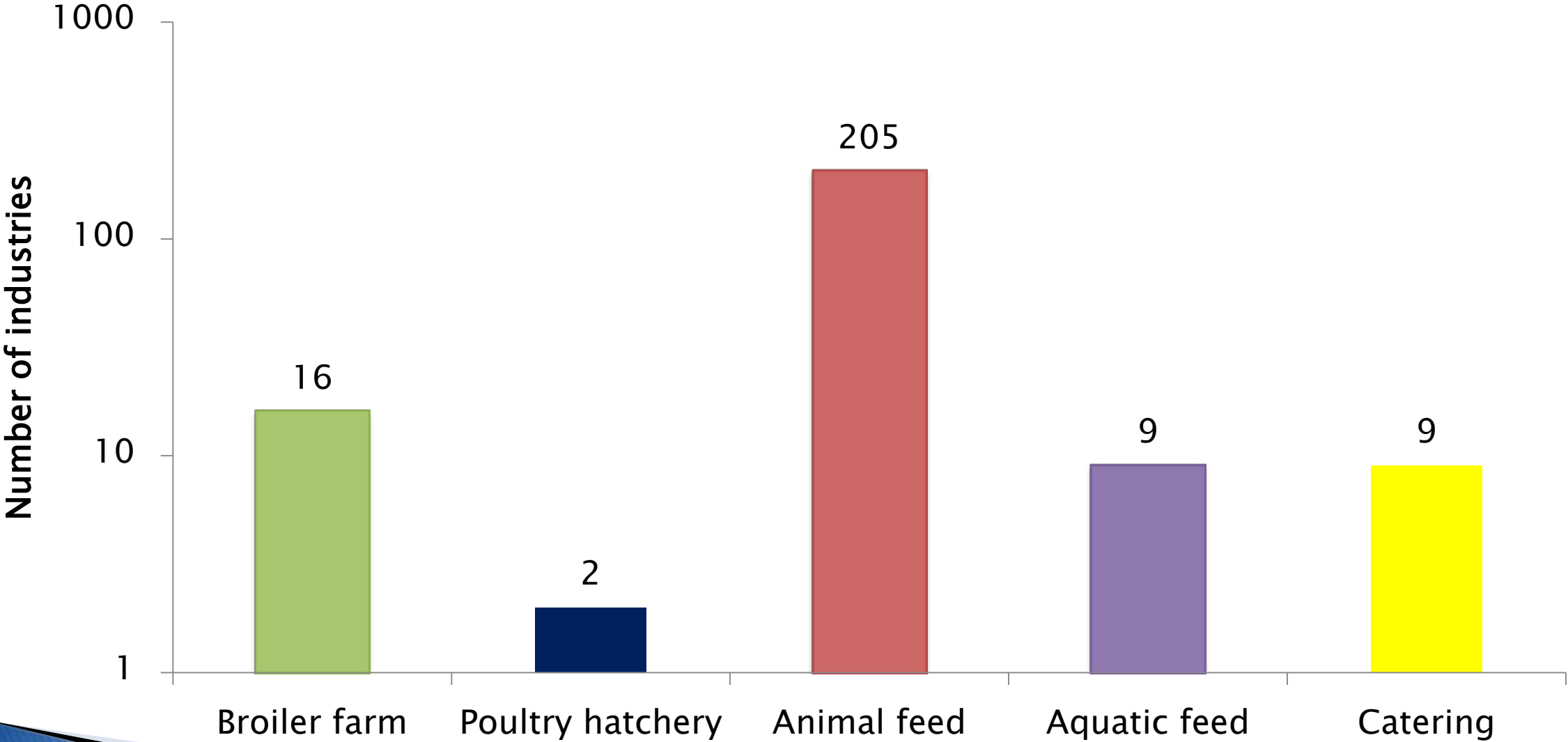
Number of food industries with HACCP certification



Number of different types of businesses with HACCP certification

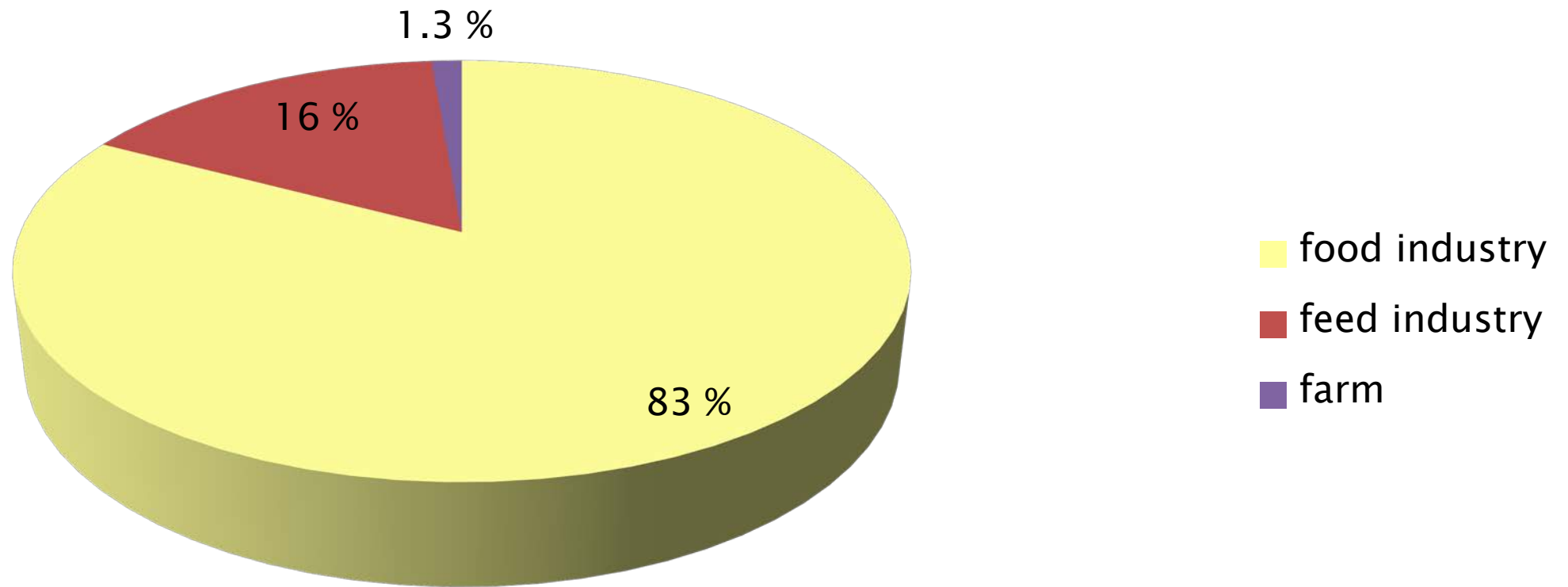


Number of farms /feed /catering industries with HACCP certification



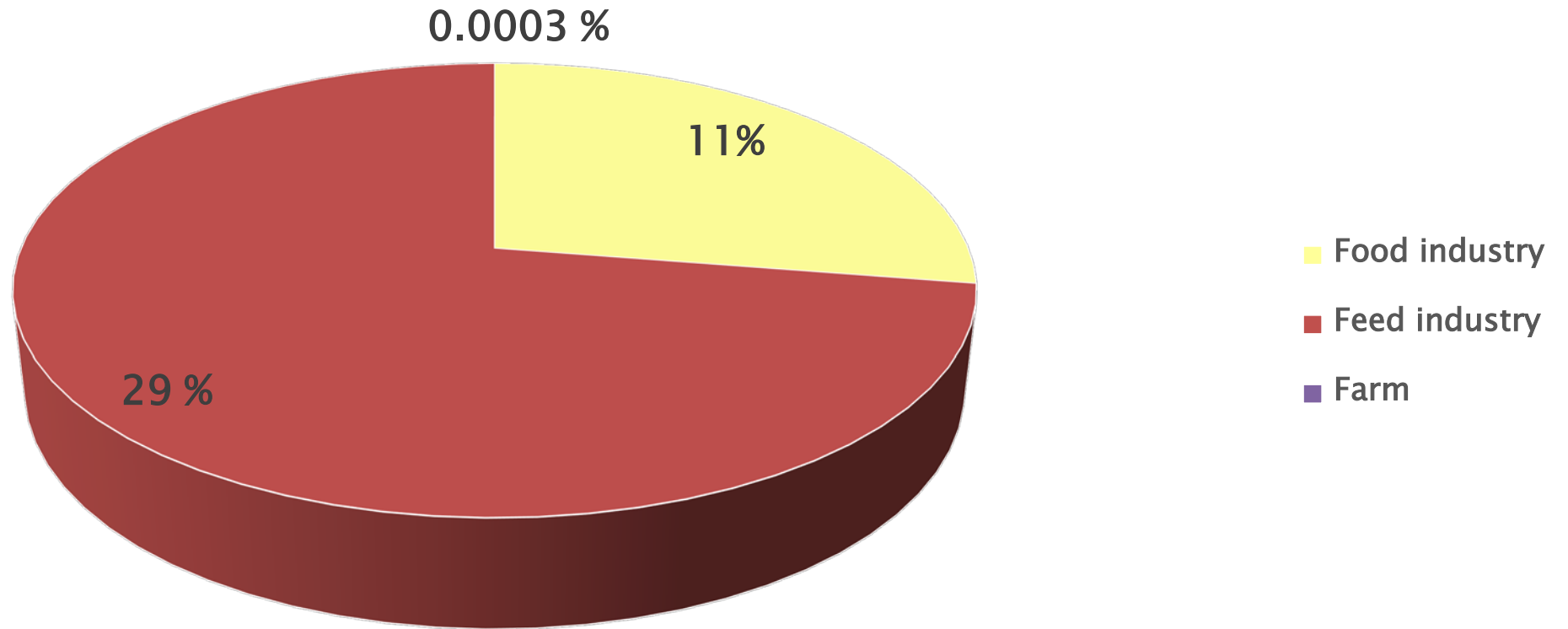
HACCP Certification: Food/Feed/Farm

HACCP certified (% of all certified industries)



HACCP Certification : Food/Feed/Farm

HACCP certified (% of each industry category)



HACCP Certification (continued)

of food business operators (FBO) certified under ISO 9000, ISO 22000 compared with FBO certified under HACCP

Standard	Number of FBO
Codex HACCP	1,122
ISO 9000	128
ISO 22000	7

Certification Bodies

Number of certification bodies (CB)

	CB		
	Government	Private	
		Accredited	Non accredited
Number of CB	3	9	8

Implementation of HACCP

- ▶ Basic GHP is a starting point --- mandatory standard
- ▶ HACCP under the TAS 9024 --- voluntary
 - 5 Preliminary steps
 - Assemble HACCP team
 - Describe product
 - Identify intended use
 - Construct flow diagram
 - On-site confirmation of flow diagram
 - + 7 Principles
- ▶ *Codex HACCP is currently well-understood and well-implemented*

After a Few Decades of HACCP Implementation

- ▶ GHP/GMP must be a starting point/well established
- ▶ HACCP was market driven (export vs. domestic)
- ▶ Trainings & Trainings
 - X,XXX FBOs and XX,XXX individuals have been trained (public and in-house courses including XXX inspectors/auditors)
- ▶ The understanding has been much improved for both food business operator and certification bodies compared to the first few years
- ▶ The adequacy of CBs (numbers and quality) including accreditation/recognition system

Challenges

- ▶ Most SMEs still find HACCP difficult to apply
 - Lack of food safety personnel, knowledge, technical information
- ▶ Using the HACCP principles in some specific areas outside of food manufacturers, such as:
 - Primary production (e.g. farms, collecting/packing house, fish peeling sheds)
 - Food services (e.g. restaurants, hotels, food catering, retailers)
- * **GAP/GMP/GHP may be more appropriate choices**
- ▶ A simplified, user-friendly HACCP guideline/guidance for SMEs?
- ▶ Integration approach (GMP/HACCP/ISO 9000/ISO 22000/private standards) for large/international FBOs?



Part 4: Implementation/Use of HACCP in Industry



Sara Mortimore
Vice President,
Product Safety, Quality & Regulatory Affairs
Land O'Lakes

Context: Land O'Lakes, Inc. overview

Fortune 500

#215

290

U.S. facilities



PRESENCE IN

50 states

60+ countries



10,000

EMPLOYEES



3rd LARGEST

U.S. member-owned Cooperative

The Land O'Lakes, Inc. Farm to Fork portfolio



Ag services,
crop inputs,
precision agriculture



Animal nutrition
and feed



Dairy foods and
ingredients



Sustainability

HACCP in Industries in the United States and Other Countries

The HACCP principles are a concept and some useful related tools assist with implementation

- ▶ HACCP is used :
 - For both animal and human food safety
 - In large and small companies
 - Through all areas of the supply chain
- ▶ This is a way of thinking and working
- ▶ Tools such as worksheets and CCP decision trees are very helpful in the right hands. They are problematic when misunderstood.
- ▶ It requires effective education and support efforts

HACCP is best implemented as a program but commonly observed beliefs include:

Having a HACCP Plan = HACCP

Or

Having HACCP = a Food Safety Program

i.e. no real consideration of environmental hazards or continued analysis of new hazards or learning from failures

Seeing a certificate of compliance as the end goal

Product design safety can be a disconnect

- ▶ It is critical to understand the product intrinsic safety factors before starting a HACCP study
 - *What is making the product safe and what would cause it to be unsafe*
- ▶ Understanding the role that the consumer plays in food safety has to be taken into consideration
 - *Is the product ready to eat versus requiring cooking*
 - *How might the product be used and abused*

In both large and small companies we see opportunities

- Poorly implemented HACCP systems
 - Incomplete process flow diagrams and therefore **incomplete hazard analysis**
 - **Inability to do hazard analysis** (needs thoughtful application of scientific knowledge)
 - Lack of time on the plant floor – many companies *think* they know what goes on
 - Lack of transparency up and down the supply chain
 - Validation – poorly understood
 - Monitoring and corrective action procedures rarely adequate
- Heavy reliance on prebuilt HACCP program templates
 - Resulting in **lack of ownership**
- Failure to maintain systems once implemented
 - Lack of a **continuous improvement** mentality and “prepping for the test”
 - Make changes because auditors/inspectors ask for them

Attention to detail is key to a robust Hazard analysis but can be lacking

- ▶ Generalization – Hazards
 - Type of pathogen
 - Specific organism where known
 - Resistant forms (e.g. spores, cysts)
 - Toxin producers
 - Vegetative (non spore formers)
 - Hazard manifestation
 - Presence, Contamination, Survival, Growth
 - Behavior under different conditions
 - Chemical and physical hazards
 - Frequently considered in less detail than Microbiological
 - ▶ Generalization – Control measures
 - “GMPs”
 - Limited thought regarding likely failure modes



A simple change in thinking can be impactful, including the approach taken to doing hazard analysis

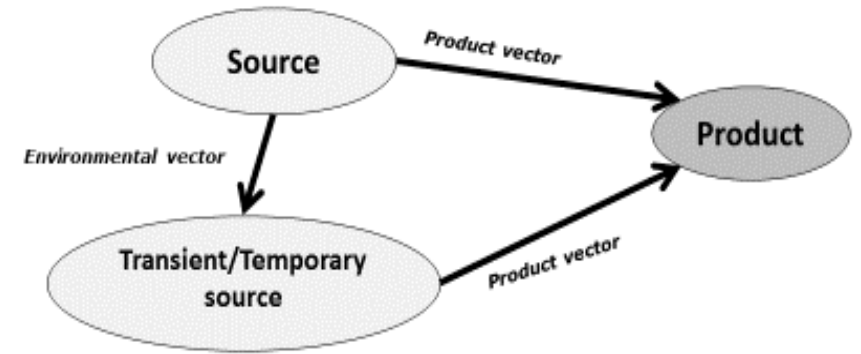
- Twenty years ago many companies had decided on way too many “CCPs” and pulled back perhaps too far
- Using the United States NACMCF Hazard definition* can be helpful in ensuring that practitioners grasp when control measures are truly needed

* A biological, chemical, or physical agent in, or condition of, food with the potential to cause an adverse health effect *in the absence of control*

How does industry address key food safety controls that do not fit the HACCP CCP approach very well?

Historically industry has failed to make a systematic connection between HACCP and PRPs

- Required PRPs are rarely determined through systematic application of *environmental* hazard analysis and risk assessment
- Poor plant infrastructure and poor practices = **significant** environmental hazards
- Using a hazard analysis approach can identify **sources and vectors** of contamination through the process
- Highlights where PRP hygiene controls are *essential* for food safety e.g. post pathogen reduction step
- Using HACCP in this way brings HACCP and PRPs closer together as opposed to them being separate, often **unconnected** programs



Applied in this way HACCP can help drive organization culture change

Plant operator level comments

“We were introduced to a risk based approach to focus on the **environmental risks** that could adversely affect the finished product rather than just focusing on the product itself.”

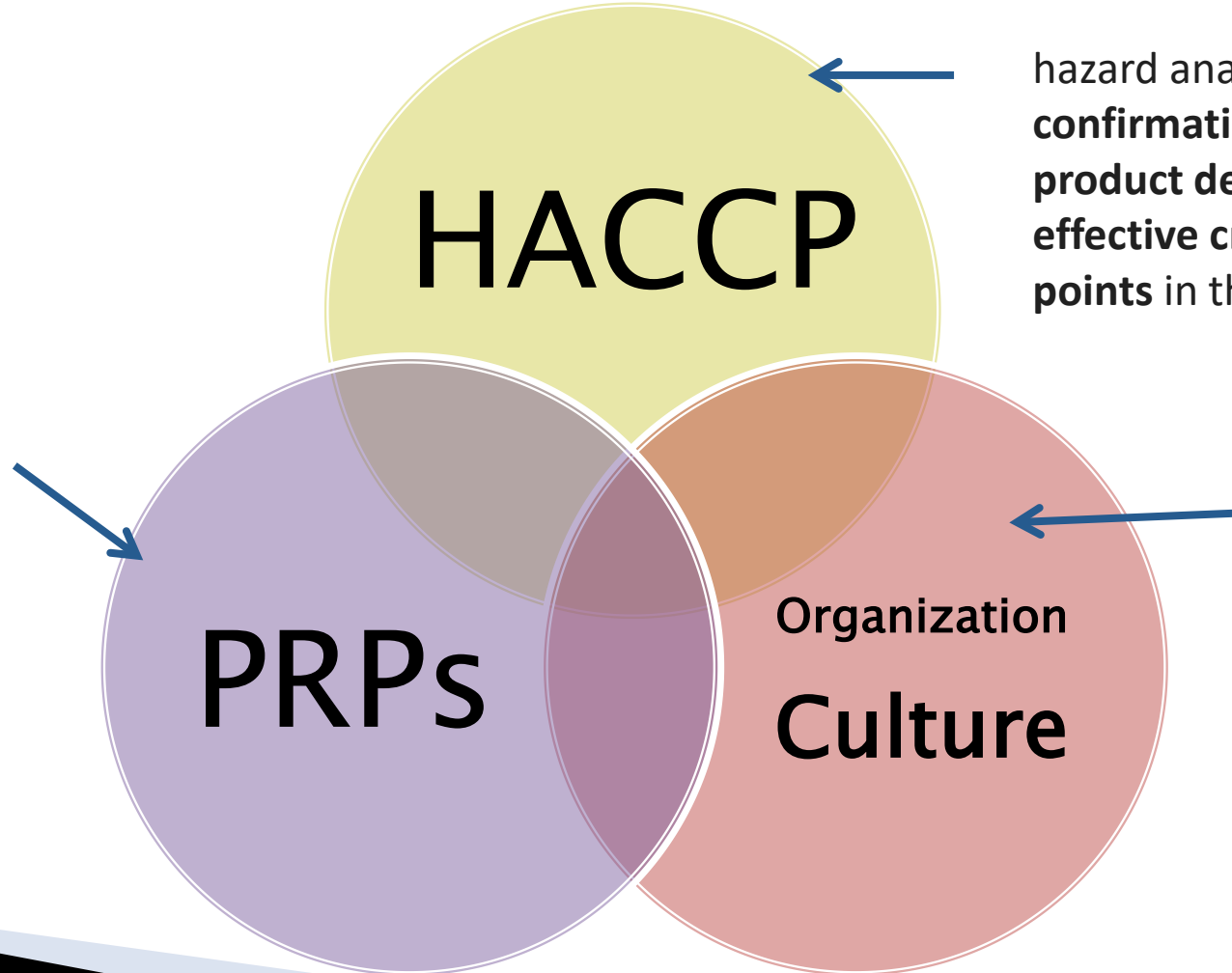
“This in itself is a big change, in the past the approach was focused on the equipment and the product with a very limited look at the affects of the environment it was processed and packaged in.”

Addressing key food safety controls that do not fit the HACCP CCP approach

- Internationally, Operational PRPs can be helpful and are increasingly used
 - ❑ Bring needed attention to programs that would not fit the model for CCPs
 - ❑ But are also an added confusion when we add PCs into the mix within the US
- The approach taken varies considerably: metal detection and allergen control come to mind – some treat those as CCP's, others as OPRPs and for others they are PRPs
- Here in the US, companies are determining whether Preventive Controls (PCs) are needed e.g. for Sanitation
- The best HACCP programs are ones that call out the **specific** pre-requisites that are controlling hazards and manage them as part of the overall food safety program
 - ❑ Do this for all types of hazards
 - ❑ Elevate where these controls are **essential** for food safety

We increasingly recognize that effective food safety management requires a rock solid **interdependency** between HACCP, PRPs and Organization Culture

particularly those environmental hygiene measures that control sources and vectors of contamination. *This requires hazard analysis skills too*



hazard analysis and confirmation of safe product design and effective critical control points in the process

more than management responsibility, this is how *ALL* employees think and behave and *for food safety behavior this requires education and training*

**Types of training/assistance
provided by larger companies
in implementing HACCP and
how effective is it?**

Typical training/assistance in implementing HACCP

- Primarily aimed at the HACCP team as opposed to broader senior managers
- Overview high level HACCP training is conducted **once a year** in most facilities and because it is required
- Knowledge and skills within HACCP teams is variable in both large and small companies, and in developed and less developed countries
- Most other employees don't have an in depth understanding of food safety controls
- Training is frequently conducted by **3rd party** and typically unless the trainee has a HACCP Subject Matter Expert at their facility the new trained will struggle to implement the knowledge
- **Training often** seen as a one time activity with limited support to **educate** and support beyond the initial class

Limited oversight of the quality of HACCP education and training **certainly contributed to its ineffective use**

- ▶ Leads to variable standard of HACCP “trainers” and therefore the effective transfer of accurate knowledge
- ▶ No common curriculum, with a few exceptions
 - In the US, the Food Safety Preventive Controls Alliance curriculum development was well done
- ▶ Lack of training validation
 - Rarely is there evidence of understanding or the ability to apply what was taught
 - The UK does have a long established approach to oversight of curriculum, trainers, training centers, and validation processes
- ▶ The result is that inadequately educated people are too often responsible for operating food businesses

Best practice training/assistance in implementing HACCP

- The most successful approaches are to require all HACCP practitioners as well as members of a wider food safety committee to attend a **variety of food safety training** to include PRPs and more advanced focus on e.g. hazards, risk assessment, validation
- HACCP teams need a network of experts they can reach out to for support, mentorship, and guidance
- Larger companies often develop **internal HACCP guidance documents** and conduct **regular support meetings**
- Small and medium sized companies may be best served by committing time for their food safety people to join forums, and best practice share groups to gain mentorship or partnership approach
- The practitioner succeeds best when they have been to a recognized HACCP course and practices what has been learned under expert guidance

In Land O'Lakes, we improved our approach both to HACCP and broader food safety education and it had an impact

- Introductory level workshops
 - 3 days for all Plant Managers, HACCP teams, and all R&D
 - Certified through Royal Society Public Health (UK)
 - In house trainers attached to a third party training center
- Developed Hazard Analysis guidance documents
- Followed by **coaching at plant level** and platform (e.g. butter) on site meetings, and discussions.
 - ▶ **Training for hygienic plant behaviors** as well as **education for why we were making such changes.**
 - ▶ **Senior leadership education for culture change**



In 2008 Land O' Lakes HACCP and PRP programs passed all customer inspections as well as third party audits

- ▶ Looked pretty good
- ▶ Today our systems look VERY different and I fully expect that they will (and should) look very different in another 5 years
- ▶ HACCP now being used primarily to reduce food safety risk as opposed to meeting regulatory requirements and passing a customer audit
- ▶ We continue to go deep and look for opportunities to do better

Nothing much wrong with HACCP as a set of principles but it needs much more emphasis on it being just one element of an authentic 24/7 more encompassing food safety program used to reduce food safety risk (outcome based), not just to get a certificate of compliance.

A significant amount of training, education and ongoing support is needed to accomplish this.

Thank you



PURINA

WINFIELD

 **LAND O' LAKES, INC.**

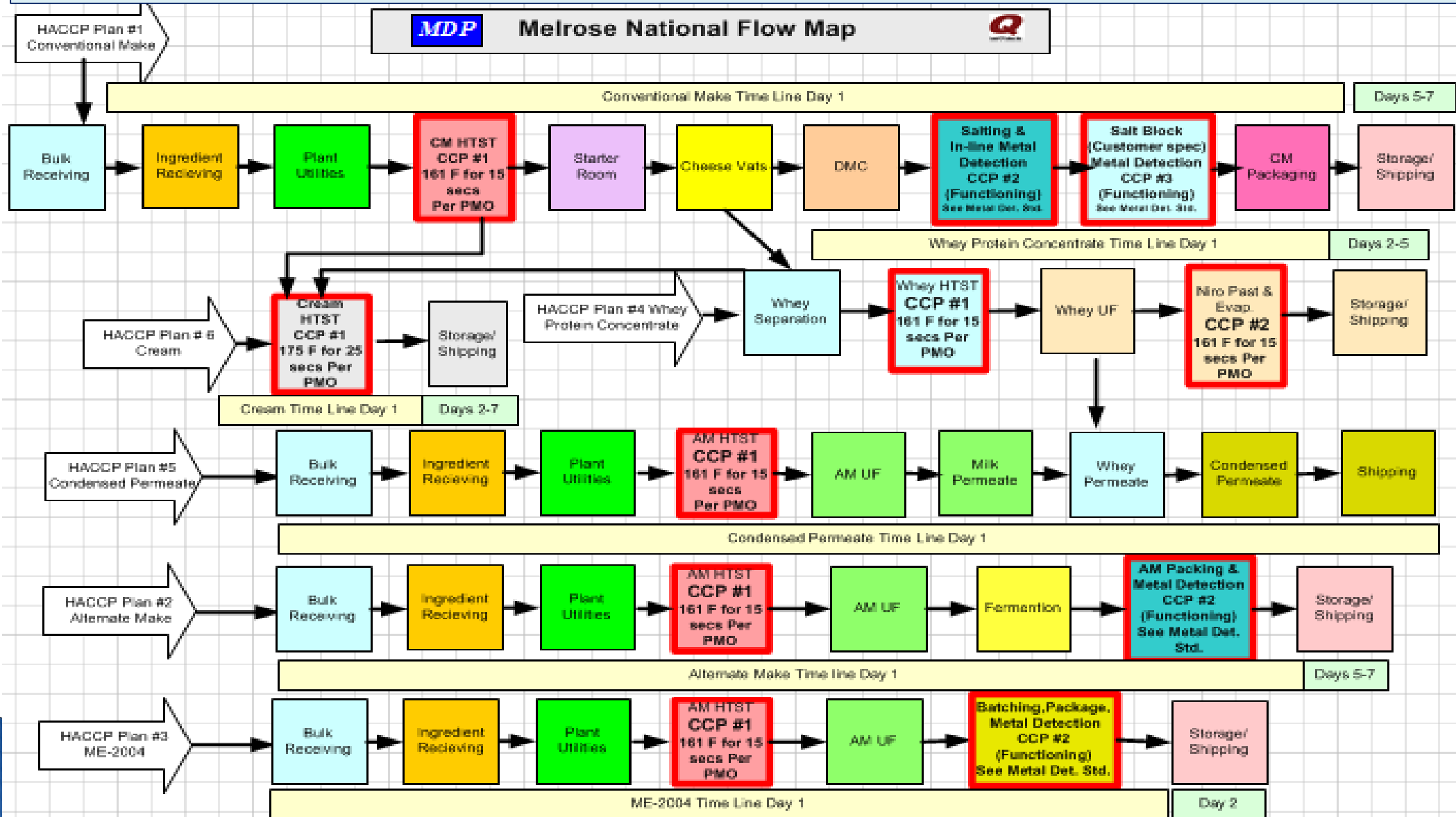
Appendix

Process Flow Diagrams

Rethinking the approach taken to process flow diagrams

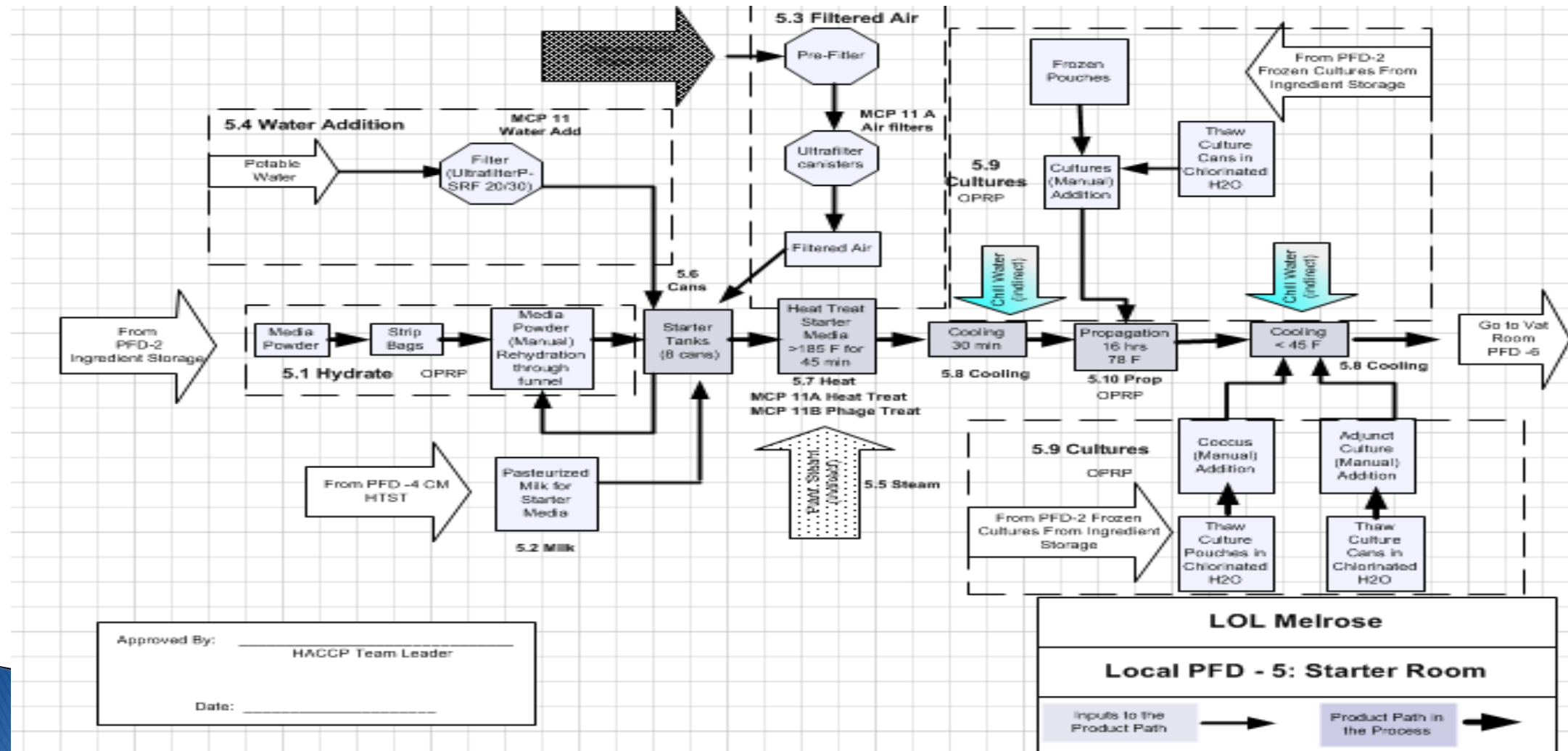
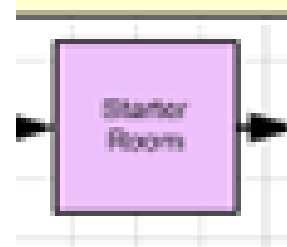
- Process flow diagrams must be painstakingly team reviewed in the plant
 - This can easily be achieved with good quality training
 - Incomplete diagrams = incomplete hazard analysis
- HACCP plans can be extended to include all **‘process interventions’**
 - This helps to ensure a connection between the operating environment and the process
- “Google earth” approach to process flow mapping used in Land O’lakes

Dairy Foods Flow Chart Example



Dairy Foods Flow Chart

Example: Starter Room



Approved By: _____
 HACCP Team Leader

Date: _____

LOL Melrose

Local PFD - 5: Starter Room

Part 5: The Task and Accomplishments to Date of the CCFH eWG



Olivier Cerf, France

In this Draft

- ▶ A modest ambition
- ▶ An attempt to achieve an agreement on the basics

Mission

- ▶ A new document in three parts
 1. Introduction including horizontal aspects (common to Good Hygienic Practices and HACCP)
 2. Good Hygienic Practices (GHP)
 3. HACCP System
- ▶ No managerial aspects
- ▶ Priority to the clarification of the third part (HACCP)
- ▶ Keeping unchanged the CCP concept
- ▶ Introduce hazard controls measures at steps that are not CCPs as currently defined

Introduction (1)

- ▶ **Foreword**
- ▶ The need to provide consumers with food that is *suitable* (acceptable for human consumption) and *safe* (harmless) through a food safety control system
- ▶ The prerequisite first phase/component is the implementation of GHPs to achieve a reduction of the *contaminant* burden
 - *Always*
- ▶ The second phase/component is the implementation of specific measures to control the contaminants that could compromise food safety, the *hazards*
 - *When appropriate and feasible*

Introduction (2)

- ▶ Objectives
- ▶ Scope
- ▶ Use by governments, food business operators and consumers
- ▶ Basic principles for a food safety control system
- ▶ Definitions applying within the whole document (Introduction, GHPs and HACCP)
- ▶ Definitions specific to the HACCP system

Keeping Unchanged the CCP Concept

- ▶ Among potential **hazards**, the hazard analysis indicates those that are as **significant**
- ▶ Hazard control **measures, *essential*** against the significant hazards, are implemented
- ▶ The **steps** where there are applied are deemed ***critical***
 - Hence the name “Critical Control Point/CCP”

The Control of a Hazard is **Essential** (1)

- ▶ The application of the control measures must be monitored
- ▶ Current Codex monitoring approach
 - A *measuring* technique is available,
 - The measurement result has to comply with a *critical limit* that separates *acceptability* from *unacceptability* with respect to *safety*,
 - Non-compliance has to be detected *in time* to make adjustments to ensure control
- ▶ “Real time monitoring”

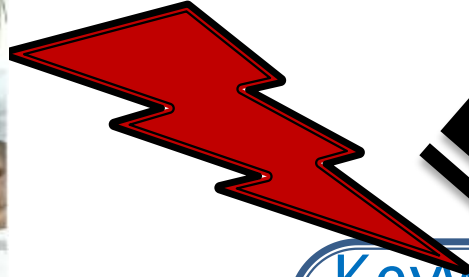
Keywords

Measurement

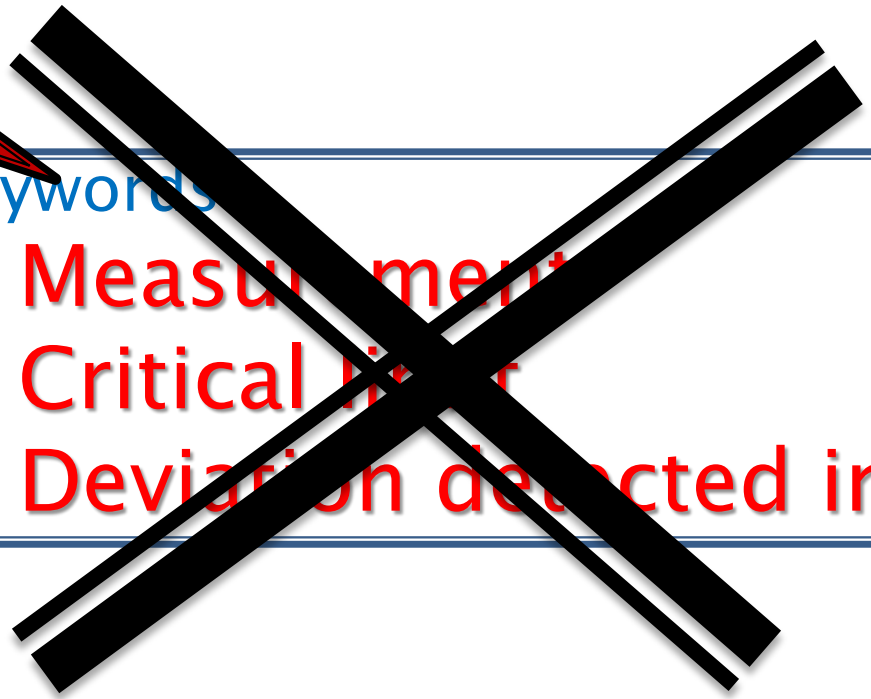
Critical limit

Deviation detected in time

The Issue: What Does Happen When ...



Keywords
~~Measurement
Critical limit
Deviation detected in time~~



The Control of a Hazard is Essential (2)

▶ Yet

- One or more keywords are not applicable
- No “real time monitoring”
 - *The step where the control measure is applied is **critical**, yet the monitoring does not comply with the current Codex description*

▶ What is it about?

▶ ISO 22000 answer:

- The control measure is called OPRP
- No name is given to the step

Moving Forward

- ▶ The revised text should incorporate both types of control measures and their monitoring

At this Committee, it is Suggested to Discuss

- ▶ The general introduction
 - Sections 3 to 5 and Principles
- ▶ The incorporation in the revised document of the two types of control measures.
 - *For the time being we should focus on the concepts, not on the names given to the steps*
- ▶ The inclusion of the primary production

Thank you

