

When Food Safety and Trade Issues Merge: Risk Managing Cadmium in Cocoa



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JIFSAN Advisory Council Annual Symposium

*Understanding the Impact of Arsenic, Cadmium and Lead
Across the Food Supply
May 25-26, 2022*

We are **Ingredion**



We turn fruits, grains and vegetables into value-added ingredients and biomaterial solutions for the food, beverage, paper & corrugating, brewing and other industries.

100

serving customers in more than
100 countries

approximately
11,000
talented and experienced
employees

FORTUNE
500
company



a global network of
Ingredion Idea Labs™ innovation centers, manufacturing facilities and sales offices...presence in 40 countries

~\$6.0
billion
net sales in 2017

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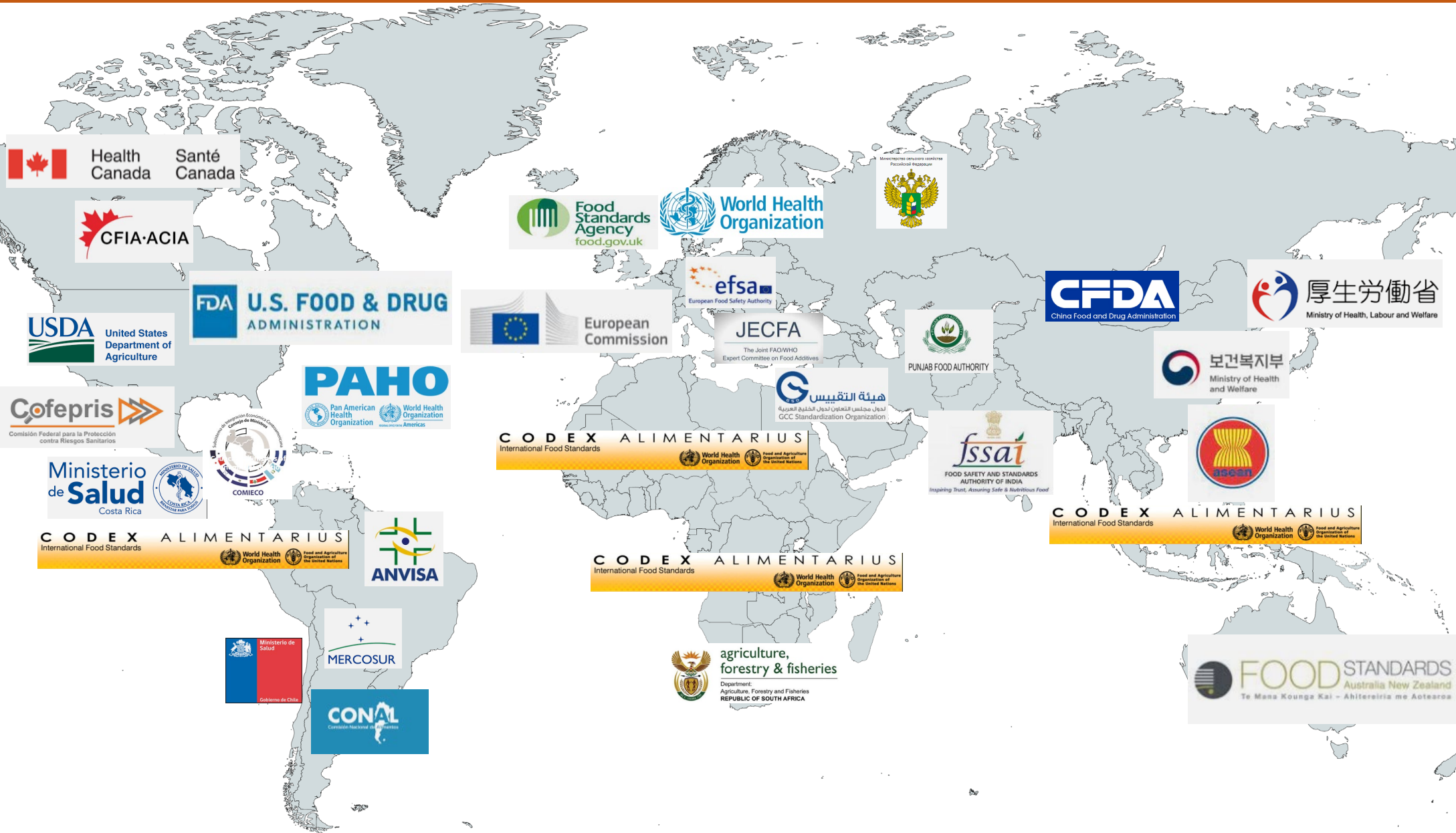
headquartered in
Westchester, Illinois



*We bring the potential of people, nature, and technology together
to make life better.*



COMPLEX GLOBAL REGULATORY LANDSCAPE





- ❖ Created in 1963 by the **Food & Agriculture Organization (FAO)** and the **World Health Organization (WHO)**
- ❖ Protect **consumer health**
Ensure **fair trade**
- ❖ Food standards, guidelines, codes of practice... (>350 listed + languages)
- ❖ 25 Committees: **Contaminants**, Additives, Food Labeling, Nutrition, Food Hygiene..., Commodities...
- ❖ Risk Assessment Expert Committees

JECFA

JOINT FAO/WHO
EXPERT COMMITTEE
ON FOOD ADDITIVES

What's the Cadmium in Cocoa Issue?

- Food contaminant
- Cadmium naturally present in soils
 - uptake into cocoa plants
- Geology - more in VOLCANIC SOILS
 - High: Latin America
 - Low: Africa
- Data needed from all producing regions
 - what's GLOBALLY ACHIEVABLE?
- Main food sources of cadmium: cereals, vegetables, seafood
 - Maximum Levels (MLs) already set
- 2013 JECFA Risk Assessment: low health concern in cocoa
- Production & Trade concerns on problematic region standards
- Need global, science-based standards



Codex: Cadmium in Cocoa History...

- **Codex Committee on Contaminants in Food (CCCF) 2014**

reported on **2013 JECFA Risk Assessment**

- *“JECFA concluded that total cadmium exposure including for high consumers of cocoa and cocoa products was not considered to be of concern.”*

- CCCF decided **no need for MLs based on health**

- **BUT concerns for producing countries and international trade**

- without Codex global standards, strict region precedents would become default

e.g. EU new Maximum Levels scheduled for 2019

- CCCF 2014 **new work:**

*“Completion of work for final adoption by the Commission in **2017 or before.**”*



Codex: Member Countries & Observers – Roles

Member Countries/ Governments:

- Raise issues
- Propose priorities to committees
- Develop discussion papers
- Lead working groups
- Share data
- National, regional perspectives
- Vote

Observer organizations:

- Practical insights & feasibility
- Ingredients, production information
- Share data
- Best practice perspectives, all regions
- Essential input for electronic working groups on achievable solutions



The screenshot shows the Codex Alimentarius website header with the title 'CODEX ALIMENTARIUS INTERNATIONAL FOOD STANDARDS'. Below the header are logos for 'support World Food Safety Day', 'Food and Agriculture Organization of the United Nations', and 'World Health Organization'. A navigation menu includes 'About Codex', 'Codex Texts', 'Themes', 'Committees', 'Meetings', 'Resources', 'Publications', 'News And Events', and 'Login'. The main content area features a photo of a man in a suit speaking at a session, with the headline 'Comment on the Codex Committee on Contaminants in Food 12th Session' and the date '26/03/2018'. A 'Categories' list on the right includes: Animal Feed (5), Antimicrobial Resistance (8), codex texts (2), Contaminants (4), foodsafety (2), meetings (3), Nutrition and Labelling (2), observers (2), Pesticides (2), regional (2), trade (4), and World Food Safety Day (6).

<https://www.fao.org/fao-who-codexalimentarius/resources/multimedia/video/en/>
Video: 'A Chocolate Story...'

Data Gathering & Review (2013-2022)

- Member Country data
- Observer Delegations - Industry data/ Science
 - **International Confectionery Association (ICA)**
 - coordination via the **National Confectioners Association (US)**, **Caobisco (EU)**
 - **International Council of Grocery Manufacturers Associations (ICGMA)**
 - **Institute of Food Technologists (IFT)**
- Information sharing:
 - Codex data requests: WHO GEMS Food occurrence database
 - Electronic Working Group + Chair (Ecuador)
 - US FDA/ Codex office
 - Other key government delegations



**International
Confectionery
Association**



Codex 2016: What to set MLs on?

?Cocoa beans?

- Problems for individual origins
- Blending beans
- Cleaning and processing to reduce levels

?Cocoa liquor/ paste?

- Varied cocoa concentrations, blending
- Not relevant for exposure from finished product

?Finished product?

- More consistent with regional regulations
- Easier to assess exposure

✓ **Cocoa and chocolate products – for consumption**



New Occurrence & Exposure Data



Proportionality – industry expertise essential

- CCCF 2019 concluded set MLs on proportionality basis
 - **percent total dry cocoa solids**
- Cocoa butter (fat) and powder (non-fat) make up total dry solids:
 - **cadmium only in non-fat dry solids**
- Can extrapolate for chocolate categories, but cocoa powder is a different product
 - high **non-fat dry solids**

2021 JECFA Risk Assessment on Dietary Exposure

- Concluded: contribution of cocoa products to **dietary cadmium exposure was minor... even in countries in which the consumption of cocoa products is relatively high**
- Compared hypothetical ML Scenarios for rejections:
 - proposed MLs for chocolate and cocoa powder may result in **substantial rejection rates (up to 30%)** for products from some regions, but has **only a minor impact (mean decrease across clusters of 0.7%, range 0.0–2.4%) on total dietary cadmium exposure**

ALARA Principle



What is 'As Low As Reasonably Achievable'?

- ❖ Follow Good Practices + ?
- ❖ Risk from dietary exposure?
- ❖ Commercial feasibility
Regional data vs Global achievability
- ❖ ALARA levels based on available data
share data to ensure achievable outcome

Cadmium Maximum Levels: Status Update

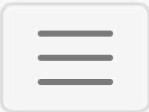
Codex Committee on Contaminants in Food (CCCF15) May 2022

Product Type	CODEX (mg/kg)	EU (mg/kg)
Chocolate (< 30% total dry cacao solids)	0.3 adopted*	0.1
Chocolate (≥ 30% < 50% total dry cocoa solids)	0.7 adopted	0.3
Chocolate (≥ 50% total dry cocoa solids)	0.8 adopted	0.8
Chocolate (≥ 70% total dry cocoa solids)	0.9 adopted	0.8
Cocoa powder (100% total dry cocoa solids) ready for consumption	2.0 (CCCF 2022)	0.6

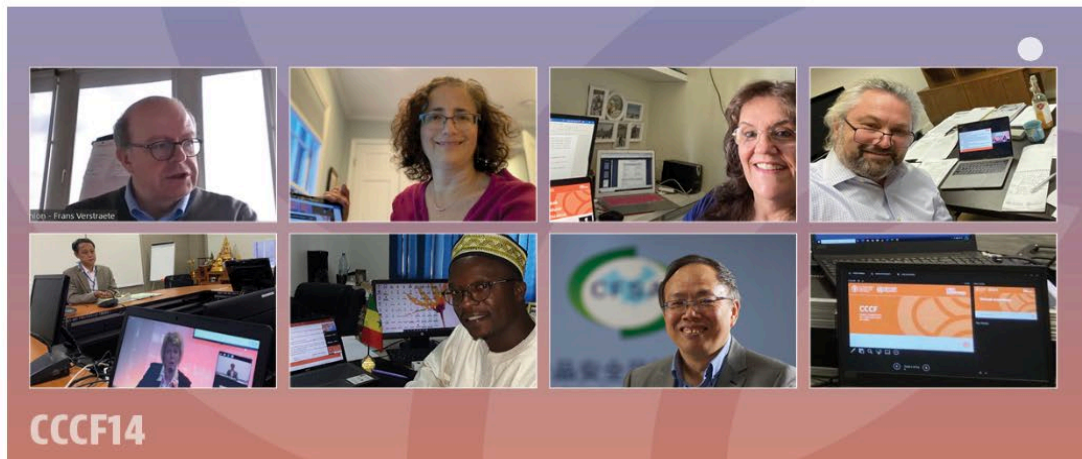
Codex took account of global risk and achievability data

*CCCF 2019 aligned on 0.3 mg/kg, sent to the Codex Alimentarius Commission for adoption – politics disrupted progress – countries in non-volcanic regions pushed back – sent back to CCCF 2021

Code of Practice to promote mitigation options: feasible short term/ long term, agricultural, production practices (CCCF aligned 2022).



[codexalimentarius](#) > [News and Events](#) > [News details](#)



“
Simplicity for global compliance, enabling international trade.

“The Codex adoption of maximum levels for cadmium in chocolate products is a positive step forward for common global standards, based on expert scientific risk assessment and global data from producing regions. A single standard means simplicity for global compliance, enabling international trade. Moreover, basing standards on global data helps avoid unnecessary food waste,” said Martin Slayne, of The International Confectionery Association, a Codex observer.

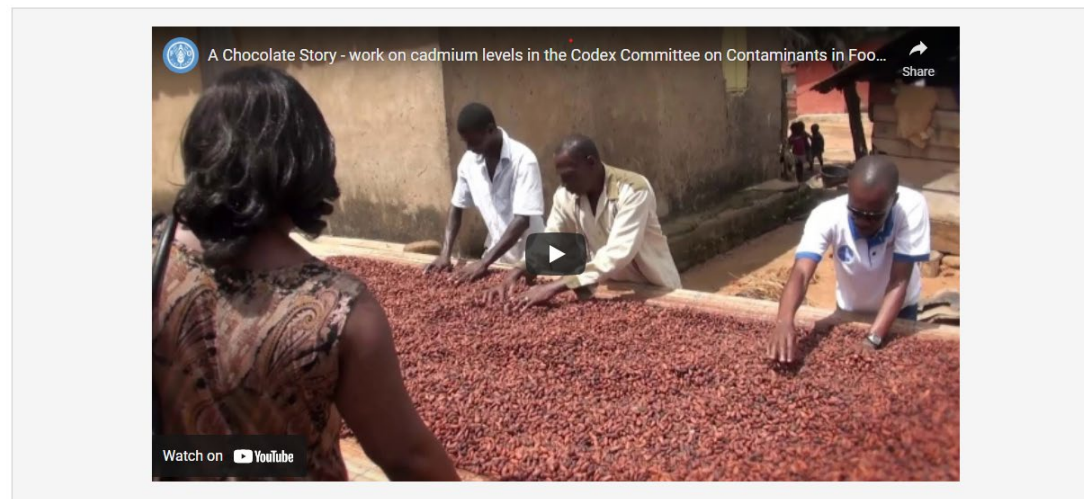


You Tube Codex Video: A Chocolate Story...

Video developed by FAO/WHO Codex secretariat and Martin Slayne, with imagery supplied by the US National Confectioners Association

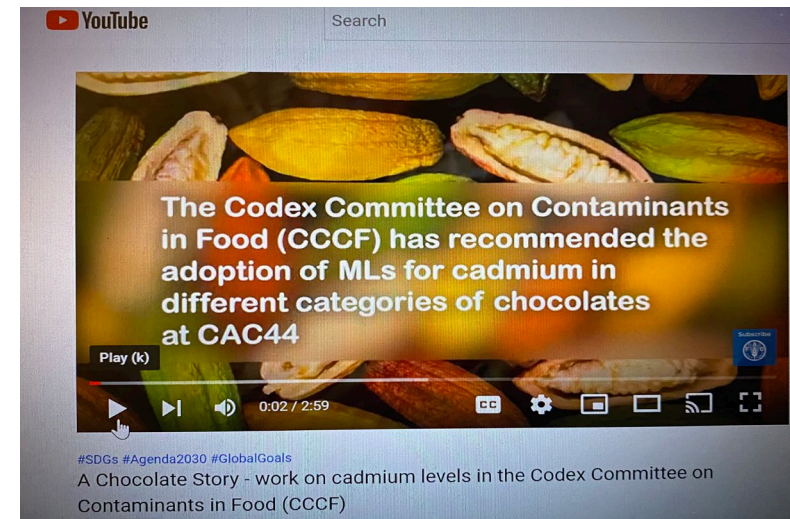


Codex Videos



<https://youtu.be/ojcwLZMYGjl>

<https://www.fao.org/fao-who-codexalimentarius/resources/multimedia/video/en/>



Thank you

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