# Processing factors for pesticide residues in food

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# What are we talking about?

| Concentration in unprocessed food | → Processing factor → | Concentration in processed food |
|---|---|---|

- Effect of processing on food
- Effect of processing on chemical
- Mainly used for pesticides

| Amount unprocessed food | → Yield factor → | Amount processed food |
|---|---|---|

- Effect of processing on food
- Dilution/concentration factor
- Process-specific

| Chemical in unprocessed food | → Loss factor → | Chemical in processed food |
|---|---|---|

- Effect of processing on chemical
- Process-specific
- Chemical-specific

## Regulation (EC) No 1107/2009

- Approval criteria for pesticide active substances
- "…reliably predict … the effects of processing and/or mixing…"

## Commission Regulation (EU) No 283/2013

- Data requirements for pesticide active substances
- Studies for the effect of processing on residues (nature/magnitude)

## Regulation (EC) No 396/2005

- EFSA to derive PFs when assessing Maximum Residue Levels (MRL)
- Annex VI – List of processing factors

> **Why is Annex VI still empty ?**

## Guidance and data requirements

- How to assess processing studies?
- Most relevant processed commodities?

## Databases on processing factors

- Only available at national level

**Procurement BfR/BPI/RIVM**

## Dietary exposure assessment

- Pesticide Residues Intake Model (PRIMo)
- Limited data for processed commodities

**Timelines**

December 2016 – November 2018

**Objective 1**

Compendium of Representative Processing Techniques investigated in regulatory studies for pesticides

**Objective 2**

Linking the processing techniques investigated in regulatory studies with the EFSA food classification and description system, FoodEx2

**Objective 3**

European database of processing factors for pesticides in food

## Compendium on processing techniques

- Analysis of available processing studies
- Selection of most relevant processes
- Elaboration of flowcharts
- Identification of the final and intermediate products

## Linking with FoodEx2 classification

- Derive FoodEx2 code for each final product
- Identify key facects for the processing technique

## Processing studies considered

- EFSA Conclusions and Scientific Reports (Reg. 1107/2009)
- EFSA Reasoned Opinions (Article 12 of Reg. 396/2005)
- issued until 30/06/2016

## Assessment criteria

- Representativeness (see objective 1)
- Mass balance
- Storage stability
- Analytical aspects
- Calculation of median processing factors

## Individual processing factors (5731)

- 866 studies
- 143 active substances
- 222 processed commodities
- 2941 acceptable; 1151 indicative

## Median processing factors (1192)

- 125 active substances
- 203 processed commodities
- 571 reliable; 211 indicative

## Improved assessment criteria (objective 1)

- Most relevant processed commodities identified
- Representativeness of processing studies

## PF Database at EU level (objectives 2 & 3)

- Publically available (Excel spreadsheets)
- Standardised coding for substances (PARAM catalogue)
- Standardised coding for commodities (FoodEx2)

## Considerations for the future

- Process for updating the database?
- Integration with other databases of EFSA?

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**RPC model**

# Food consumption data

The **EFSA Comprehensive Database** contains:

- *24-hour recall* or *dietary record* surveys
- data collected at individual level (94,532 individuals)
- most recent data within each country (51 surveys, 23 countries)
- random sample at national level
  - different age classes, from infants to elderly
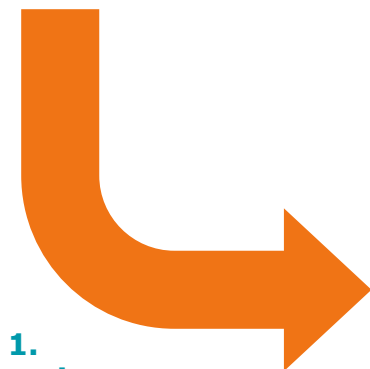  - special population groups
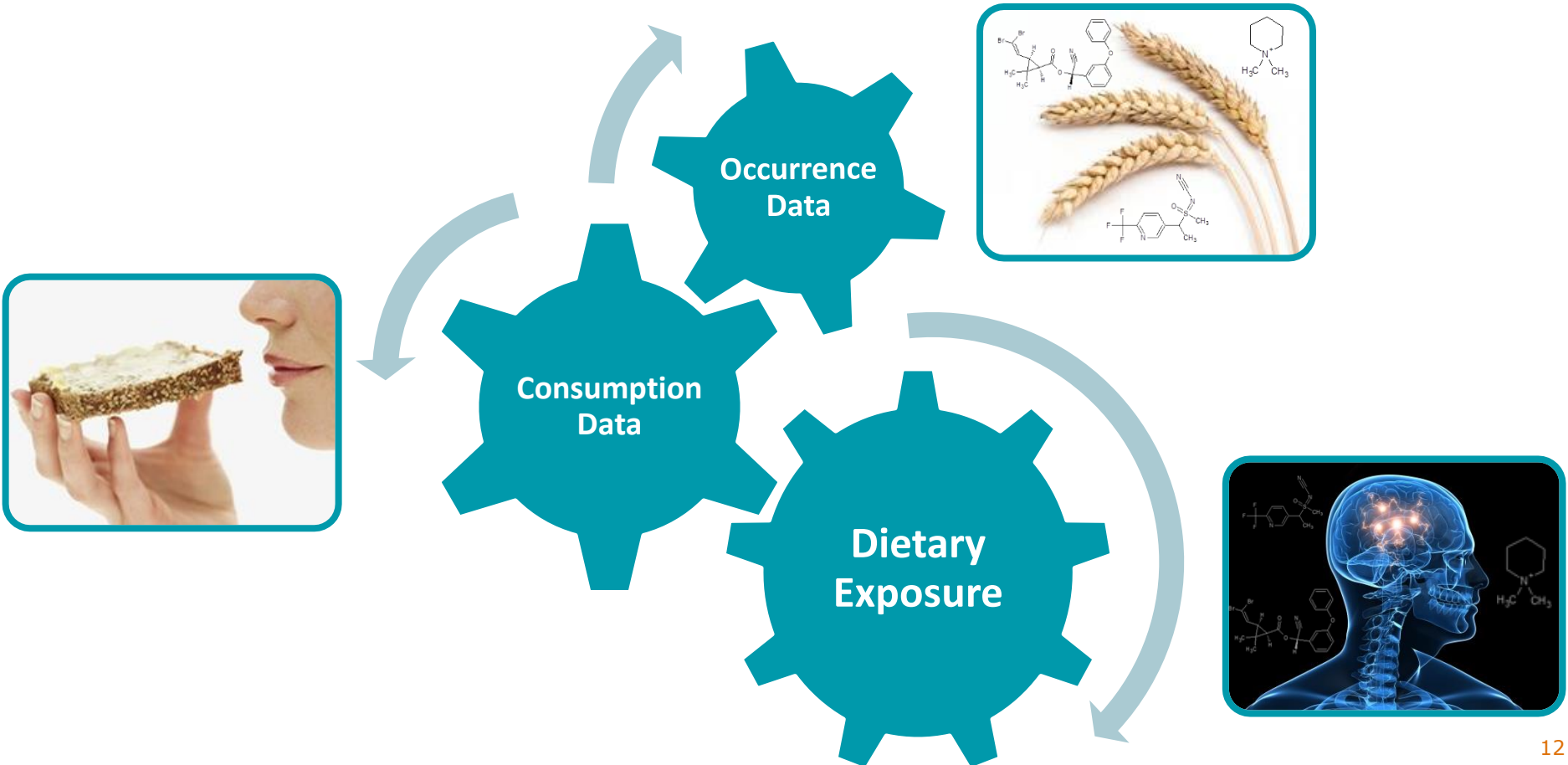
# Raw Primary Commodity (RPC) Model
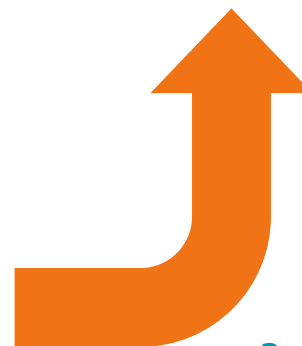


**Food as consumed**

**Raw Primary Commodities**

**RPC derivatives**

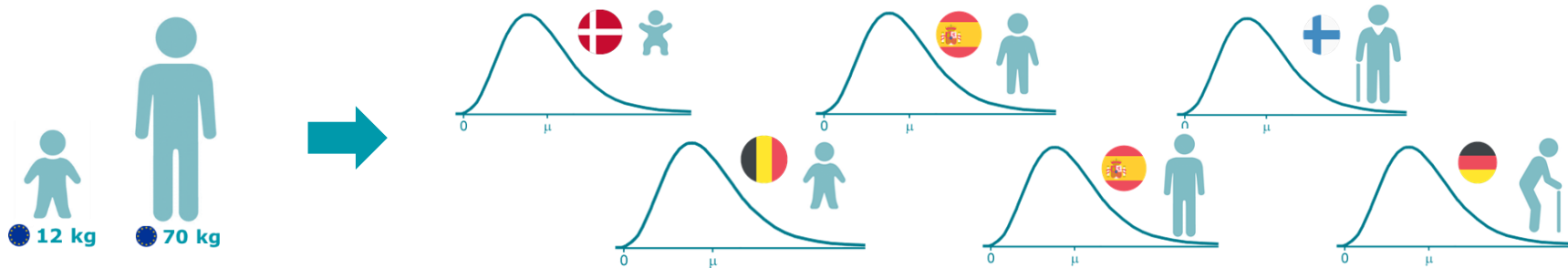**1. Disaggregation step**
Ratio of ingredients

**2. Conversion step**
Reverse yield factors

## Harmonisation and standardisation

- Comprehensive Database will be used in new areas
- Individual-based modelling at level of RPC



## Flexibility

- No longer limited by the available occurence data
- Use of processing factors

# RPC Model – Implementation

## Case studies

- Scientific opinion on pesticides in foods for infants and young children (w/o processing factors)
- Feed Additives Consumer Exposure (FACE) calculator

## Validation and finalisation

- Final checks currently ongoing
- Technical report expected by end 2018

# What's next?

## Cumulative exposure to pesticides

- RPC consumption data
- Processing factors collected by BfR, BPI & RIVM

## Pesticide Residues Intake Model (PRIMo)

- RPC consumption data
- Incorporate PFs?
- Individual based modelling?

## PF Database

- How to ensure regular updates?
- How to improve accessibility?

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