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Enhancing Public Health: Harnessing the Power of AI in Ensuring Food Safety

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Agroknow



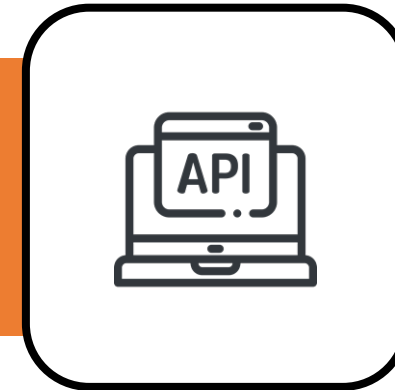


Agroknow

The data & analytics company that uses AI to predict Food Safety Risks



OUR OFFERINGS



**FOOD RISK INTELLIGENCE
PLATFORM**

**FOOD RISK DATA AS A
SERVICE**

DATA WORKFLOW

TRUSTED OFFICIAL DATA SOURCES SCANNED
EVERY 5 MINS



UNSTRUCTURED
WEB DATA

BIG DATA
PROCESSING



COLLECT &
HARMONIZE DATA

BIG DATA
PROCESSING



TRANSLATE
DATA

AUTOMATIC LANGUAGE
TRANSLATION



ENRICH
DATA

AI & SEMANTIC
ANNOTATION



DATA VALIDATED BY FOOD SAFETY
EXPERTS

DATA COVERAGE

North American Data Sources

FDA Recalls
 FDA Inspections Citations
 FDA Enforcement Reports
 FDA Import Alerts
 FSIS USDA
 Canadian Food Inspection Agency
 FreshDirect U.S.
 California Dep. Of Public Health

European Data Sources

RASFF
 German Authority
 Food Standard Agency UK
 Greek Authority
 Italian Authority
 Austrian Authority
 French Authority
 Czech Authority
 Irish Authority
 Danish Authority
 Spanish Authority
 Slovenian Authority

Asian Data Sources

Chinese Authority
 Singapore
 Hong Kong
 Japanese Authority
 Israel
 India
 Vietnam
 Philippines

Latin American Data Sources

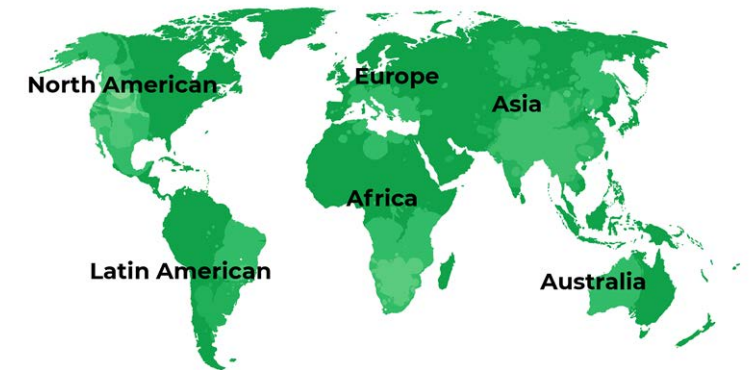
Brazil
 Mexico
 Ecuador

African Data Sources

Nigeria

Oceania Data Sources

New Zealand
 Australia



>1 BILLION

Records from official trusted sources

45

Data types

>880

Data sources

196

Countries covered

FOODAKAI MODULES

7. RISK PREDICTION

Which will be the next food safety incident in my supply chain?

1. REAL TIME INCIDENTS MONITORING & ALERTING

Am I aware of all the relevant food safety incidents for my supply chain?

2. EMERGING HAZARDS

Which are the emerging hazards for my ingredients & products (per region)?

6. RISK ASSESSMENT

How can I have fast & real time risk assessment for my ingredients, products & suppliers?



3. SUPPLIER EVALUATION

Which of my suppliers are more susceptible to risk?

5. GLOBAL LAB TEST INSIGHTS

Which are the hazards we should test for, according to global lab test results ?

4. AUTOMATED REPORTING

How can I have a quick overview of incidents & recalls for our brand vs competition?



Innovation Team and EU projects

EU Horizon Projects



Foster the adoption of AI-enabled food risk predictions through novel methods for privacy-preserving AI training and explainability



Cutting-Edge Named entity recognition for Food Safety related texts



Horizon Europe project dedicated to developing transparency solutions for transforming the food system



FoodDataQuest's ambitious goal is to inspire and provide the tools for an effective global movement towards innovations – driven by Artificial Intelligence and data-driven Machine Learning algorithms – that will boost sustainable food systems.

About HOLiFOOD

What? A 4-year project (2022-2026) funded by the European Commission under the Horizon Europe Programme that aims to introduce a **holistic approach for tackling food systems risks** in a changing global environment .

How? The project aims to improve the integrated **food safety risk analysis (RA) framework** in Europe to support the early detection of food risks in the food chain for a safe and sustainable food system.

Goals of the project

The overall objective of HOLiFOOD is **to improve the food safety risk analysis framework in Europe to:**

Meet future challenges arising from Green Deal policy driven transitions, in particular in relation to climate driven changes

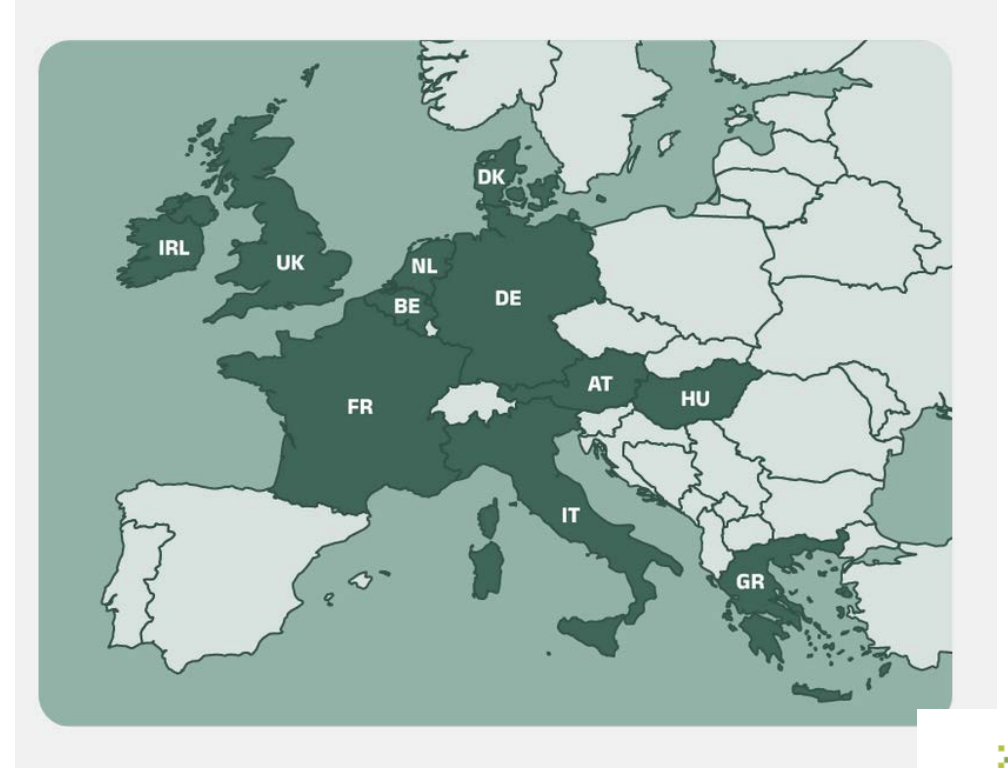
Support the realization of a truly safe and sustainable food production.

Contribute to the United Nations' Sustainable Development Goals (SDGs 2, 8, 9, 12, 15)

Who is behind the project?

holi
food

- **17 organisations from 10 European countries**, whose multidisciplinary expertise and knowledge in the field will help deliver the methods and tools needed to support policymakers and food actors in taking effective decisions.





Scientific Publication : under review

From Environment to Plate: A Comprehensive Review of PFAS presence in Food Products and Environmental Matrices

- Per- and polyfluoroalkyl substances (PFAS) represent an **emerging environmental risk** affecting both food products and the environment.
- Understanding the distribution and presence of PFAS compounds across various matrices and geographical origins is crucial for the development of effective mitigation strategies

This review aims to:

- Explore the presence of PFAS compounds in food and environmental samples,
- Enhance our comprehension of the worldwide prevalence of PFAS,
- Gain insights into the processes of bioaccumulation from the environment to the food chain

Materials and Methods

In pursuit of reproducibility and transparency, we curated the dataset to include only records sourced from **publicly available** data and **open-access publications**

Total Records : >150.000

Top Data sources selected for PFAS

Data source	Records collected
Water quality	49067
Food Standards Australia New Zealand (FSANZ) 27th Australian Total Diet Study	40080
WHO GEMS Food Contaminants Database	40080
Water Appendix	11270
Per- and Polyfluoroalkyl-Contaminated Freshwater Impacts Adjacent Riparian Food Web	1650
Results from the monitoring of veterinary medicinal product residues and other substances in live animals and animal products	1493
Perfluoroalkyl acids in drinking water of China in 2017: distribution characteristics, influencing factors and potential risks	1343

Results

Presence of PFAS in different environmental samples

	Surface water	Wastewater	Biota	Particulate matter	Groundwater	Soil
Total samples	13545	186	2559	65	316	283
>LOD	13346	79	1175	33	117	152
<LOD	199	107	1384	32	199	131

***Concentrations between the LOD and LOQ were included as >LOD, as we aimed to explore the presence of PFAS even at very low concentrations**

Results

Presence of PFAS in different food samples

	Total samples	>LOD	<LOD
Drinking Water	52040	50684	1344
Poultry& products	4285	2342	1943
Oils/Fats	2582	1622	960
Cereals& Grains	6028	2894	3134
Dairy Products	5524	2860	2664
Fish& Seafood	9015	5581	3434
Fruits	11548	5764	5784
Herbs& Spices	1440	960	480
Honey	480	240	240
Seeds& Nuts	2004	1034	970
Meat& products	9103	5002	4101
Pasta	240	240	0
Vegetables	21896	11066	10830
Beverages	2400	1200	1200
Sucrose	720	240	480
Chocolate/Coffee/Tea	1680	1200	480
Ready to eat	1920	720	1200
Infant	720	480	240
Other	1440	0	1440

Results

Mean values of PFAS concentration in environmental samples (mg/kg) (ww)

Resulted Concentration	Surface Water	Soil	Biota	Groundwater	Wastewater	Particulate Matter
Mean Value	1.00E-03	3.00E-03	0,02	1.00E-03	6.00E-03	6.00E-06

Mean values of PFAS concentration in food samples (mg/kg) (ww)

Resulted Concentration	Drinking Water	Fish & Seafood	Meat & Products	Poultry & Products	Fruits	Vegetables
Mean Value	1.00E-04	0,02	3.00E-04	2.00E-04	2.00E-06	6.07E-06

Results

Top 10 countries with the highest number of samples exceeding the LOD

Country	Records >LOD
France	28218
Italy	11705
USA	4098
Germany	3399
Netherlands	2840
Denmark	2256
Sweden	1961
China	1746
Norway	614
Canada	1004

Highlights

- Significant literature on the topic, but **information gaps exist** for many regions worldwide.
- PFAS detected in **over 99% of surface water and drinking water samples.**
- **Mussels (Fish & Seafood) and ticks (biota) exhibit the highest PFAS concentrations among samples,** which could be a result of environmental contamination of their habitat and bioaccumulation
- **Higher mean values in food samples** compared to environmental samples
- Most PFAS compounds detected in food samples mostly belong to the **long-chain PFAS** category

Conclusion

Mitigation and Regulatory Measures:

- Identification of contamination sources and prevention efforts
- Health risk assessments and ecological impact evaluation
- Implementation of mitigation strategies and enhanced waste management practices

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Thank you!

Questions?



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