



RISK ASSESSMENT OF FEED AND FOOD CONTAMINANTS: LATEST EFSA OPINIONS AND CURRENT ACTIVITIES

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Contaminants in the food chain - 10 October 2024
Food safety research conference Luxembourg



**Background
EFSA &
CONTAM Panel**





EFSA was established under EU law in 2002 following a series of food crises

TO

Improve the EU food safety system

Help ensure a high level of consumer protection

Restore and maintain confidence in the EU food supply

Clearly separate risk assessment and risk management functions



What EFSA Does



Provides **independent scientific advice** to EU risk managers on food/feed safety



Provides independent, timely **risk communication**



Promotes **scientific cooperation**



What EFSA Does NOT do



Develop food safety policies & legislation



Adopt regulations, authorise marketing of new products




Enforce food safety legislation



EFSA vision and mission

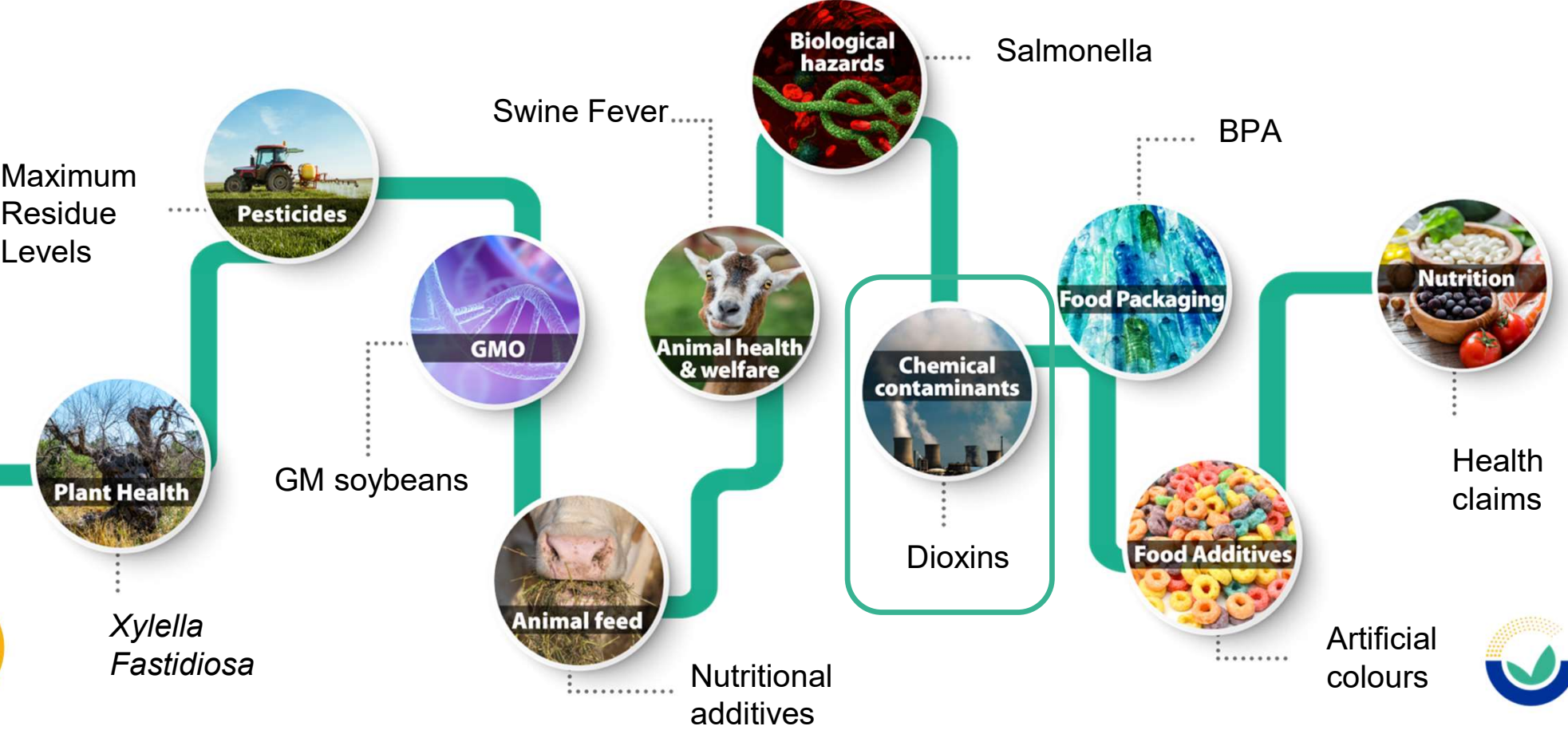
SCIENCE
SAFE FOOD
SUSTAINABILITY



Protecting consumers, animals,
plants and the environment
through independent and
transparent scientific advice
on risks in the food chain from
farm to fork



SCIENCE – FOOD SAFETY FROM FARM TO FORK



RISK ASSESSMENT PROCESS

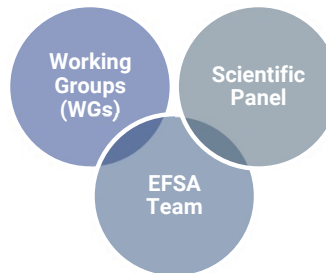
Receipt of mandate/ application

- European Commission
- European Parliament
- Member States
- EFSA self-mandate
- Applicant



Assessment

- Panel and working group members



11 Scientific Panels
1 Scientific Committee
15 Scientific Units



Publication

- EFSA Journal

The screenshot shows the EFSA Journal website. At the top is the EFSA logo (European Food Safety Authority). Below it is a navigation bar with 'JOURNALS' and 'SUBJECTS' dropdown menus. The main header features the 'efsa JOURNAL' logo with an 'OPEN ACCESS' button. Below the header, it lists 'JOURNAL METRICS >', 'Online ISSN: 1831-4732', and 'Print ISSN: 1831-4732'. A secondary navigation bar includes 'HOME', 'ABOUT' (dropdown), 'BROWSE' (dropdown), and 'VIRTUAL ISSUES'. At the bottom, the URL <https://efsa.onlinelibrary.wiley.com> is displayed.

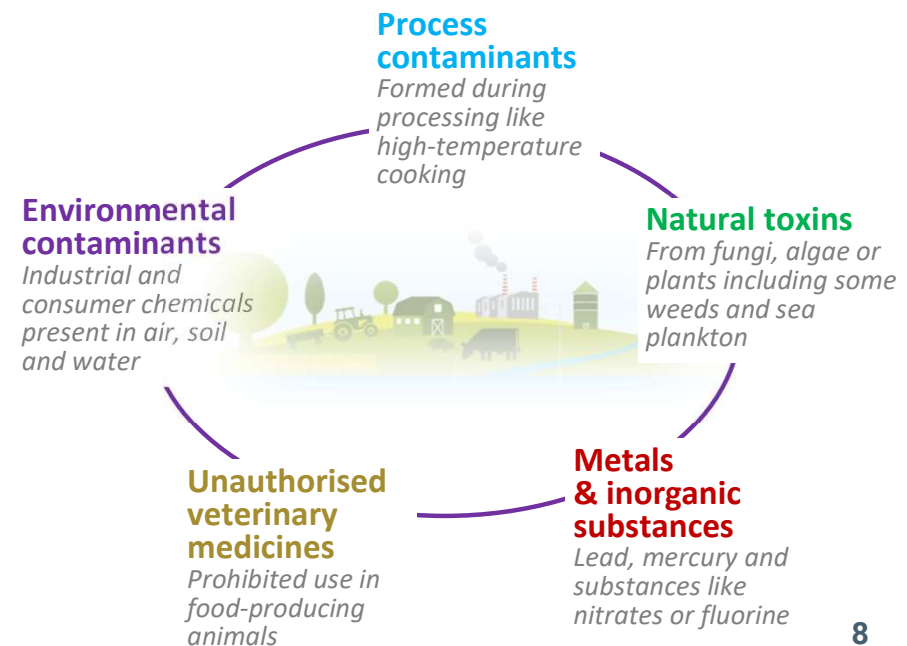


THE CONTAM PANEL

The EFSA Panel on Contaminants in the Food Chain (CONTAM) Panel and the EFSA CONTAM Team provide scientific advice on **contaminants in the food chain and undesirable** such as natural toxins, mycotoxins and residues of unauthorised substances mainly through **generic mandates**.

⇒ 19 Panel members with expertise in:

- ✓ Chemistry
- ✓ Exposure assessment
- ✓ Human and veterinary toxicology
- ✓ Epidemiology
- ✓ Statistics / PBK modelling
- ✓ Animal nutrition



Risk assessments on chemical contaminants in food and feed



2023 - 2024 SCIENTIFIC OPINIONS

2023

Deoxynivalenol in feed

Grayanotoxins in honey

N-nitrosamines in food

Ambrosia seeds in feed

Mineral oil hydrocarbons in food (PC March/April)

Ochratoxin A in feed

2024

Feed detoxification guidance

PBDEs in food (PC May/June 23)

Inorganic Arsenic in food (PC July/Sept 23)

Ergot alkaloids in feed

Polychlorinated naphthalenes in food & feed (PC Nov 23/Jan 24)

Small organoarsenics in food (PC March/May)

TBBPA in food (PC March/May)

Animal dietary exposure assessment of contaminants in feed

Beauvericin genotoxicity – 9 Oct. 2024

Brominated Phenols in food (PC June/Aug) – Oct. 2024

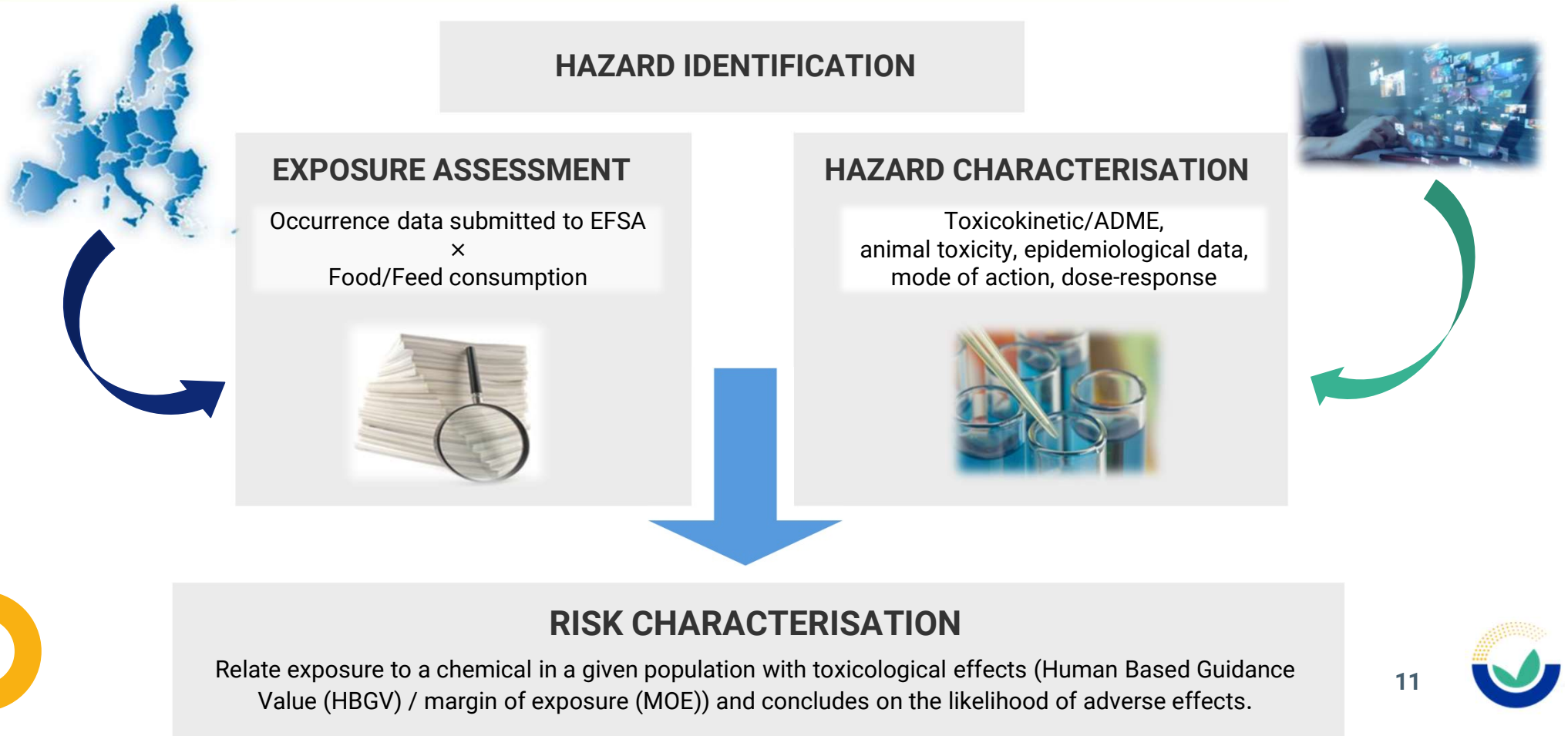
PC: Public Consultation

PBDE: Polybrominated diphenyl ethers

TBBPA: Tetrabromobisphenol A



THE RISK ASSESSMENT PARADIGM



ARSENIC IN FOOD

- Mandate from the European Commission: M-2021-00525
- Update of previous 2009 EFSA Opinion
- WG chair: **Tanja Schwerdtle**
- WG vice-chair / EFSA CONTAM coordinator: **Hans Steinkellner**
- Three Questions / Scientific Opinions:



Scientific Opinions	Question n.	Public consultation	Publication
Inorganic arsenic in food	EFSA-Q-2021-00250	July/Sept 2023	January 2024
Small organoarsenic species in food	EFSA-Q2021-00496	March/May 2024	July 2024
Complex organoarsenic species in food	EFSA-Q-2021-00525		<i>Adoption by Dec. 2024</i>



INORGANIC ARSENIC IN FOOD

Published in January 2024



- Food is the main source of exposure to iAs for the general population in Europe. The main contributors to dietary exposure are **rice, rice-based products, and grains and grain-based products**. **Drinking water** is also a major contributor to exposure, although levels are usually low in Europe.
- Epidemiological studies show that exposure to iAs via the diet is associated with increased risk of several adverse outcomes including cancers of the skin, bladder and lung.

Main outcomes

- Inorganic As is a **genotoxic carcinogen** with additional epigenetic effects.
- The CONTAM Panel applied a **Margin of exposure (MOE)** approach for the risk characterization.
- In adults, the **MOEs are low** (range between 2 and 0.4 for mean consumers and between 0.9 and 0.2 at the 95th percentile exposure, respectively).
- **Conclusion: Inorganic Arsenic raises a health concern despite a number of uncertainties.**



SMALL ORGANOARSENIC SPECIES IN FOOD

Published in July 2024



- For monomethylarsonic acid MMA(V), decreased body weight resulting from diarrhoea in rats was identified as the critical endpoint. The highest chronic dietary exposures were estimated for high consumers of **fish meat and processed/preserved fish**.
- For dimethylarsinic acid DMA(V), increased incidence in urinary bladder tumours in rats was identified as the critical endpoint. **Rice and fish meat** appeared as the main contributors to the chronic dietary exposure across population groups.
- For other small organoarsenic species: the toxicological data are insufficient to identify critical effects and reference points.

Main outcomes

- The CONTAM Panel applied a **Margin of exposure (MOE)** approach for the risk characterization.
- Based on this, the CONTAM Panel considers that:
 - **MMA(V): does not raise a health concern**
 - **DMA(V): a possible concern to human health was raised**



BROMINATED FLAME RETARDANTS (BFRs) IN FOOD



- Mandate from the European Commission M-2018-0092
- Update previous 2011 EFSA Scientific Opinion on BFRs
- WG chairs: **Christiane Vleminckx / Christer Hogstrand**
- EFSA CONTAM coordinator: **Luisa Ramos Bordajandi**
- A series of six Questions / Scientific Opinions:

Scientific Opinions	Question n.	Public consultation	Publication
Hexabromocyclododecanes (HBCDDs) in food	EFSA-Q-2018-00433	Oct./Nov. 2020	March 2021
Polybrominated diphenyl ethers (PBDEs) in food	EFSA-Q-2018-00432	May/June 2023	Jan. 2024
Tetrabromobisphenol A (TBBPA) and its derivatives in food	EFSA-Q-2018-00434	March/May 2024	July 2024
Brominated phenols (BPs) and their derivatives in food	EFSA-Q-2018-00435	July/Aug 2024	Oct. 2024
Emerging and novel BFRs in food	EFSA-Q-2018-00436	TBD	<i>Adoption by March 2025</i>
Mixture approach for the different families of BFRs in food	EFSA-Q-2020-00825	TBD	<i>Adoption by Nov. 2025</i>

HEXABROMOCYCLODODECANES (HBCDDs) IN FOOD

Published in March 2021



- HBCDDs can be found in the environment, food and in humans. The most important contributors to the chronic dietary exposure to HBCDDs were found to be **fish meat, eggs, livestock meat and poultry**.
- The main targets for toxicity are neurodevelopment, the liver, thyroid hormone homeostasis and the reproductive and immune systems. The CONTAM Panel concluded that the **neurodevelopmental effects on behaviour in mice** can be considered the critical effects.

Main outcomes

- The CONTAM Panel applied a **Margin of exposure (MOE)** approach for the risk characterization.
- Current **dietary exposure to HBCDDs across European countries does not raise a health concern**.
- An exception is **breastfed infants with high milk consumption**, for which **HBCDDs may raise a health concern**



POLYBROMINATED DIPHENYL ETHERS (PBDEs) IN FOOD

Published in January 2024



- The Opinion focuses on **10 PBDE congeners**
- The most important contributors to the chronic dietary exposure to PBDEs were **meat and meat products and fish and seafood**
- **Neurodevelopmental effects on behaviour and repro/developmental effects** considered critical
- Since repeated exposure to PBDEs results in accumulation of these chemicals in the body, the Panel estimated the **body burden** at the BMDL in rodents, and the chronic intake that would lead to the same body burden in humans.

Main outcomes

- Reference Points could be derived for 4 congeners only (BDE- 47, - 99, -153, - 209). For the remaining 6 congeners (BDE- 28, -49, -100, -138, -154 and -183), mechanistic studies indicated that they share common modes of action: enough basis to include all congeners in a group assessment.
- The **combined margin of exposure (MOET)** approach was used for the combined risk characterisation.
- **Conclusion: It is likely that the current dietary exposure to PBDEs in the European population raises a health concern.**



TETRABROMOBISPHENOL A (TBBPA) AND ITS DERIVATIVES IN FOOD

Published in July 2024



- The Opinion focuses on the **risk assessment of TBBPA** as there were insufficient data on the toxicity of any of the TBBPA derivatives to derive reference points, or to allow a comparison with TBBPA.
- The available evidence indicates TBBPA to induce carcinogenicity via non-genotoxic mechanisms. The CONTAM Panel considered it appropriate to **set a tolerable daily intake (TDI)**.
- The most important contributors to the chronic dietary exposure to TBBPA were **fish and seafood, meat and meat products and milk and dairy products**.

Main outcomes

- A TDI for TBBPA of 0.7 µg/kg bw per day was established based on a **decreased interest in social interaction observed in male mice**.
- The exposure estimates to TBBPA were all below the TDI, including those estimated for breastfed and formula-fed infants.
- **Conclusion: TBBPA does not raise a health concern for any of the population groups considered.**



2024 - 2026 WORKPLAN



2024 - 2026 CONTAM WORKING GROUPS

- Beauvericin genotoxicity
- Arsenic in food
- BFRs in food
- Perchlorate in food
- delta 8 –THC HBGV
- Plant lectins in food
- Dioxins in feed and food new TEF values
- Enniatins in feed and food
- Alternaria in feed and food
- WG feed detoxification
- Semicarbazide in food
- Phomopsins in feed and food
- Thebaine and oripavine in poppy seeds



OTHER ACTIVITIES

✓ **Representative at the Member States Initiative Group on PFAS**

Established in 2023 within the framework of the EFSA Advisory Forum, it comprises 10 MS & observers from EFSA, DG SANTE and DG ENV.

Goal: To share and exchange information and build collaborative approaches in the field of the risk assessment of PFASs between Member States and EFSA.

- **Steering Board:** supervision & prioritization of activities.
- **Risk Assessors Team:** sharing information, data, methodologies and building mutual benefiting exchanges between participants.

✓ **Follow-up of activities of interest to the CONTAM Panel**

International Food Chemical Safety Liaison Group (IFCSLG), PARC, OECD, One Substance One Assessment, Compendium of botanicals, Grants and procurements



OPEN CALL FOR PROPOSALS



Role of nitrate/nitrite and of processing and storage in the N-nitrosamine formation in certain foods (EUBA-EFSA-FEEDCO-2024-01)

Aim: explore possible correlations between nitrates/nitrites and *N*-nitrosamines in food, as well as the role of cooking and storage on *N*-nitrosamine formation.

- **Deadline for submission of proposals:** 28/11/2024 at 17:00 (CEST)
- **Contract duration:** 2.5 years from the signature of the contract
- **Grant award:** 750.000 €
- **Link:** <https://www.efsa.europa.eu/en/art36grants/article36/euba-efsa-feedco-2024-01-role-nitratenitrite-and-processing-and-storage-n>

Further EFSA Grants & Procurement opportunities:

<https://www.efsa.europa.eu/en/calls/art36grants> & <https://www.efsa.europa.eu/en/calls/procurement>



Mary Gilsenan

Maria Anastassiadou

Margherita Andriulli

Arianna Angelini

Anna Christodoulidou

Eirini Kouloura

Luisa Ramos Bordajandi

Elena Rovesti

Hans Steinkellner

Alexios Zormpas

Federico Cruciani

Mariano López Romano

Anamarija Romac

Tuuli Tauriainen

Gkimprixi, Elena

Rumbidzai Changwa

CONTAM Panel 2018-2024, CONTAM Panel 2024-2029,

CONTAM WG members

THANK YOU !

More about Contaminants in the Food Chain

CONTAM Panel:

<https://www.efsa.europa.eu/en/science/scientific-committee-and-panels/contam>

Chemical contaminants in food and feed:

<https://www.efsa.europa.eu/en/topics/topic/chemical-contaminants-food-feed>

EFSA mandates & questions:

<https://open.efsa.europa.eu/questions>





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