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SUMMER COURSE "LEADERSHIP" 2022

October 2022 13th

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From risk analysis to public policy design : practical approach in food safety and leadership at the scale of a local team

1. Definitions and concepts : risk analysis / hazard analysis (HACCP)
risk analysis / risk management
The scientific basis for acting !

2 Multi-Annual National Control Plan 2021-2025 : a tool for management at a national level and its adaptation at a local level
The role of a head of service in Food Safety

3 Key messages / leadership in FSQ

General introduction - *definitions*

Food safety?

Insurance that foods will not cause deleterious effects to consumers' health… *when prepared / consumed for the purpose for which they are intended*

*Means: no **hazards (or acceptable level)** in foods*

General introduction - *definitions*

Hazard?

Biological, physical, chemical agent that, when present in foods, may have detrimental effect on health

Risk?

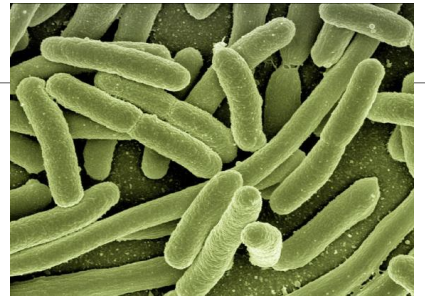
Probability to see the deleterious effect related to a hazard happen

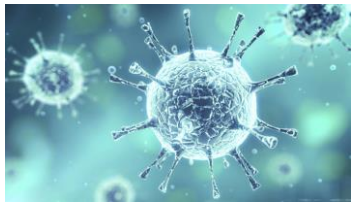
Notion of **threshold**: infectious dose, concentration of toxic compound…

The main aim of food safety authorities are to identify the thresholds for the different hazards in order to protect consumers.
This may be difficult and require many scientific data, experiments …

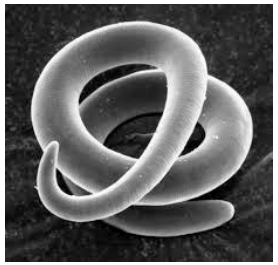
Biological hazards

Pathogenic microorganisms
- Bacteria (and their toxins)
- Viruses

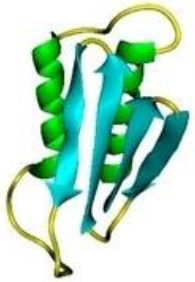




Parasites



Others?
- BSE agent



Chemical hazards

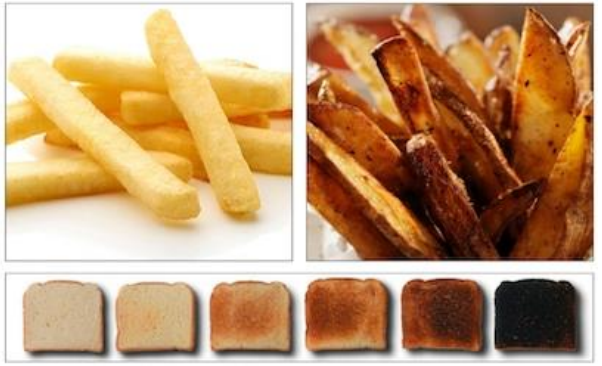
Drug residues (food from animal origin)

Pesticides (fruits, vegetables, cereals…)

Environmental contaminants

- Heavy metals (Lead, Mercury, Cadmiu
- Dioxins

Neo-formed food components : acrylamide…



Particular cases: mycotoxins/phycotoxins

Physical hazards

Foreign bodies

Radioactive elements

Food hazards: ***relative importance in Foods from animal origin***

1. Biological

2. Chemical

3. Physical

Food hazards: ***vegetable foods***

1. Chemical
2. Physical
3. Biological

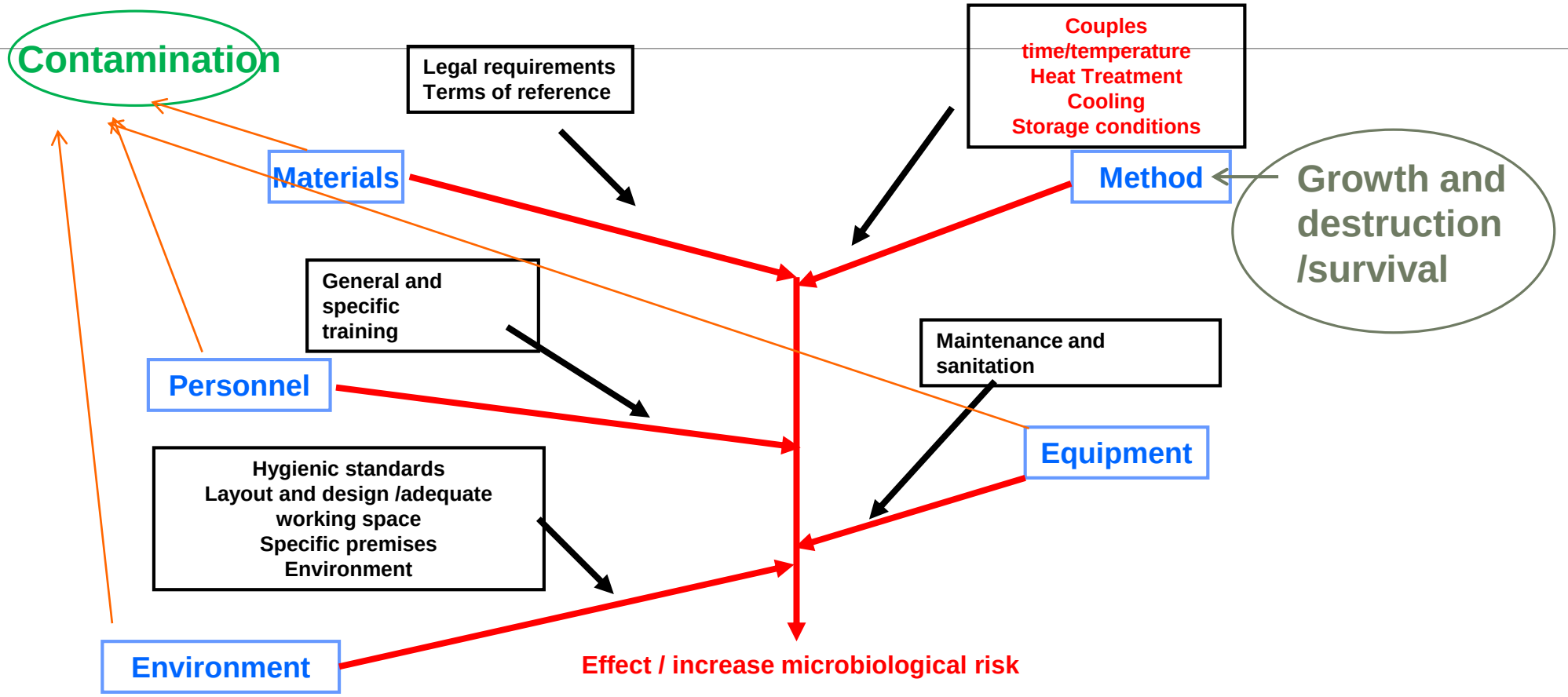
Food hazards: ***impact on health***

1. Chemical…long term effects

2. Biological.. short term effects

3. Physical

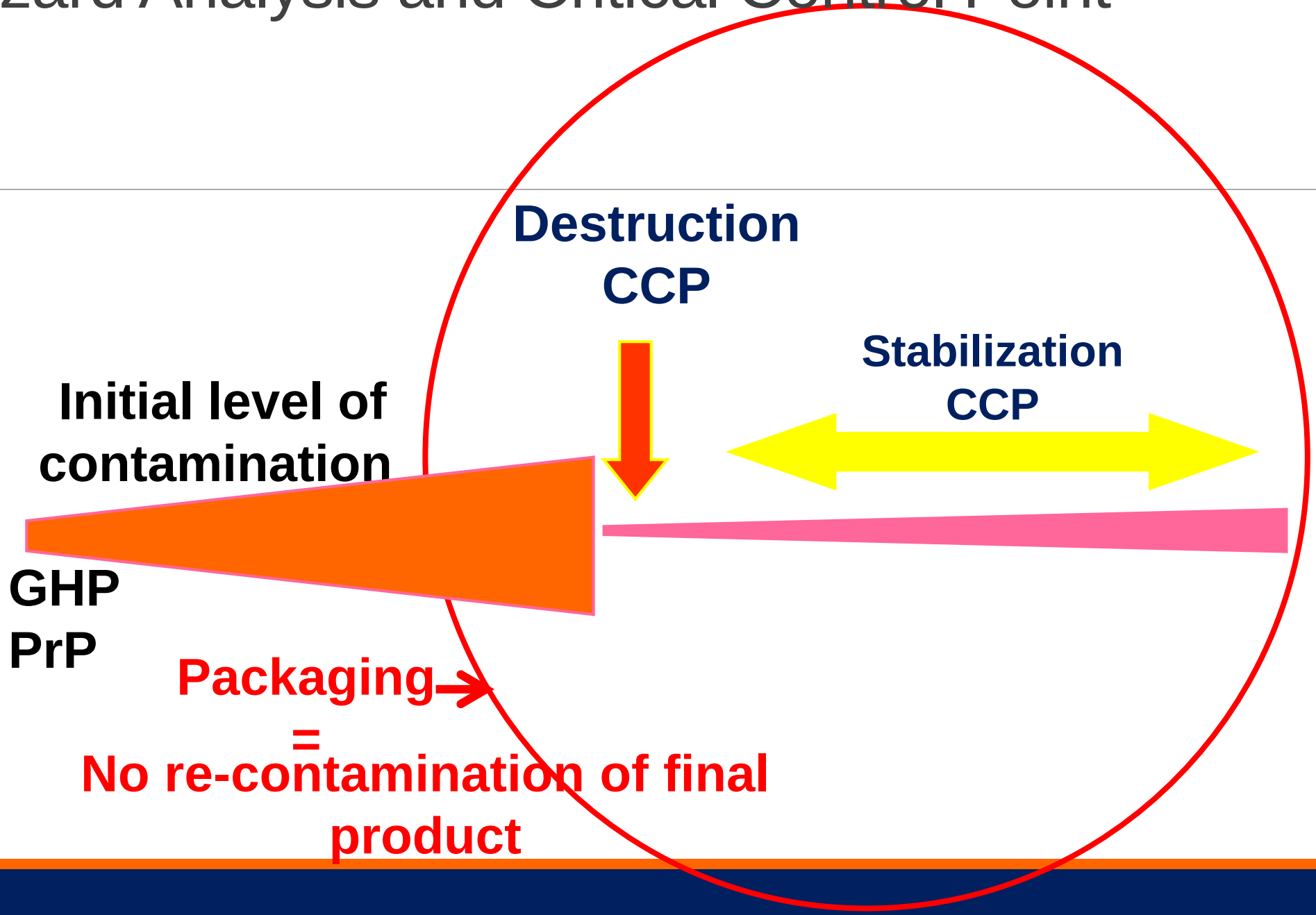
List of measures which will eliminate or reduce hazards Regularly prescribed or through GHP guides…



The pathway

Step	Hazard	Condition	Cause	Control measure
N…	Biological Chemical Physical Allergic	Presence Introduction Growth Survival	Environment Material People Method Equipment	?

Hazard Analysis and Critical Control Point



1 hazards analysis : example of list of major hazards for milk products (EU guidelines / responsibility of FBO in EU regulations)

Biological hazards

Listeria monocytogenes
Enterotoxins produced by Coagulase-Positive Staphylococci (including *Staphylococcus aureus*)
***Salmonella* spp.**
Brucella spp (except B. ovis which is not pathogenic for humans)
Mycobacterium bovis and M. tuberculosis
Shiga toxin-producing Escherichia coli (STEC)
Viruses

Campylobacter

Foodborne diseases (food poisoning)/ consequences of hazards

Diseases:

- due to the presence in foods of pathogenic bacteria or their toxins

- most often characterized by **digestive disorders.** If 2 or more people are infected, we speak of « collective foodborne disease »

- other symptoms may be described : neurologic symptoms (botulism, listeriosis); abortion (listeriosis); renal failure (haemolytic and uremic syndrome due to EHEC); …

Foodborne diseases: *nature*

Toxic infection

- Disease due to the presence of pathogenic bacteria that will colonize intestine and produce simultaneously toxins

Intoxination

- Disease due to the presence, in food, of bacterial toxins that were produced before consumption (bacteria may be no more present in food because of time/temperature of treatment)

Infection

- Disease due to the presence of pathogenic bacteria that will invade the whole body of the consumer

Foodborne diseases: *foods targeted ?*
Need for data !

Food from animal origin:
- animals can be carriers of pathogenic bacteria
- /physico-chemical characteristics

NB: same way of thinking for vegetal origin

Notion of COMBINATION HAZARD / FOOD

Foods involved in collective food poisoning in France in 2020

Food involved	Number of cases	%	Major agent
Cheese/dairy products	33	6	Salmonella
Eggs and products from eggs	89	11	Salmonella
Meat	70	8	B. cereus
Delicatessen	28	3	Salmonella
Poultry meat	79	10	C. perfringens
Fishes	68	8	-
Shelfishes	52	6	virus
Crustaceans	12	1	-
Other foods (non animal or mixed)	361	43	C.perfringens B. Cereus Staphyl.aureus
Drink	3	0	-
Unidentified food	36	4	-

from santepubliquefrance.fr

2 Risk evaluation / Hazard analysis

The FBO approach

Hazard identification (hazard/ source listed)

Risk evaluation

Probability / severity

(evaluation of impact in the company)

Levels of concern for hazards and control measures in company

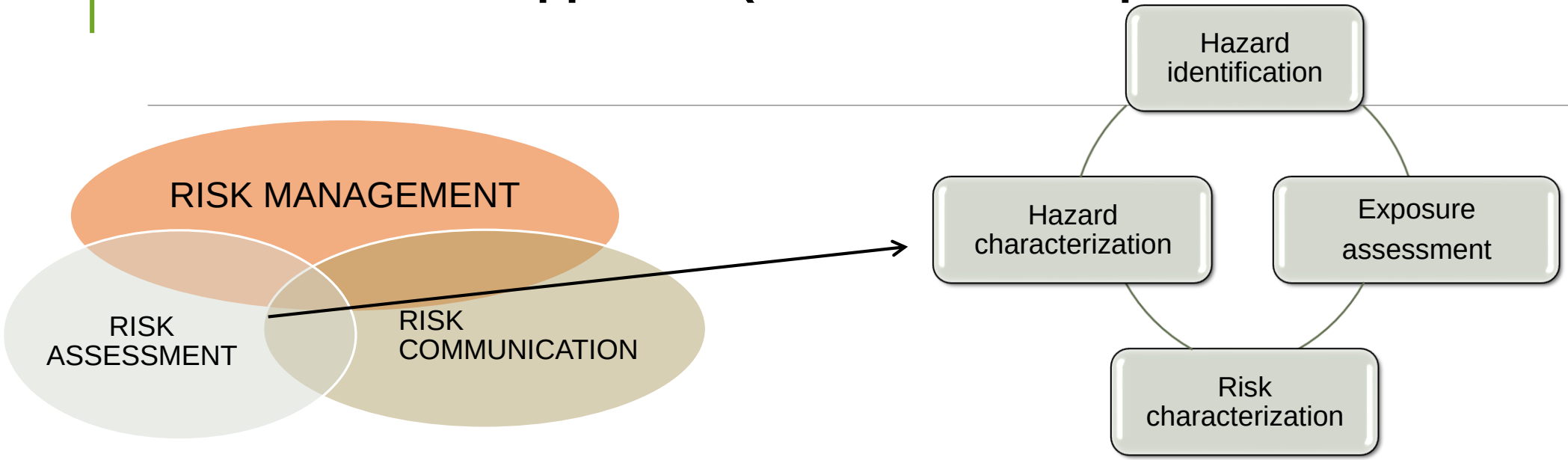
(PRPs, OPRPs, CCPs)

Cf Notice document of EU Commission 2022/C 355/01

Commission Notice on the implementation of food safety management systems covering Good Hygiene Practices and procedures based on the HACCP principles, including the facilitation/flexibility of the implementation in certain food businesses 2022, September 16th

2 Risk analysis

The scientific approach (research and experts committees = agencies)



Hazard identification➔ hazard-food combination for populations
Hazard characterization➔ adverse health effects of the hazard (dose response data)
Exposure assessment ➔how much of the hazard populations “consume” (dietary patterns= consumption habits, social issues + knowledge about level of contaminations)
Risk characterization ➔ estimate of risk from the 3 above steps (Scientific opinion, MRLs, **Food Safety Objectives**).

Definitions and concepts about risk management

One can determine for each hazard **an ALOP = Appropriate level of Protection** that means

The level of protection deemed appropriate by the Member establishing a sanitary or phytosanitary measure to protect human, animal or plant life or health within its territory (Definition by WTO 1995)

Example ?
For example less than 10 cases of foodborne salmonellosis in a given country

In the context of microbiological risk management the ALOP is a reflection of a particular country's expressed public health goals for a microbiological hazard associated with a food. An ALOP can be implicit or explicit.

An explicit description of ALOP may be in terms of a probability of an adverse public health consequence or an incidence of disease.

Definitions and concepts about risk management

FSO, Food Safety Objective:
The maximum frequency and/or concentration of a hazard in a food at the time of consumption that provides or contributes to the appropriate level of protection (ALOP)

Example ?

Absence of Salmonella in 25g = less than 4 in 100g…..

NB : absence doesn’t mean 0…that means no germs isolated

Definitions and concepts about risk management

PO, Performance Objective:

The maximum frequency and/or concentration of a hazard in a food at a specified step in the food chain before the time of consumption that provides, or contributes to, an FSO or ALOP as appropriate

example ?

Absence of Salmonella in 25g in final product at the end of the shelf-life

NB:

- If foods support growth the PO needs to be more stringent than FSO

- the possibility of cross contamination has to be taken into account

Definitions and concepts about risk management

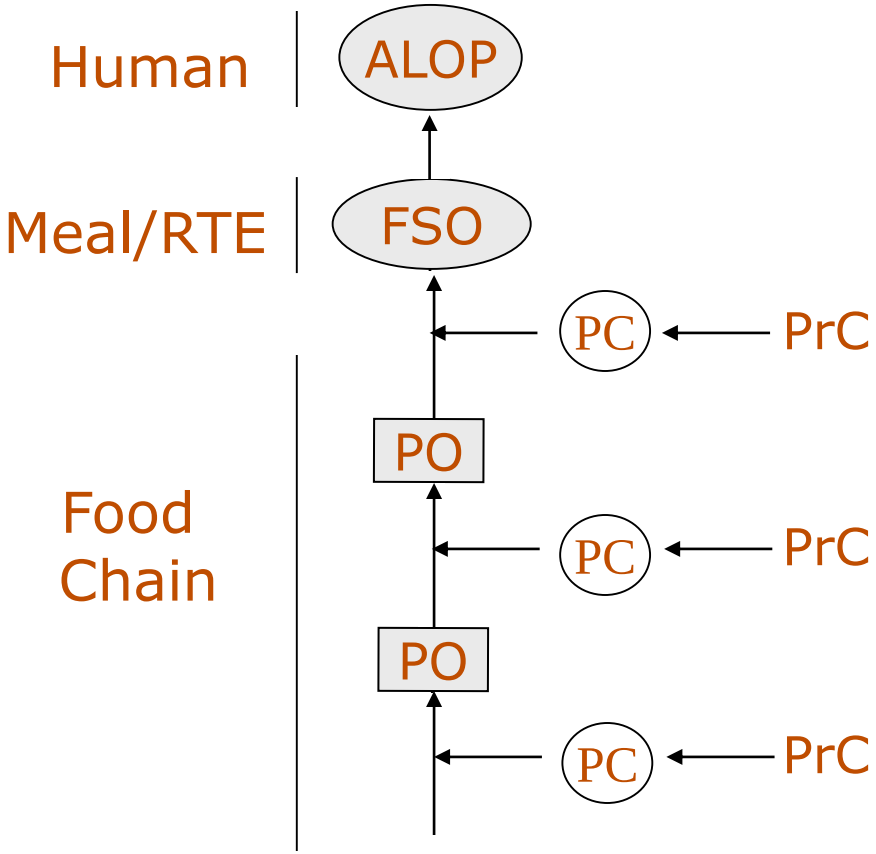
PC: Performance criteria : **The effect** in frequency and/or concentration of a hazard in a food that must be achieved by the application of one or more control measures to provide or contribute to a PO or an FSO

Example ?

Reduction of 6 log

PrC: Process criteria: Parameters of a control measure that if properly applied have been established as meeting, either alone or in combination with other control measures, a performance criterion.

Example ?
Time /temperature leading to 6 log reduction



The construction of these parameters form a “cascade” with the ALOP at the top, describing what we are trying to achieve.

From FSO/PO to MC

The original purpose of the FSO/PO was to translate the ALOP into levels of hazards in the food chain that can be communicated to and managed by the food industry.

A microbiological criterion consists of more specific elements such as the analytical method, the sampling plan, microbiological limit(s), the specified point of the food chain where the limit(s) apply, the number of analytical units that should confirm to the limit(s) and the actions to be taken when the criterion is not met.

The FSO and PO only represent limits, the role of competent authorities is to determine relevant MC

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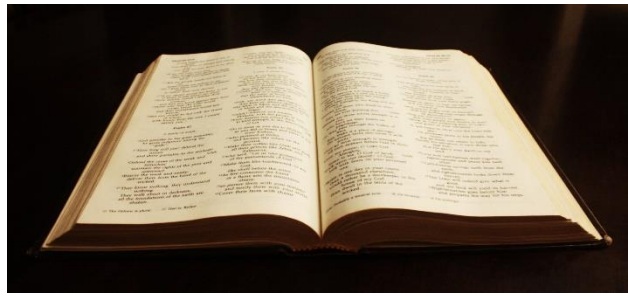
The role of a head of service in Food Safety

MANCP : principles and basis



. Reg (EU) 2017/625 : each member state must define a MANCP describing the controls foreseen and applied throughout the food chain…: foodstuffs

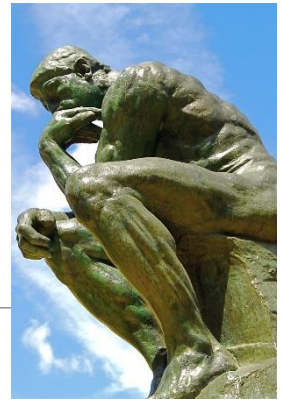
. The MANCP is a public document intended for the general public and food chain professionals in addition to its distribution to the control services of European Commission

.Each country in EU is responsible for the organization of verification of the rules along the entire food production and distribution chain : « from farm to fork » with two core issues :
- the safety for health of food, animals and plants

- product quality and fair trading

. MANCP will first describe the organization (and missions delegations) at national and local level of competent authorities in charge with the subjects listed just before, and the qualitative and quantitative data about official controls

MANCP as a management tool ?



. The planning of the whole range of controls is made dependent on a risk analysis applicable to all areas : health and protection of consumers, animal health, plant health,animal protection and animal feed, on the basis of scientific knowledge of hazards, consumers exposure, feed-back from official control and data…

. Priorities for action determined, for example :

- verifying the safety for health of certain food products placed on the market

- verifying the overall functioning of facilities producing, processing and distributing food products (including transport and storage) in targeted sectors

. Specific activities like short-term or seasonal actions to focus on open air markets in summer, end-of year holiday season in winter…
Enhanced control measures for import of higher-risk products

. Together with the continous activity of surveillance and control plan (PSPC in French) = national sampling plan (B. and C. hazards on a wide range of products)

At a national level

Instructions for the determination of harmonized level of risks (grade) :
Volume
Sector / sensitiveness of public ex: catering in hospitals..
Product/process = risk ex raw milk cheese
History of official controls and failures observed…

Input of economical and contextual data…

Determination of national instructions for « routine « official control / rythms of inspection

At the national level, decision of regular surveillance based on risks analysis : examples

Sector	Comment
Milk and milk products : EU approved	Calculation /approved farm workshops
Eggs and products from eggs : EU approved	
Meat and meat products : EU approved	
Catering, central unit. :EU approved	
Poultry and rabbits slaughterhouses : EU approved	Approved farm workshops

At the national level decision of regular surveillance not based on risks analysis : examples of predetermined rythms of controls

Sector	Max time between 2 OC	Corresponding minimum inspection frequency	Comment
Slaughterhouses and game processing establishments: approved	12 months	1 / year	Permanent OC on site for slaughterhouse + 1/year head of service + dean of « departement »
Poultry and rabbits slaughterhouses :EU approved	12 months	1/ year	
Poultry and rabbits slaughterhouses :not EU approved (local distribution)	60 months	1 every 5 years	
Milk and milk products: raw milk and direct sale	96 months	1 every 8 years	
Factory and freezer boats	60 months	1every 5 years	Full inspection frequency (on-site and documentary): every 5 years Intermediate document inspection frequency (done in the office) every 5 years (2.5 years out of date with the previous one)

Ad-hoc surveillance to focus on certain activities– mandatory

Approved Storage est. all sectors	10 %
Catering: not approved	20 %
Catering for sensitive consumers (young, old, sick…)	12 %
Direct sale from farm products	13 %
Comercial catering : traditional and fast-food	10 %
Butcher’s shop with delicatessen	13 %
Fish shop	12 %
Primary production boats	10 % (lim 10 boats)
Establishments manufacturing composite products	10 % (lim 5 controls)

Ad-hoc surveillance to focus on certain activities – options : examples

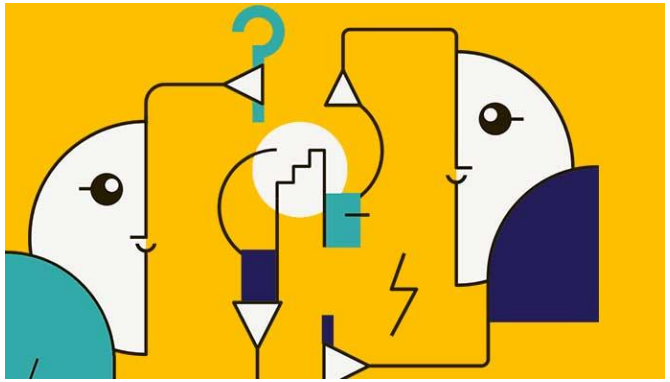
Catering : on site kitchen without sensitive consumers
Catering: satellite offices and satellite restaurants
Not approved storage establishments : all sectors
Bakery
Cheese shop
Other food trade
Direct sale : Charitable institution (food service/food trade)
Other activities of direct sale
Transport = trucks
Honey workshop
Open air market when tourism is important…

The role of the head of service

- Take into account on one hand national instructions, on the other hand the FBOs the service has to control to grade the risks and gather rythms of inspections
- Take into account the availabilities in terms of human means to allocate a certain type/number of controls to each agent
- Try to keep a balanced approach between FBO (difficulties encountered in the past, process/product…) and between agents…

And get a final accepted program of inspections for the year!

NB / training !



The role of the head of service

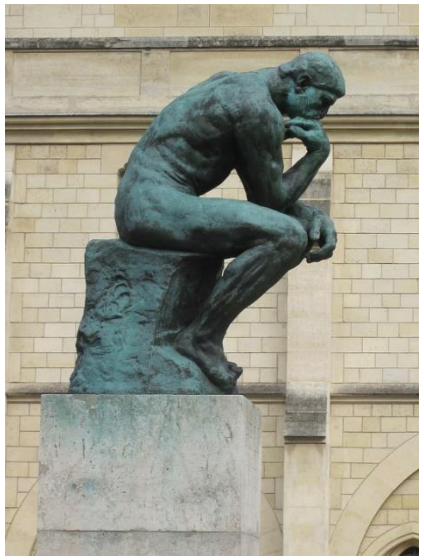
- And if an emergency situation appears (human cases in catering, non compliance on products with consequences on human health…)
  Stop the daily activities you spent a lot of time to organize and try to manage it quickly :
  - to solve the problem and avoid new cases
  - to improve the level to insure it will never appear a second time…

Key messages / leadership in FSQ

- Solid technical, scientific and regular knowledge to be sure that relevant references will be the basis for deciding

- Balanced and fair attitude towards all FBOs :
apply principles of flexibility
same conclusions about the level of food safety = similar follow-up

- Balanced and fair attitude towards all membres of the team



LEGITIMACY

Key messages / leadership in FSQ

- Importance of the stabilized framework :
organization of the work well adapted
relevant document to support activities of official control =
procedures, instructions, check-lists and vademecum…

-Try to give meaning to the actions of the division

- Trust in the expertise of the staff and give them some leeway

- In return try to gain the confidence of coworkers (liability)

- Try to harmonize practices, coordinate actions through exemplary behaviour and personal charisma….

LEGITIMACY… and be able to challenge yourself in an improvement framework!

Thank you for your attention !
It’s up to you!