STRENGTHENING DATA QUALITY AND EXPLORING NEW DATA STREAMS TO FACE FUTURE CHALLENGES IN EXPOSURE ASSESSMENT

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efsa
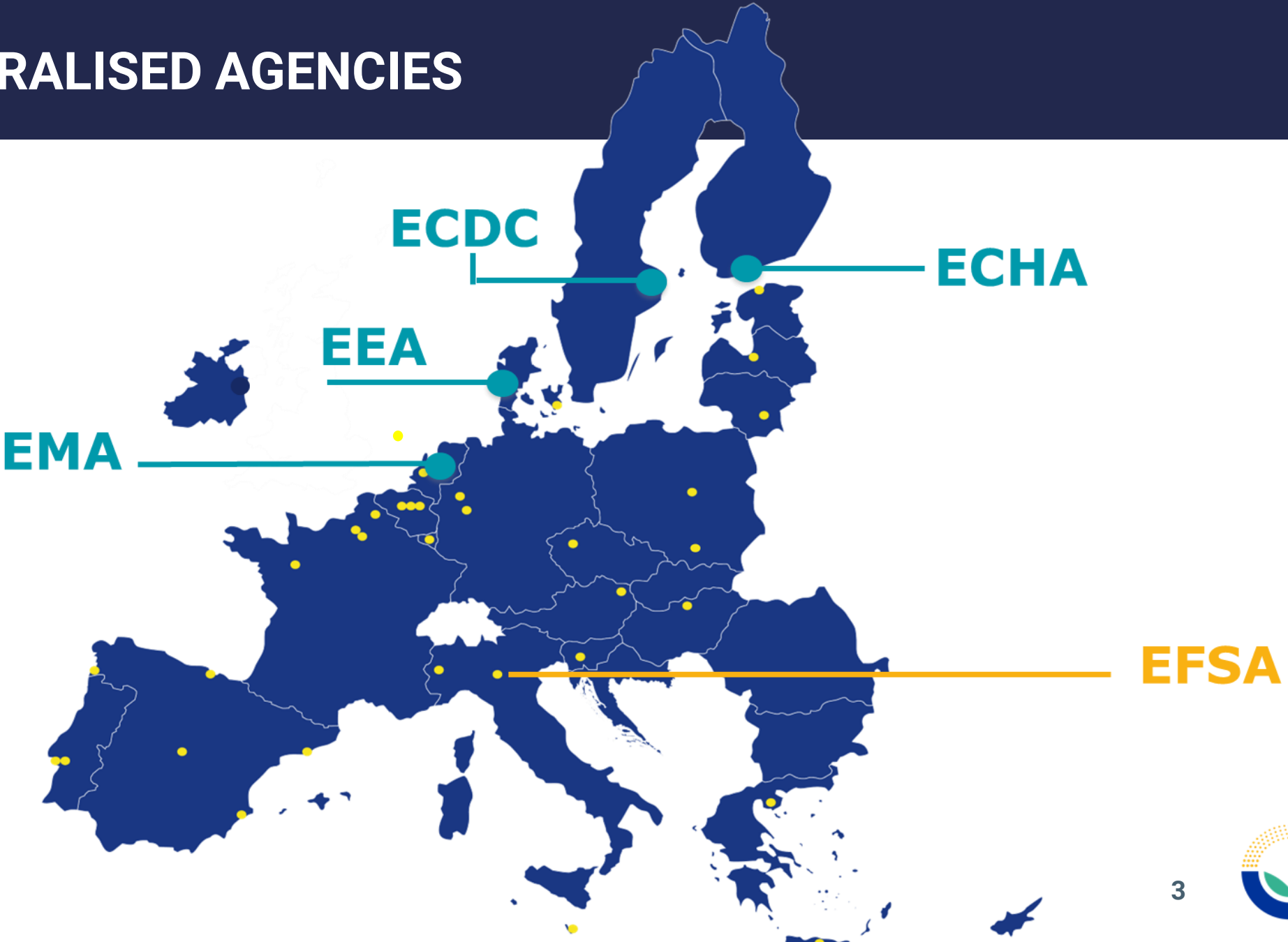EUROPEAN FOOD SAFETY AUTHORITY

EFSA IS

The **reference body for risk assessment** of food and feed in the European Union. Its work covers the entire food chain – from field to fork

One of a number of bodies that are **responsible for food safety in Europe**
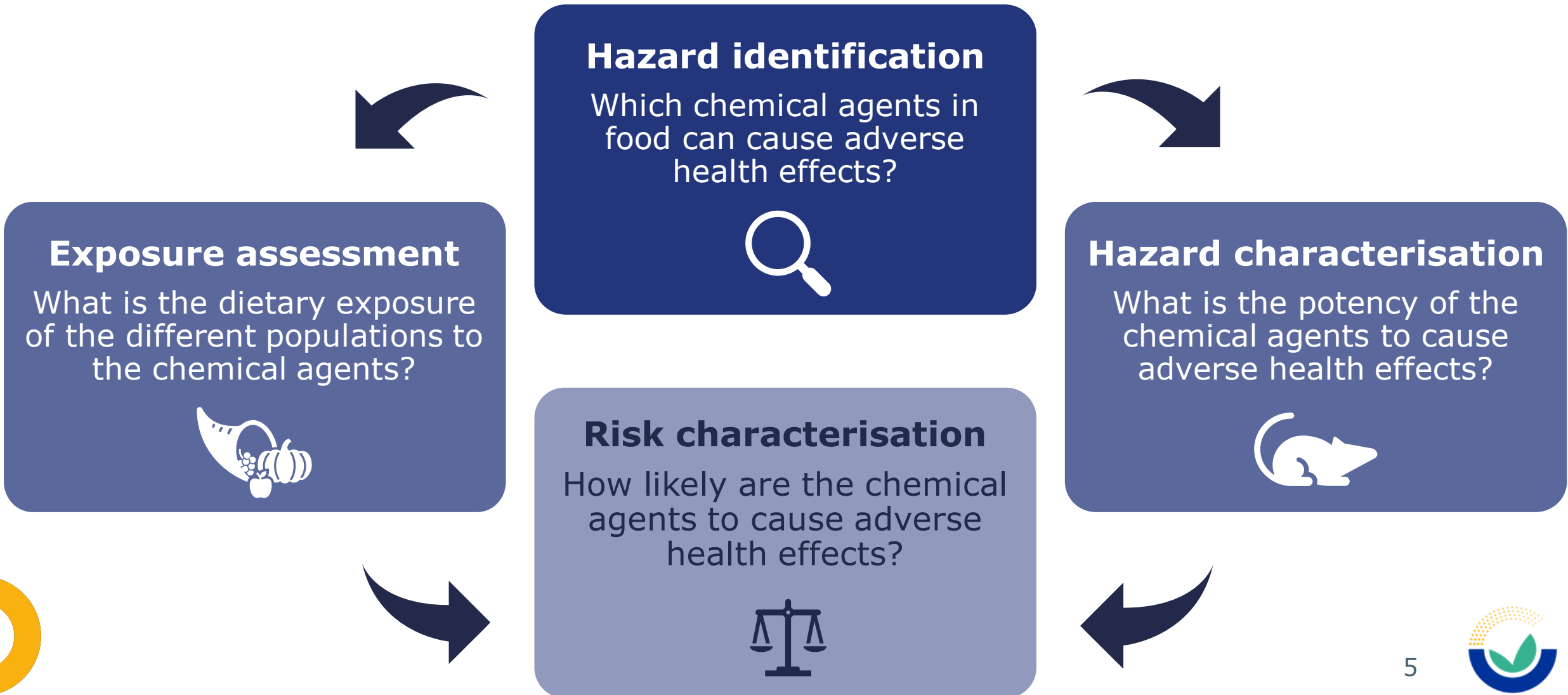
EU DECENTRALISED AGENCIES

ECDC

ECHA

EEA

EMA

EFSA

- ✓ Dietary exposure @ EFSA
- Consolidate data quality
- Advancing FAIR data
- Explore new data streams

RISK ASSESSMENT PRINCIPLES

Hazard identification
Which chemical agents in food can cause adverse health effects?

Exposure assessment
What is the dietary exposure of the different populations to the chemical agents?

Hazard characterisation
What is the potency of the chemical agents to cause adverse health effects?

Risk characterisation
How likely are the chemical agents to cause adverse health effects?

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DIETARY EXPOSURE ASSESSMENT

Acute or chronic ?

Prospective or retrospective ?

Conservative or accurate ?

Occurrence

Consumption

Exposure

- Pesticide residues
- Contaminants
- Natural toxins
- Additives
- Food contact materials
- Nutrients
- Enzymes
- Flavourings
- Feed additives
- …
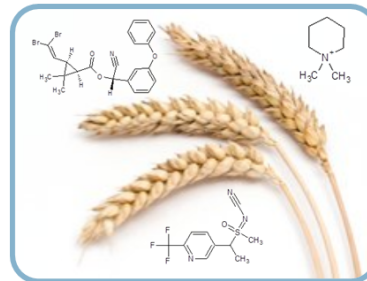
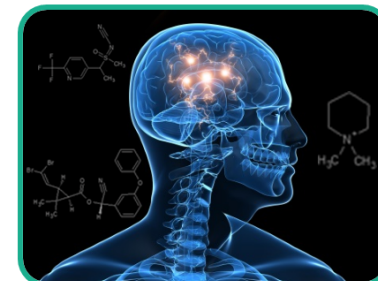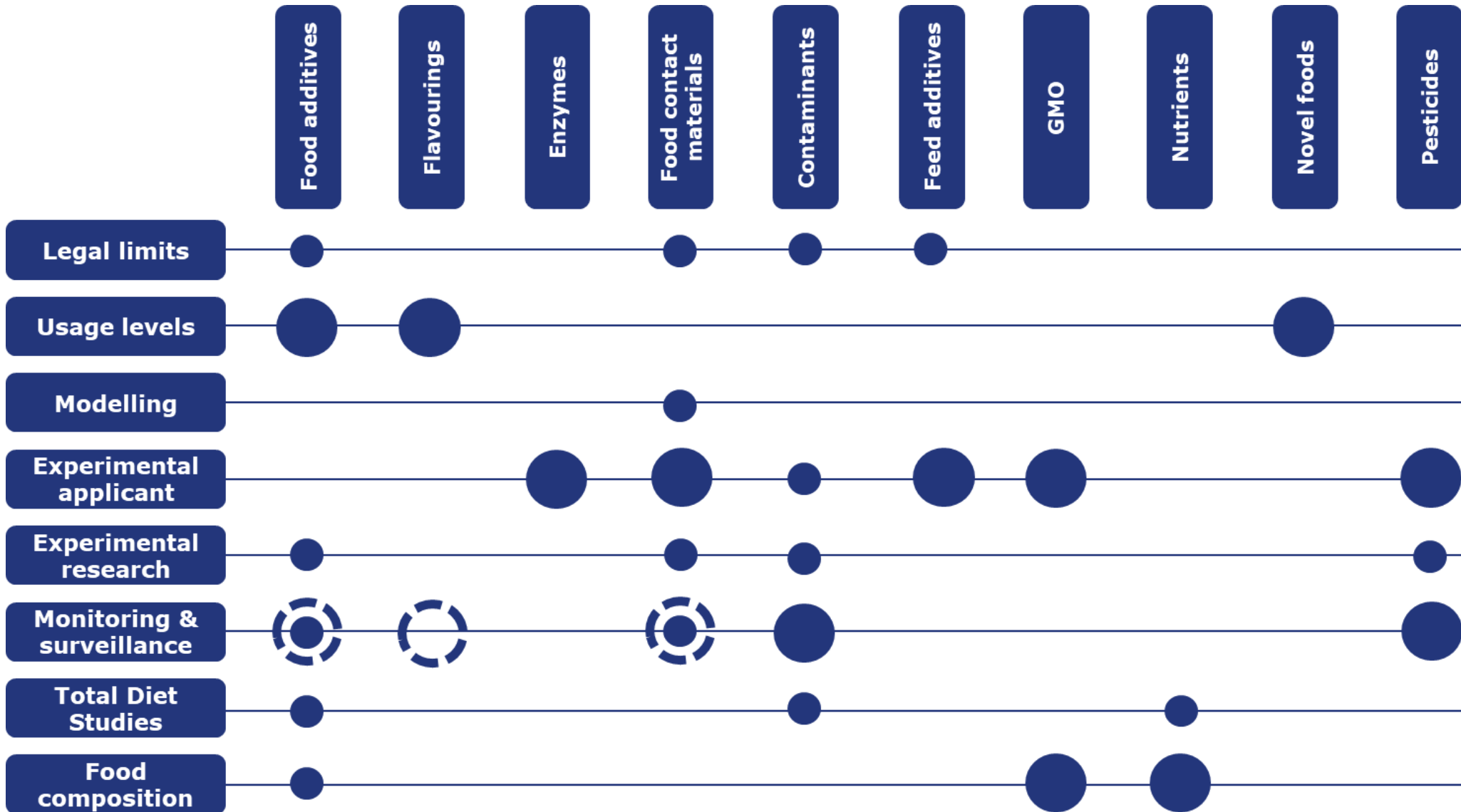## Deadlines for 2024 Chemicals data reporting and validation

1 March 2024 — Data collection framework opens for testing data transmission

1 April 2024 — Data collection framework opens for the official data transmission

30 June 2024 — Deadline for the complete transmission of all residue data domains datasets/data (VMPR, pesticide residues, chemical contaminants and food additives)

All data to be transmitted to the EFSA DCF by 30 June 2024: data providers for all data domains in the frame of the harmonised *ChemMon* data collection will have until 31 August 2024 to validate (check) and accept their data in the EFSA Scientific DataWareHouse (sDWH)

31 August 2024 — Deadline for data validation and data acceptance in the EFSA sDWH

1 September 2024 — Closure of the data collection

No more data correction, validation and acceptance will be possible

Since 2010, EFSA has collected over 400M analytical results for almost 5,000 parameters in 23,000 datasets
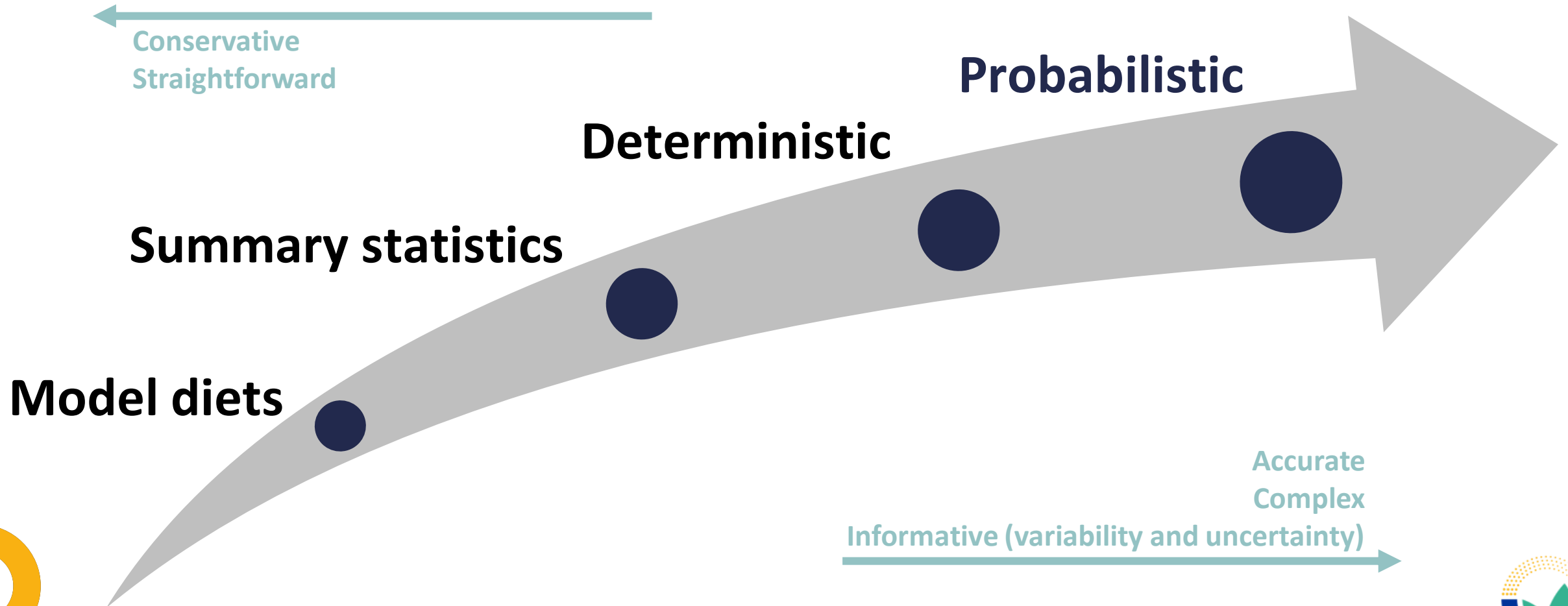

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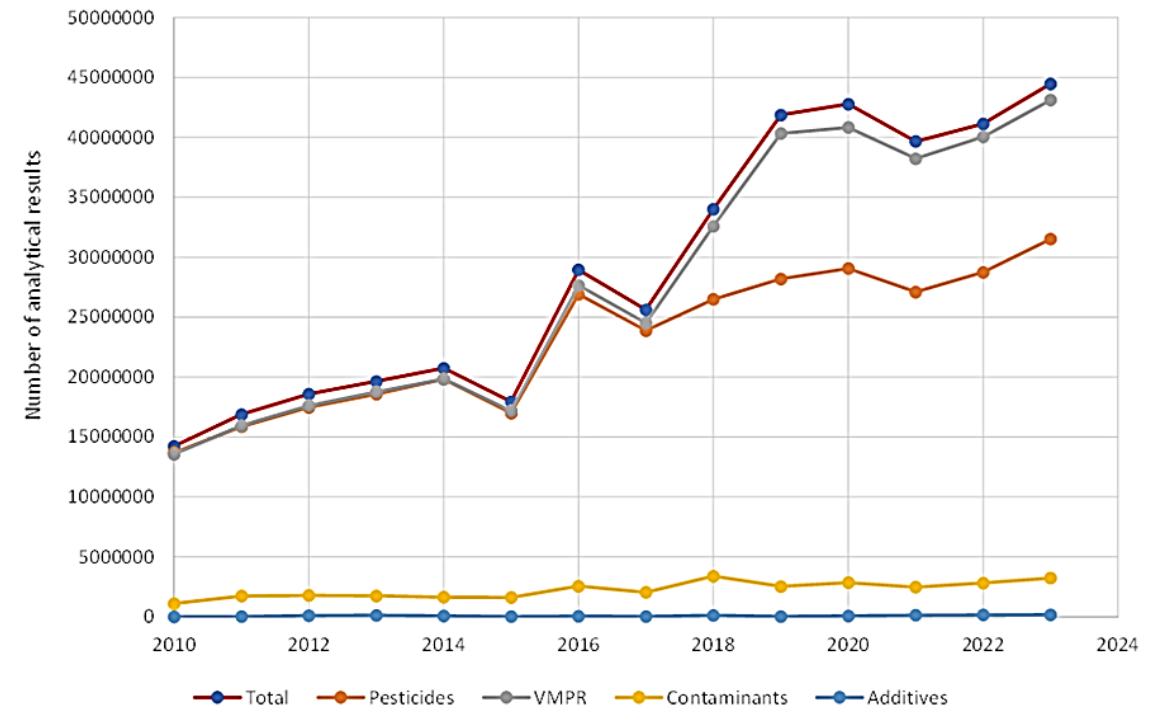
EUROPEAN FOOD CONSUMPTION DATABASE

The EFSA Comprehensive European Food Consumption Database:

- 24h recall/dietary record method
- collected at individual level
- most recent within each country
- representative at national level
- different age classes, from infants to elderly
- special population groups

Population group	Number of surveys	Number of countries
Infants	12	12
Toddlers	18	18
Other children	23	22
Adolescents	26	24
Adults	28	27
Elderly	23	23
Very elderly	16	15
Pregnant women	9	9
Lactating women	2	2
Vegetarians	2	2

DIETARY EXPOSURE MODELLING

Conservative
Straightforward

Probabilistic

Deterministic

Summary statistics

Model diets
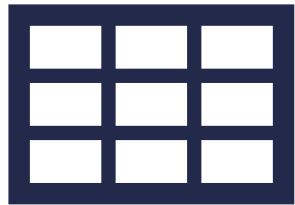
Accurate
Complex
Informative (variability and uncertainty)

- Dietary exposure @ EFSA
- ✓ Consolidate data quality
- Advancing FAIR data
- Explore new data streams

QUALITY OF MONITORING DATA

Standard Sample Description

Data Collection Framework

Scientific Data Warehouse

Standardization

Validation

Enrichment

Towards more harmonised food consumption data at EU level to address methodological differences in the comprehensive food consumption database

Guidance of EFSA | 🔒 **Open Access**

Guidance on the EU Menu methodology

European Food Safety Authority

First published: 22 December 2014 | https://doi.org/10.2903/j.efsa.2014.3944

https://www.efsa.europa.eu/en/efsajournal/pub/3944

FOODEX2 CATALOGUE

FoodEx2

A0FBT#F06.A06XK$F10.A0CQE

Base Term:
Canned tunas and similar (A0FBT)

Facets:
SURROUNDING-MEDIUM = In olive oil (A06XK)
QUALITATIVE-INFO = Without added salt (A0CQE)

- **FoodEx2** is a hierarchical food classification and description system consisting of individual base terms aggregated into food groups and broader food categories

- Facets are used to add further detail, in relation to different properties and aspects of foods

- Developed and maintained by EFSA

FOODEX2 WORLDWIDE

RELIABILITY OF PERCENTILE ESTIMATES

Ongoing mandate on the reliability of percentile estimates

- Demand for increased level of protection
- Are available data sufficient to estimate such percentiles?
- Can the lack of data be compensated by applying certain statistical models?

Deadline: mid-2025

https://open.efsa.europa.eu/questions/EFSA-Q-2023-00542
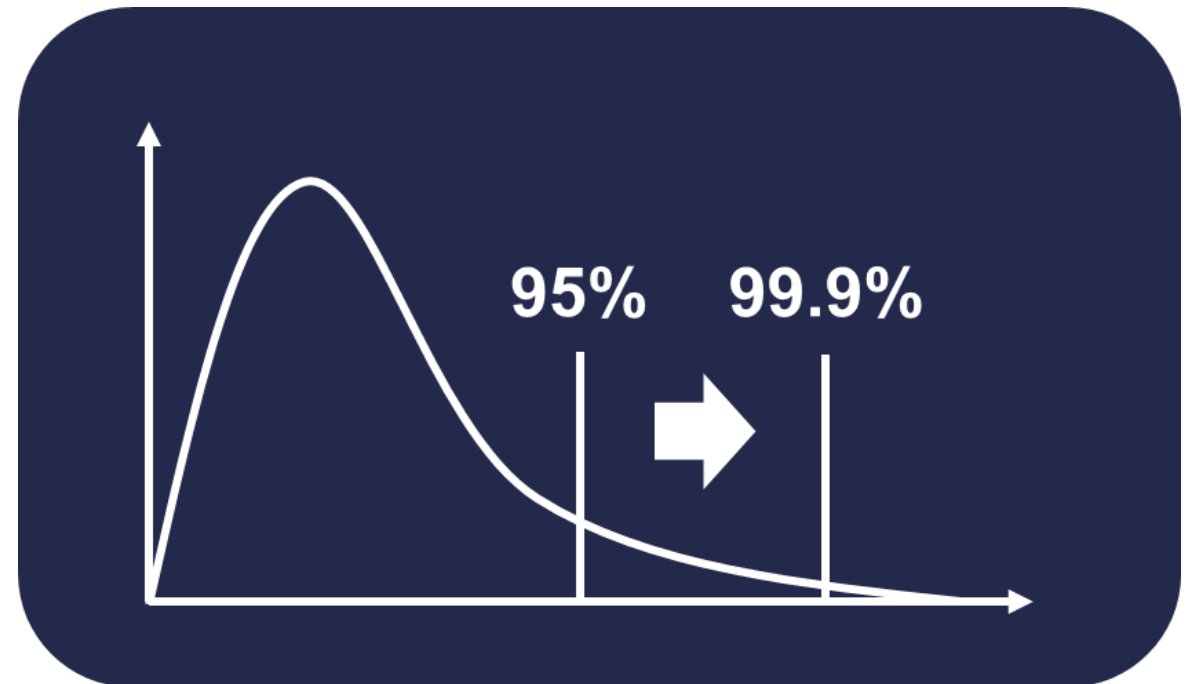
OVERVIEW

Dietary exposure @ EFSA

Consolidate data quality

Advancing FAIR data

Explore new data streams

FAIR DATA PRINCIPLES

Findable

Accessible
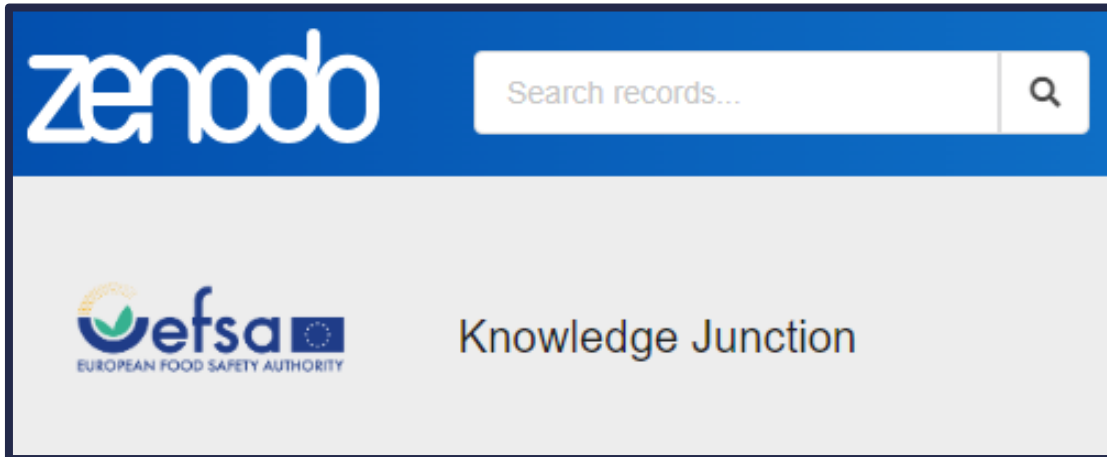
Interoperable

Re-usable

Increasing difficulty

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PUBLICATION OF MONITORING DATA

Curated **monitoring data** for pesticides residues, veterinary medicinal product residues and chemicals contaminants are made **publicly accessible** through two different platforms, including metadata to facilitate searchability and findability.

FOOD CONSUMPTION DASHBOARDS

The EFSA Comprehensive European Food Consumption Database

Food consumption - survey details

Food consumption statistics for FoodEx2: Level 1 (e.g. grains and grain-based p...

Food consumption statistics for FoodEx2: Level 2 (e.g. fine bakery wares)

Food consumption statistics for FoodEx2: Level 3 (e.g. cakes)
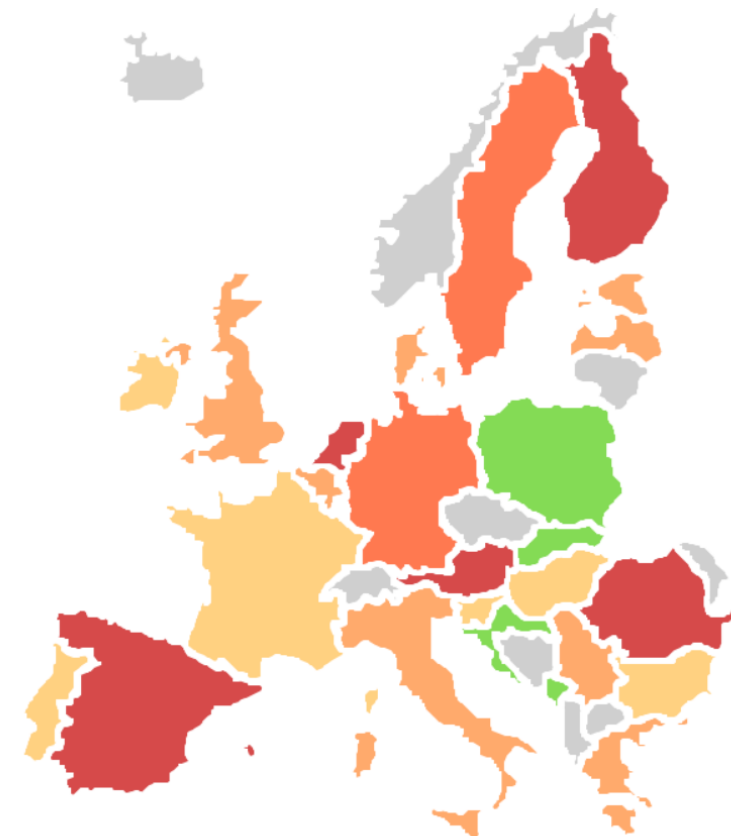
Food consumption statistics for FoodEx2: Level 4 (e.g. plain cakes)

Food consumption statistics for FoodEx2: Level 5 (e.g. cream cake)

Food consumption statistics for FoodEx2: Level 6 (e.g. cheese cake)

Food consumption statistics for FoodEx2: Level 7 (e.g. cheese cream sponge cake)

https://www.efsa.europa.eu/en/data-report/food-consumption-data

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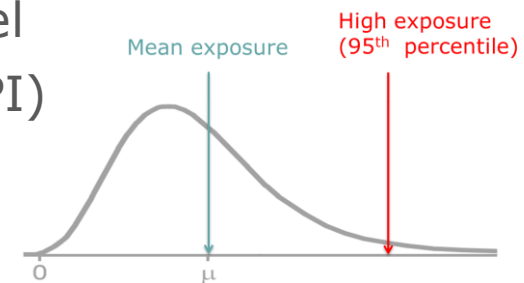# EXPOSURE TOOLS

EFSA Tools

- Feed Additive Consumer Exposure ([FACE](#))
- Food Additives Intake Model 2.0 ([FAIM](#))
- Food Enzyme Intake Model ([FEIM](#))
- Pesticide Residue Intake Model ([PRIMo](#))
- Rapid Assessment of Contaminant Exposure ([RACE](#))
- Dietary Exposure ([DietEx](#))
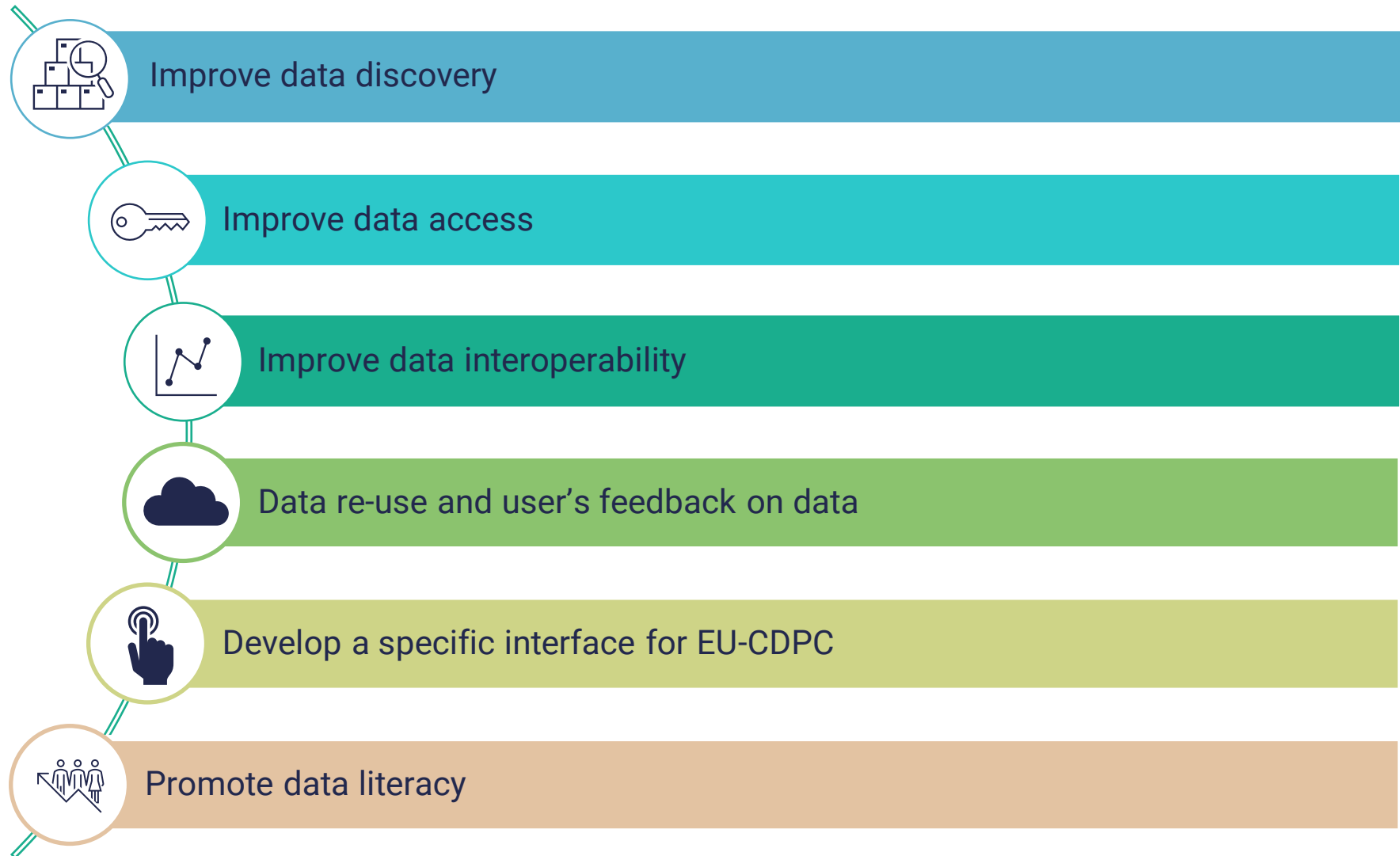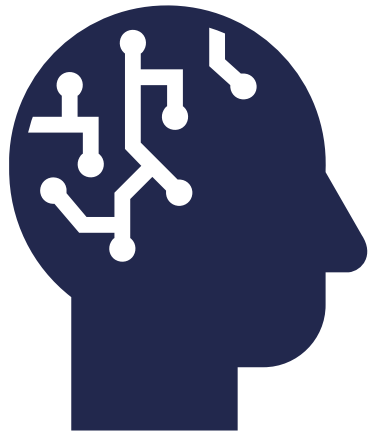
External Tool

Interoperability

- Allows for use of food consumption data at individual level
- Piloting the use of Application Programming Interface (API)

FUTURE OF EFSA'S DATA OUTREACH

Improve data discovery

Improve data access

Improve data interoperability

Data re-use and user's feedback on data

Develop a specific interface for EU-CDPC

Promote data literacy

- Dietary exposure @ EFSA
- Consolidate data quality
- Advancing FAIR data
- Explore new data streams

ONGOING PROJECTS

Creation of open access EU Food Composition Database and related data

Feed classification system and feed consumption database

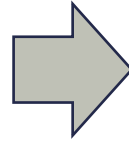**Monitoring and surveillance data for chemicals: exploring new opportunities**

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COMBINED EXPOSURE TO MULTIPLE CHEMICALS

EU Chemicals Strategy for Sustainability

EFSA Strategy 2027
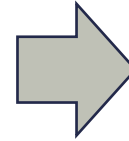
RACEMiC[1] Roadmap

Expo Advance[2] Roadmap

Section 2.2.2.
Protecting people and the environment from the combination effects of chemicals

Key Action
*Develop risk assessment of **combined exposure to multiple chemicals**, across regulatory domains*

[1] Roadmap for action on Risk Assessment of Combined Exposure to Multiple Chemicals (RACEMiC)
    https://doi.org/10.2903/sp.efsa.2022.EN-7555
[2] Roadmap for action on Advancing Aggregate Exposure to Chemicals in EU (ExpoAdvance)
    (Roadmap under development, Theme (concept) paper: Advancing Aggregate Exposure to Chemicals in EU)

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SURVEILANCE DATA: EXPLORING NEW OPPORTUNITIES

Objective 1 – Data needs: Identify and prioritise EFSA's future needs in terms of monitoring and surveillance data for chemical risk assessments. This is not restricted to analytical laboratory measurements only; it may also include other types of data such as pesticide usage surveys, trade volumes, etc.

Objective 2 – Data sources: Identify all possible data sources that would address the priority needs identified under Objective 1 by combining different methodologies (for example through interviews, surveys, literature reviews, crowdsourcing, but not necessarily restricted to those).

Objective 3 – Recommendations and reporting: Identify opportunities for data retrieval, harmonisation and sharing, and propose modifications to the existing data generation pipelines to make the identified data sources fit for use in chemical risk assessment, derive recommendations for new data generation (through dedicated projects or monitoring programmes) to fill data gaps with fit-for-purpose data.

NEW TYPES OF MONITORING DATA

Non-target screening

Quantification?

Human bio-monitoring

Source?

Effect-based monitoring

Identity?

How to make best use of those new data types?
Prioritisation only or can we do more?

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SCREENER PROJECT

Objective 1: To apply **non-target screening** approach to 212 chemicals currently registered under the REACH legislation that were assigned high priority as potential unrecognised contaminants in the European food chain (presence/absence);

Objective 2: To concurrently apply **non-target screening** for halogenated organic chemicals which may have been introduced unintentionally through industrial and/or anthropogenic sources and have not been recognised as contaminants in the food chain before (presence/absence);

Objective 3: To fully **quantify** the occurrence of a limited number of chemicals in food and feed.

Objective 4: To evaluate in more detail, in consultation with EFSA, the significance of the occurrence levels of the analysed chemicals to **characterise their risks**. In relation to this objective , the contractor is designing a strategy for the exposure assessment.

IDENTIFYING RELEVANT ACTIVITIES BEYOND EFSA

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