



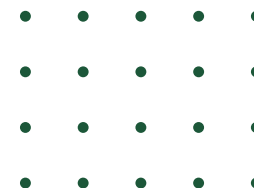
Portuguese Economic and Food Safety Authority

ASAE: Enhancing Food Safety Risk Assessment through AI

From Organic Structure to AI-Driven Risk Assessment (IDRisk II)

Pedro Nabais, Head of Food Risks Division

Madrid, 21 May 2026



ASAE Overview

The National Authority

ASAE is the Portuguese specialized authority for food safety and economic surveillance. It operates as a central department of public administration with scientific independence.

Specialized Police Body

With criminal investigation powers, ASAE monitors and prevents the enforcement of legislation across the food and non-food sectors.

Official Control Body

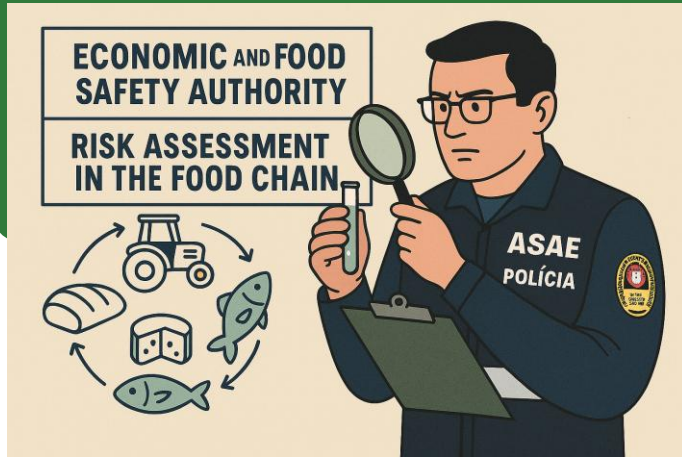
A Competente Authority in charge of performing official food controls under the MANCP (Multi-Annual National Control Plan) and acts as the national liaison body with other EU Member States.



ASAE Overview

Risk Assessment and Risk Communication

Responsible for the Risk Assessment and Risk Communication of the potential risks on the food chain.



EFSA's Focal Point

National EFSA's Focal Point and Advisory Forum representative and member of Food Fraud Network





NORTHERN REGIONAL UNIT (URN)

- UO I - Porto
- UO II - Barcelos
- UO III - Mirandela

CENTRAL REGIONAL UNIT (URC)

- UO IV - Coimbra
- UO V - Coimbra Norte
- UO VI - Castelo Branco

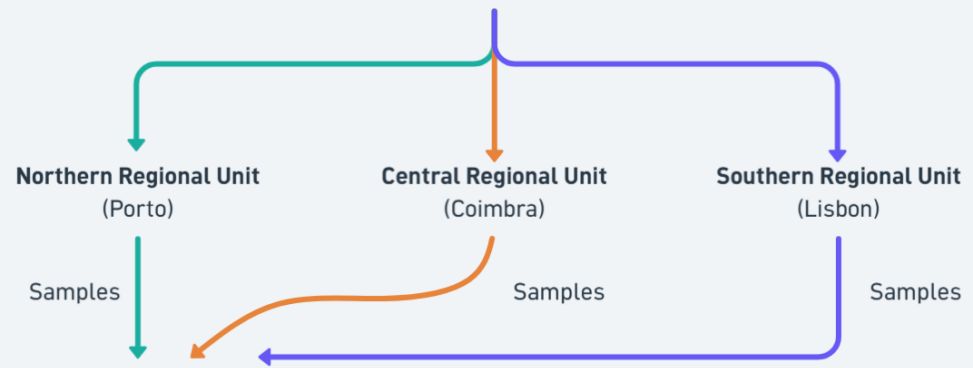
SOUTHERN REGIONAL UNIT (URS)

- UO VII - Lisboa
- UO VIII - Lisboa/Oeste
- UO IX - Lisboa/Sul
- UO X - Santarém
- UO XI - Évora
- UO XII - Faro



CENTRAL SERVICES

- National Control and Enforcement Unit
- National Information and Criminal Investigation Unit
- Department of Administration and Resources
- Department of Law Enforcement and Infringements
- Department of Risk Assessment and Laboratories



FOOD SAFETY LABORATORY

- Ph-Chemical Lab.
- Microbiology Lab.
- Beverages Lab.

FOOD RISKS UNIT

- Risk Assessment
- Risk Communication

- Non-compliant samples**
- Non-criminal infringements
 - Criminal infringements

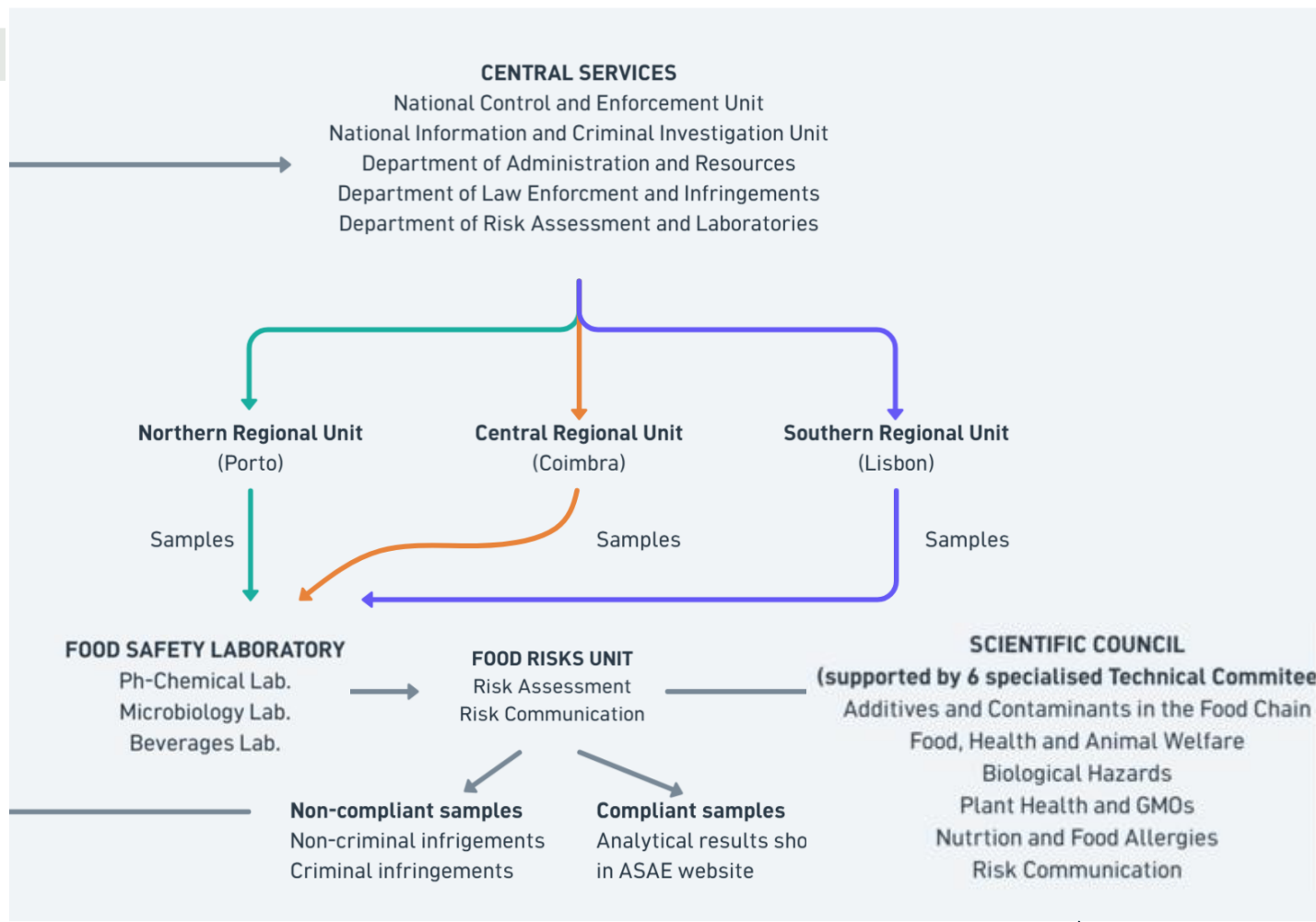
- Compliant samples**
- Analytical results shown in ASAE website

SCIENTIFIC COUNCIL

- (supported by 6 specialised Technical Committees)
- Additives and Contaminants in the Food Chain
 - Food, Health and Animal Welfare
 - Biological Hazards
 - Plant Health and GMOs
 - Nutrition and Food Allergies
 - Risk Communication

Macro Organic Structure





Macro Organic Structure

Scientific Support

- **Collect and analyze data on risks** (direct or indirect) to food safety, ensuring public and transparent risk communication.

Coordinates National Food Sampling Plan (PNCA)



Food Samples



- **Assess and Characterize Food Risks** and issue scientific and technical opinions, recommendations, and warnings, collaborating with EFSA within the scope of its responsibilities.

Safety Assessment of Foods



Risk Assessment Methodology



*Exposure
assessment*

Occurrence
data
(PNCA)



Consumption
data
(IAN-AF)



Exposure
Assessment



Risk Assessment - Example

Wild boar steak



$$EDI = \frac{11 \text{ mg/kg} \times 0,06693 \text{ kg/day}}{73,6 \text{ kg bw}}$$



CLIENTE						
IDENTIFICAÇÃO: ASAE - DRAL - DRA (
MORADA: Estrada do Paço do Lumiar, 22						
AMOSTRA						
Carne de javali			DATA DE RECEÇÃO: 21/08/2023			
Bifes de javali congelado			DATA DE VALIDADE: 13/02/2026			
REFERÊNCIA: 0184A3051C23		LOTE: 207311				
DESTINO: -		NºPROCESSO: -				
INFORMAÇÃO ADICIONAL: -						
PERÍODO DE REALIZAÇÃO DO(S) ENSAIO(S)		INÍCIO: 25/08/2023		FIM: 19/09/2023		
Ensaio	Resultado	Incert.(a)	Unidades	Técnica	Documento de Referência	Dados Adicionais
Físico-Químicos						
Chumbo	11 ± 5		mg/kg	Absorção Atômica	QMI - 140 de 09/07/2021	TR não aplicada
LD: Limite de deteção	LQ: Limite de quantificação	LL: Limite Legal	TR: Taxa de Recuperação	NA: Não Aplicável		
(d) Ensaios cujo resultado provém da soma de resultados de outros ensaios. Quando todos os resultados parciais são inferiores ao LD/LQ, o resultado final é da forma "<(valor numérico)LD/LQ", sendo o valor numérico indicado igual ao LD/LQ mais elevado dos ensaios parciais. Caso haja pelo menos um resultado quantificável, o resultado final é a soma dos resultados quantificáveis dos ensaios parciais.						

$$MOE \text{ nefrotoxicity adults} = \frac{0,63}{10}$$

MOE 0,063 – intake of 66,93g/day
by an adult with 73,6kg bw

SAFETY MOE: > 10



Risk Assessment - Example

Corn snack



$$EDI = \frac{763 \mu g / kg \times 0,100 kg}{73,6 kg pc}$$



$$MOE \text{ carcinogenic effects} = \frac{0,17}{0,00104}$$

MOE 163 intake of 100g/day by an adult with 73,6kg bw
MOE 47 intake of 100g/day by a child of 21,3kg bw

SAFETY MOE: > 10.000

CLIENTE					
IDENTIFICAÇÃO: ASAE - DRAL - DRA (Divisão de Riscos Alimentares)					
MORADA: Estrada do Paço do Lumiar, 22 - Edifício F, 1º - 1649 - 038 LISBOA					
AMOSTRA					
Outros			DATA DE RECEÇÃO: 03/10/2023		
Aperitivo frito de milho com sabor a queijo e bacon			DATA DE VALIDADE: 27/01/2024		
REFERÊNCIA: 0207A3051C23		LOTE: T144227335			
DESTINO: -		NºPROCESSO: -			
INFORMAÇÃO ADICIONAL: -					
PERÍODO DE REALIZAÇÃO DO(S) ENSAIO(S)		INÍCIO: 18/10/2023		FIM: 23/10/2023	
Ensaio	Resultado	Incert.(a)	Unidades	Técnica	Documento de Referência
Físico-Químicos					
* Acrilamida (LFQ)	763		µg/kg	LC-MS/MS	QMI - 148 de 19/09/2023
LD: Limite de deteção	LQ: Limite de quantificação	LL: Limite Legal	TR: Taxa de Recuperação	NA: Não Aplicável	
(d) Ensaio cujo resultado provém da soma de resultados de outros ensaios. Quando todos os resultados parciais são inferiores ao LD/LQ, o resultado final é da forma "<(valor numérico)LD/LQ", sendo o valor numérico indicado igual ao LD/LQ mais elevado dos ensaios parciais. Caso haja pelo menos um resultado quantificável, o resultado final é a soma dos resultados quantificáveis dos ensaios parciais.					

Risk Assessment - Innovation

- **Data Quality Improvement** – Focused on improving the quality and standardization of data from official controls for risk assessment purposes;
- **Interoperability** – Alignment with European Standards, specifically the SSD2 (Standard Sample Description) and FoodEx2 classification systems;
- **Assisted Encoding Tool** – Development of a digital tool to assist inspectors in encoding food sampling data, reducing errors and improving precision.



IDRisk

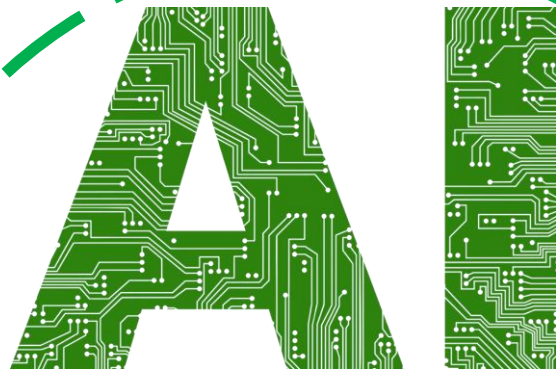
Project

(GP/EFSA/ENCO/2018/03)



📱 Data Capture @ Point of Sampling Tool

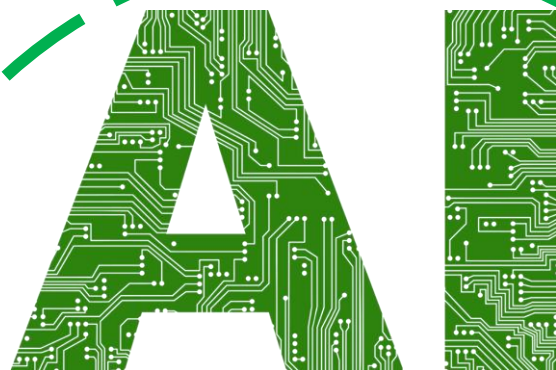
- **International Collaboration** – Implement a tailored data capture tool to foster cooperation between Portugal, Denmark and Belgium;
- **EFSA Standardization** – Prepare data from sampling point to **SSD2** (Standard Sample Description) format and **FoodEx2** classification;
- **Form Customization** – Create concise digital forms for partner's operational needs;
- **Quality and Speed** – Reduce manual work and errors and increase completeness and timeliness in real-time data collection – using AI



IDRisk 2.0
Project

(GP/EFSA/ENREL/2022/03)





IDRisk 2.0

Project

(GP/EFSA/ENREL/2022/03)



Luis Paulo Reis (UPorto) Credits 194 Logout

Organization: EFSA | Language: English | **Inspection** | Configuration | Products: New Product

Export PDF | Export JSON | Export Excel | Play music

NIF: Use current GPS Lat 41.183762, Lon -8.653778

GeoRef (Auto):

Find nearby (500m)

Name: | Establishment type:

Address:

Postal code: | Parish:

Municipality: | District:

Economic operator type:

Add location voice notes | Add Text Notes

Location notes (voice or text):

Select zoom level or click map to set location

- Very close Close Far +



IDRisk 2.0

Project

(GP/EFSA/ENREL/2022/03)



EFSA | ASAE | LIACC | PORTO | DTU | Danish Veterinary and Food Administration | favv | FoodEx AI

Luis Paulo Reis (UPorto) Credits 189 Logout

Organization: EFSA | Language: English | Inspection | Configuration | Products: New Product

Generate FoodEx2 (multi-image) | RAG info | Save product and next | Clear current product

Analysis ready. Click "Save product and next" to add it to this inspection.

Choose images (1-5)

Drag and drop images here or click to choose

Live camera | Use device camera

Uploaded image(s)

Product name: HVIDE BØNNER I TOMATSAUCE / HARVEST BEST BAKED BEAN | Responsible organization: La Doria S.p.A. for Netto

Origin (Country): Italy | Brand: Harvest Best

Expiry date: Unknown | Production date: Unknown

Time of Collection: 2026-05-19 15:06 | Batch/Lot: Unknown

Main Ingredients: 51 % white beans, tomato sauce (49 %), water, sugar, modified maize starch, salt, antioxidant E300, acidity regulator E330, (

Prompt (optional): Optional context (e.g., usage, product category).

Add voice notes

1) FoodEx2 code (base + facets)

AOERT#F28.A0BYP
Canned legumes (as part-nature) See above + Canning / jarring

2) Image - FoodEx2-focused description

Canned cooked white beans in tomato sauce (baked beans), whole beans as legume product, ready-to-eat shelf-stable preserve. Ingredient list visible: white beans and tomato sauce with sugar, modified maize starch, salt, antioxidant E300, acidity regulator E330, onion powder, maltodextrin, paprika, rapeseed oil, spice extracts, natural chili aroma, garlic extract. Metal can, 420 g net weight, branded Harvest Best / private-label style, no origin claim visible, product may be from Denmark/Nordic market (Danish text). Uncertainty: exact manufacturer/brand owner only partially visible.

3) Image - Detailed description

Product is a can of baked beans. Front label shows the brand/name "HARVEST BEST" and "BAKED BEANS," with Danish product name "HVIDE BØNNER I TOMATSAUCE" (white beans in tomato sauce). Net weight visible: 420 g e. The can is a cylindrical metal tin with printed paper label in red and beige/brown tones.

Visible responsible organization text on the side/back: "Produceret af La Doria S.p.A., Via Sanno-Palma km 16,400, 84087 S. Arno (SA), Italien for Netto, netto.dk" (partly visible but readable enough to indicate producer and retailer for whom it is made). Brand/ marketed-by organization appears to be Netto; Harvest Best is the brand on the front. No importer/distributor beyond "for Netto" is visible.

Ingredients visible in Danish: "51 % hvide bønner, vand, tomatkoncentrat, sukker, modificeret majsstivelse, salt, antioxidant (E300), surhedsregulerende middel (E330), løgpulver, maltodextrin, paprika, rapsolie, krydderi-ekstrakter (nellike, paprika, chili, kanel), naturlig chiliaroma, hvidløgs ekstrakt." Main ingredient percentages visible: 51% white beans; front also states "49 % tomat sauce." No other ingredient percentages visible.

Nutrition declaration visible per 100 g: energy 396 kJ/94 kcal; fat 0.7 g; of which saturates 0.2 g; carbohydrate 14 g; of which sugars 4.9 g; protein 4.8 g; salt 0.50 g. Storage conditions visible: "Opbevaring: Ved stuetemperatur og tørt." Shelf-life/use instructions visible: "Hekonserves" (canned

AI-Driven Risk Assessment



PWA Technology

Flexible Forms Application (Progressive Web App) accessible on mobile devices for field inspectors.



Advanced AI

Automatic FoodEx2 classification using OCR, Large Language Models (LLM), and RAG for maximum accuracy.



REST Integration

Real-time communication and direct data transfer to CA systems and EFSA.

Operational Efficiency

- Drastic optimization of field inspection team workflows.
 - Reduction of manual data entry
 - Increased sampling speed
 - Intuitive mobile interface

Data Quality

- Ensuring integrity and accuracy in information sent to European authorities.
 - Reduction of classification errors
 - Greater record completeness
 - SSD2 and FoodEx2 standardization

Regulatory Science

- Adoption of cutting-edge technologies for decision support and transparency.
 - Intelligent automation with AI
 - Enhanced traceability
 - Compliance with EFSA standards



THANK YOU FOR YOUR ATTENTION

GET TO KNOW US BETTER

