neotron
Part of the Cotecna Group

Determination of arsenic in foodstuffs

Arsenic is a naturally occurring element, that exist in different inorganic and organic forms, present in soil, ground water and plants.
The inorganic forms of arsenic are more toxic as compared to the organic arsenic.[4]

Food, particularly grain-based processed products such as wheat bread, rice, milk and dairy products, and drinking water are the main sources of exposure. Other food groups that are important contributors to the daily dietary exposure to inorganic arsenic are food for special dietary uses, bottled water, coffee and beer, rice grains and rice based products, fish and vegetables (especially algae).[3]

The main adverse effects reported to be associated with long term ingestion of inorganic arsenic in humans are: skin lesions, cancer, developmental toxicity, neurotoxicity, cardiovascular diseases, abnormal glucose metabolism, and diabetes. There is emerging evidence of negative impacts on foetal and infant development, particularly reduced birth weight.[3]

In March 2023 the European Commission published the **Commission Regulation (EU) 2023/465 of 3 March 2023** amending Regulation (EC) No 1881/2006 as regards maximum levels of arsenic in certain foodstuffs.[1]

For details, please see the Annex to Regulation (EC) No 1881/2006, subsection 3.5 (Arsenic) at the following link:
https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R0465&from=en.

Foodstuffs that were lawfully placed on the market before the entry into force of this Regulation may remain on the market until their date of minimum durability or use-by date.[1]

Here following the new maximum levels and matrices for arsenic provided by Reg. (EU) No 465/2023, with amendments marked in blue (Figure 1):

Foodstuffs		Maximum level (mg/kg)	
Inorganic Arsenic		**NEW**	**OLD**
3.5.1	Cereals and cereal based products	-	-
3.5.1.1	Non-parboiled milled rice (polished or white rice)	**0,15**	0,20
3.5.1.2	Parboiled and husked rice	0,25	
3.5.1.3	Rice flour	**0,25**	-
3.5.1.4	Rice waffles, rice wafers, rice crackers, rice cakes, **rice flakes and popped breakfast rice**	0,30	
3.5.1.5	Rice destined for the production of food for infants and young children	0,10	
3.5.1.6	Non-alcoholic rice-based drinks	**0,030**	-
3.5.2	Infant formulae, follow-on formulae, foods for special medical purposes intended for infants and young children and young child formulae	-	
3.5.2.1	-marketed as powder	**0,020**	-
3.5.2.2	-marketed as liquid	**0,010**	-
3.5.3	Baby foods	**0,020**	-
3.5.4	Fruit juices, concentrated fruit juices as reconstituted and fruit nectars	**0,020**	-
Total Arsenic			
3.5.5	Salt	**0,50**	-

Figure 1: New maximum levels and matrices provided by Reg. (EU) No 465/2023.[1]

Neotron proposal

Neotron performs the analysis of arsenic by HPLC-ICP-MS technique, or according to UNI EN 16802:2016 or through an internal method, both validated and accredited.

These methods are in compliance with Commission Regulation (EC) 2023/465 of 3 March 2023, that shall apply from 26 March 2023.

To request an analysis, or to learn more about this specific topic, please do not hesitate to contact the Neotron team https://www.neotron.it/en/contacts.

References:

1. Commission Regulation (EU) No 465/2023 of 3 March 2023 amending Regulation (EC) No 1881/2006 as regards maximum levels of arsenic in certain foods.
2. Commission Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs.
3. European Commission, Food safety, *Arsenic in food*.
4. Scientific report on the chronic dietary exposure to inorganic arsenic, *EFSA Journal* **2021**; 19 (1):6380.
5. UNI EN 16802:2016: *Prodotti alimentari - Determinazione di elementi e loro specie chimiche - Determinazione di arsenico inorganico nei prodotti alimentari di origine marina e vegetale per scambio anionico HPLC-ICP-MS.*