



# Prioritization of dietary chemicals

Johanna Suomi

# Dietary chemicals?

- Ongoing work at Evira Risk Assessment Unit:
  - Risk profile on food additives (in press)
  - Prioritization of contaminants from national point of view (ongoing)
  - Collaboration with NFA, Sweden: Risk ranking (EU RAA project)
    - Chemical & microbiological hazards, common approaches  
(more info: [https://www.evira.fi/globalassets/tietoa-evirasta/esittely/toiminta/riskinarviointi/seminarit/bergman\\_evira\\_2016\\_10\\_11.pdf](https://www.evira.fi/globalassets/tietoa-evirasta/esittely/toiminta/riskinarviointi/seminarit/bergman_evira_2016_10_11.pdf) )
  - Funding applied also for other linked projects (Burden of Disease etc.)
  
- Why prioritization?
  - Budgets decrease, understanding of dangers of many compounds increases: where to concentrate efforts to best protect the consumer?

# Food additives, priority list (1/2)

- EU 1333/2008: national monitoring system
- Rough prioritization (Tier 1-2) of additives with ADI
- EFSA's FAIM template data on consumption
  - Adjusted to product type level via expert opinions
- MPL values, some industry data on true max levels used in Finland
  - Voluntary questionnaire for some additives
  - Highest use level used in calculations
  - Questionnaires can be repeated later → monitoring
- Project identifies where to focus later studies / which additives to follow closest. Not detailed enough for e.g. consumption advice!
  - Risk assessment needed for consumption advice (individual consumption data, product level concentration). Cf. Nitrite → national sausage use advice for children in 2013.
  - Primarily protection through MPLs

## Project group

- Johanna Suomi
- Kimmo Suominen
- Tero Hirvonen
- Pirkko Tuominen

## Food additives, priority list (2/2)

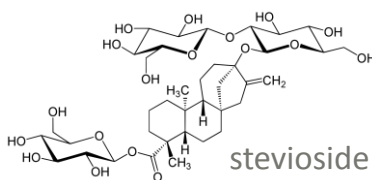
- Additives divided into 2 groups:
  1. Exposure  $\ll$  ADI  $\rightarrow$  no concern
  2. Exposure close to ADI or above  $\rightarrow$  more data needed / monitoring use
  
- Examples of why closer inspection may be necessary:
  - ADI decreased recently
  - additive used in foods with high & frequent consumption
  - new sweeteners (e.g. E960) w. potentially increasing use although current exposure  $<$  ADI
  
- Results of project  $\rightarrow$  decisions on how to proceed with Group 2.
  - If necessary, based on further data, more detailed studies later.

Report (in Finnish) will be published later in 2017 at:

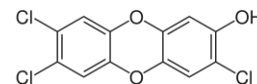
[www.evira.fi/en/about-evira/about-us/activity/risk-assessment/reports/](http://www.evira.fi/en/about-evira/about-us/activity/risk-assessment/reports/)

# Food additives vs. Contaminants

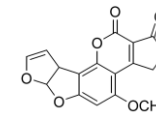
- Food additives: (EU 1333/2008)
  - Added to food
  - Ca. 300 approved compounds (non-genotoxic, known toxic effects and safe ADI levels)
  - Used only in approved food groups, max levels
  - Use can be discontinued → no more dietary exposure
  - Consumer can avoid (food ingredients info, use of nonprocessed food)



- Contaminants (EU 1881/2006)
  - Not wanted toxic chemicals from environment, processing, ...
  - Presence and levels not known unless analysed; unknown number of chemicals in food
  - Includes genotoxic, carcinogenic, endocrine disrupting compounds
  - Max levels enforced by monitoring (analyses), but you cannot analyse everything!
  - Consumer cannot know if food contains these, cannot choose to avoid



One of dioxins



Aflatoxin B1

As  
Pb

heavy metals


# Prioritization of contaminants

- Risk profile: Scientific background for priority list of monitoring, for plans of risk assessment priorities
- Gathering data on
  - National occurrence
    - National exposure
  - Toxicology of compounds (effects, reference doses)
  - Current situation in (natl.) monitoring
  - Lack of data / information gaps
- Dietary contaminants (in EC 1881/2006 latest update or EC monitoring recommendations)
  - Not included in project: residues of pesticides, medicines
- Project group
  - Johanna Suomi
  - Kimmo Suominen
  - Tero Hirvonen
  - Pirkko Tuominen
- Timeline: 2017 to 2019

# Two prioritizations



## 1. Prioritization of contaminants

- MOE and severity of effect A circular icon resembling a thermometer with a color gradient from green to red and the word "DANGER" at the bottom.
- Approaches in literature, some modification?
  - Risk Thermometer ([www.livsmedelsverket.se](http://www.livsmedelsverket.se))
  - Stroheker et al (Food Control 79, 2017)
  - Considering >1 health effect?
- How?
  - Tox data (EFSA OpenFoodTox, ECHA etc.): BMDLs, effects
  - Pilot: Exposure / MOEs from literature
  - Rough exposure assessments based on national data (monitoring data & EFSA Comprehensive Consumption DB)
    - updating MOEs → final priority list



# Two prioritizations

## 2. Prioritization of occurrence data

- Based on
  - 1) priority list of contaminants (first prioritization) and
  - 2) gaps in national data  
(and reason to believe local differences occur)
- Needs for national occurrence data determined at FoodEx L1

### Results:

1. Priority list of toxic contaminants – for RA, RM
2. Priority list for getting occurrence data – for RM (& RA)



# Thank you for your attention!

Project descriptions can be found at:

<https://www.evira.fi/en/about-evira/about-us/activity/risk-assessment/current-research-projects/>

Published reports:

<https://www.evira.fi/en/about-evira/about-us/activity/risk-assessment/reports/>