



Codex Community Event

OPEN TO CCNASWP MEMBERS

26 – 28 February 2024

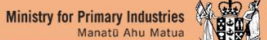
Sofitel Fiji, Nadi, Fiji

Codex Guidance to Manage Chemical Contaminants in Food

2ND NORTH AMERICA SOUTH WEST PACIFIC CODEX COLLOQUIUM

Supporting the Enhancement of Food Control Systems in the SWP Region

Event Partner Organizations



United States
Department of
Agriculture



SW Pacific
CODEX



Review of Codex Texts

Prof. Samuel Godefroy, Laval University, Québec, QC. Canada



FOUNDATIONS

- ✓ *General Standard for contaminants and toxins in food and feed (CXS 193-1995)*
- ✓ *Codex guidelines for Rapid risk analysis following instances of detection of contaminants in food where there is no regulatory level (CXG 92-2019)*
- ✓ *Code of practice concerning source-directed measures to reduce contamination of food with chemicals (CAC / RCP 49-2001)*





DEFINITIONS

- ❑ **Contaminants in Food:** chemical substances that may be present in food that have **not been intentionally added to food** and that could impact the overall safety and/or quality of foods
- ❑ **Adulterating Substances in Food:** mean chemical substances that have been intentionally added to food for fraudulent purposes

def·i·ni·tion

/ defə|niSH(ə)n /

noun: a statement of the exact meaning of a word.



GENERAL PRINCIPLES

- ❑ Ensure that contaminant levels in food and feed are reduced to levels **As Low as Reasonably Achievable (ALARA)**, through the application of best practices in GAP and GMP
- ❑ **Prevent the introduction of food and feed chemical contamination** at the source
 - E.g., reducing environmental contamination
- ❑ **Apply control measures**, including technologies used in food and feed production at the various stages of the value chain
- ❑ **Apply measures to decontaminate** food and feed, and to **prevent** the introduction of contaminated food and feed products to consumption





GENERAL PRINCIPLES (CONTINUED)

- ❑ Emphasis on preventive interventions, **NOT on chasing contamination in end-products**
- ❑ Early identification of possible points of introduction for contamination of food and feed
 - Controlling contamination of feed = key area of intervention to prevent contamination in food (several contaminants are introduced in food of animal origin through feed)





DECONTAMINATION

- ❑ No MIXING between a contaminated food (containing unacceptable levels of chemical contaminants) and other sources of the same food, considered to be free of contamination or at very low levels
 - Dilution of the contamination is an UNACCEPTABLE measure, as it amounts to deliberate introduction of contamination into the food supply

- ❑ Interventions should be based on excluding the contamination source and/or attempting to decontaminate the food if technologically feasible



MAXIMUM LEVELS (ML)

- ❑ Levels of a given chemical contaminant in (a) food product(s), that serve as sentinels for reaching and maintaining the required threshold of exposure reduction
- ❑ Used as guidance levels by industry or set as regulatory limits or MLs
- ❑ To be established only for food in which the contaminant may be found in an amount that is significant for the total exposure of the consumer





THRESHOLD CHEMICALS

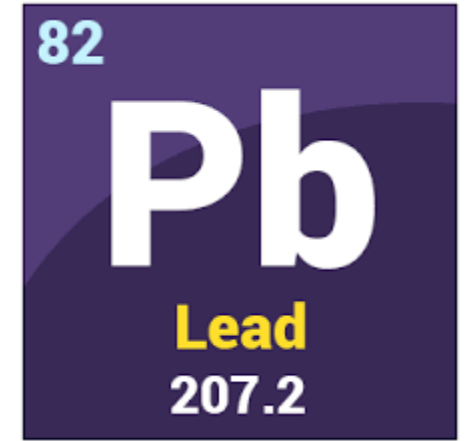
- ❑ MLs result from outputs of a health risk assessment, where health-based guidance (HBGV) such as Tolerable Daily Intakes can be established
- ❑ Goal: drive down exposure to the targeted chemical(s), through intervention measures identified as part of food production practices
- ❑ Reduction of exposure = enhancing protection of consumers and increasing the margin of exposure

$$\textit{Margin of exposure} = \frac{\textit{Tolerable intake}}{\textit{Probable intake for period X}}$$



NON-THRESHOLD CHEMICALS

- ❑ Ex. Lead, genotoxic carcinogens
- ❑ Same goal: reduction of exposure
- ❑ Margin of exposure can be estimated by relying on a benchmark dose identified for the chemical contaminant as part of its hazard characterization
 - Used to prioritize risk management activities for this chemical in food



CODEX PRINCIPLES FOR MLS: CXS 193-1995

Deriving MLs

- ❑ **Toxicological information:** effects on human health, toxicokinetics, toxicodynamics, carry-over of the toxic substance from feed to food
- ❑ **Analytical data:** validated qualitative/quantitative data, sampling protocols
- ❑ **Intake data:** identification of food representing the major source of exposure, results of occurrence in various monitoring programs (e.g., Total Diet Study)
- ❑ **Technological information:** processes that support management, reduction of points of introduction or decontamination of the food and feed supply
- ❑ **Achievability:** costs of application, accessibility of control measures to the majority of FBOs



ML CONSIDERATIONS

- ❑ Prior to imposing MLs: ascertain the availability of reduction measures to help achieve the MLs and their accessibility by FBOs
 - Development of a Code of Practice, to support the reduction of exposure to a given contaminant in a food source (Codex)
- ❑ Dispel the misunderstanding that the absence of a ML is equivalent to the absence of management requirements for a given chemical contaminant in a food
- ❑ Regulation: introduce preventive controls and put the onus on FBOs to identify food hazards and take the appropriate action to mitigate risk
 - Guidance needed (e.g., for emerging chemicals like process-induced chemicals)





CAC/RCP 49-2001

Prevention of introduction of contaminants in food at the source

☐ Examples to achieve ALARA with:

- adoption of measures to eliminate or control the source of contamination
- processing measures to reduce contaminant levels
- identification and separation of contaminated supply from food fit for human consumption

☐ Applying preventive controls, the analysis of production and processing operations for the purposes of identifying hazards and assessing risks

- Determination of CCPs and monitoring (HACCP)

☐ Interventions

- meant to drive reduction of exposure to chemicals in food
- should result in reduced reliance on the development and maintenance of MLs for contaminants in food





“BLACKLISTING” / BANNING

- ❑ Risk management approach when accumulation of substances through environmental pollution impossible to remove or control with reasonable measures (CAC/RCP 49-2001)
- ❑ Ex. heavy environmental contamination
- ❑ Require measures upstream in the food production system
 - control of pollutants' emissions from industry (e.g., mining)
 - control of emission from sources of energy generation and use (e.g., nuclear plants)
 - control of production, sale, use and disposal of certain toxic, environmentally persistent substances (e.g., organohalogen compounds, heavy metals)



ADULTERATING SUBSTANCES = FRAUD

- ❑ Deliberate introduction of chemicals in food, as part of illicit practices related to food fraud (i.e., for illicit economic gain) is prohibited
- ❑ Adulterating substances not allowed in food at any level
- ❑ MLs for adulterating substances
 - To enable identification of foods, where the chemical used as an adulterating substance is to be discriminated from its occurrence in food as a result of background environmental contamination that is not deliberate



CONCLUSIONS

- ❑ Management approaches chasing low levels of contamination – with little to no human health significance – or focusing on enforcement of MLs in final products:
 - disruptive to the food production system and yield limited impacts
- ❑ **Mechanisms aimed to identify and remove points of introduction or to reduce the level of contamination through targeted processing:**
 - preventive, more effective and should be preferred
- ❑ MLs:
 - part of a broader approach to reduce exposure to target chemical contaminants
 - assess effectiveness of control interventions

