



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

Legal requirements

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 ?**

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

Dietary exposure assessment

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

**Procurement
BfR/BPI/RIVM**

Procurement BfR / BPI / RIVM

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

Objectives 1 & 2

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 facets for the processing technique

Objective 3 – Data and methodology

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

Objective 3 - Outcome

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



Main achievements through procurement

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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BfR/BPI/RIVM**

RPC model

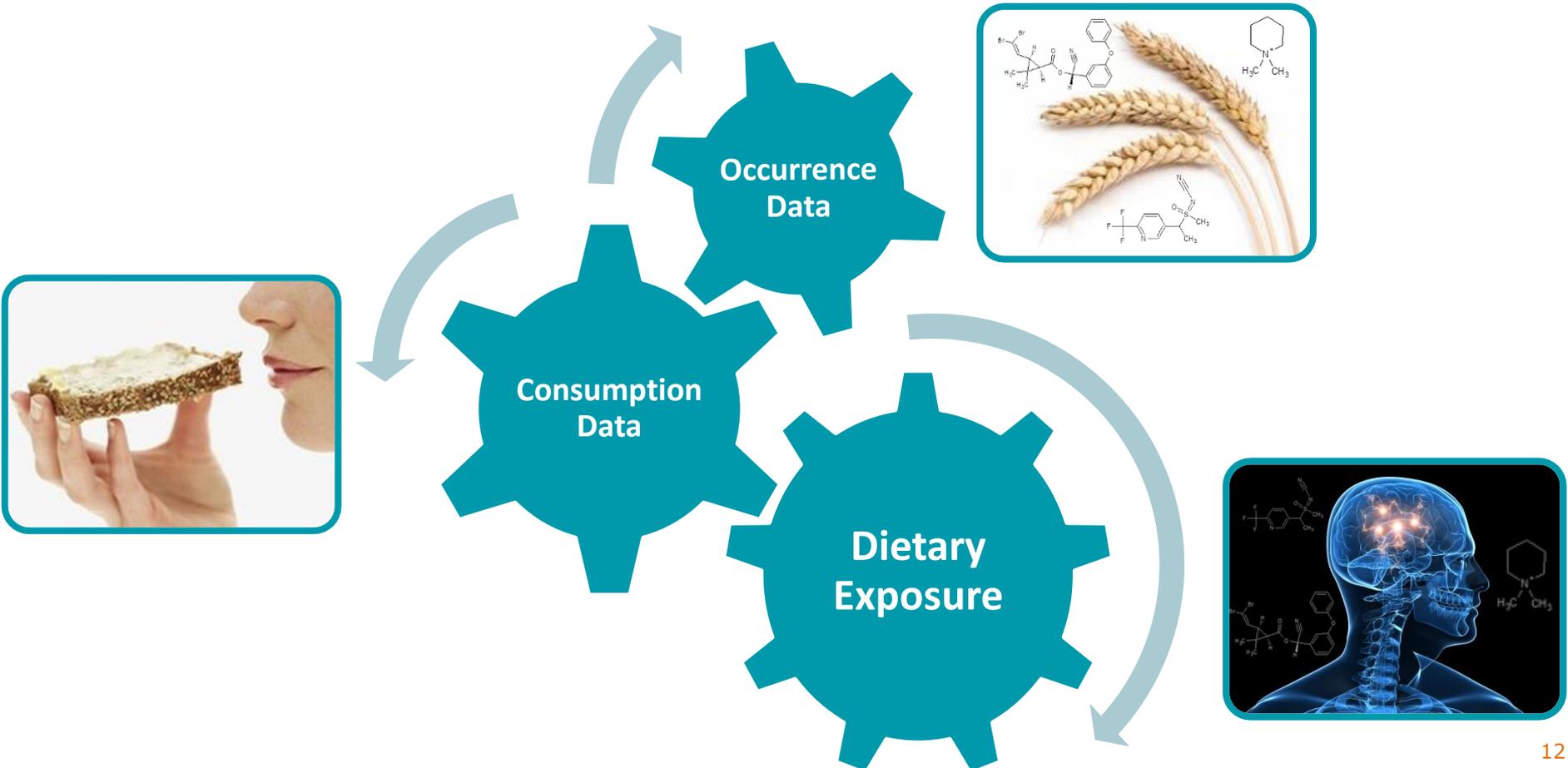
Food consumption data

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



Dietary exposure assessment



Raw Primary Commodity (RPC) Model



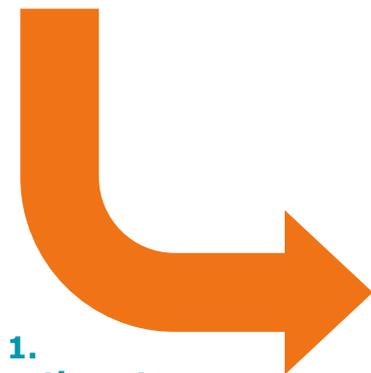
Food as consumed



Raw Primary Commodities

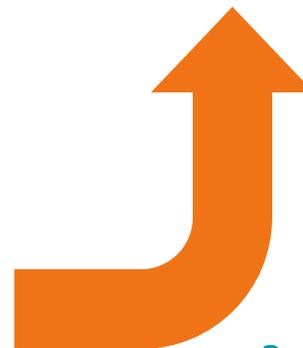


RPC derivatives



1.

Disaggregation step
Ratio of ingredients



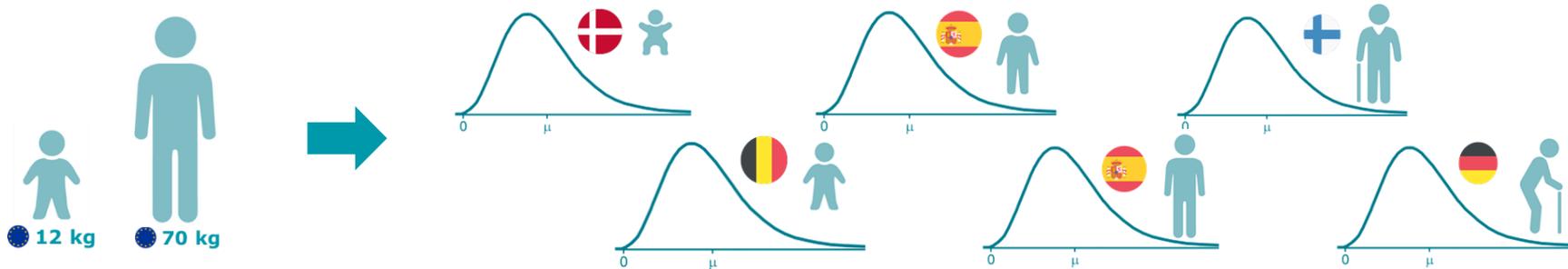
2.

Conversion step
Reverse yield factors

RPC Model – Main benefits

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 occurrence 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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