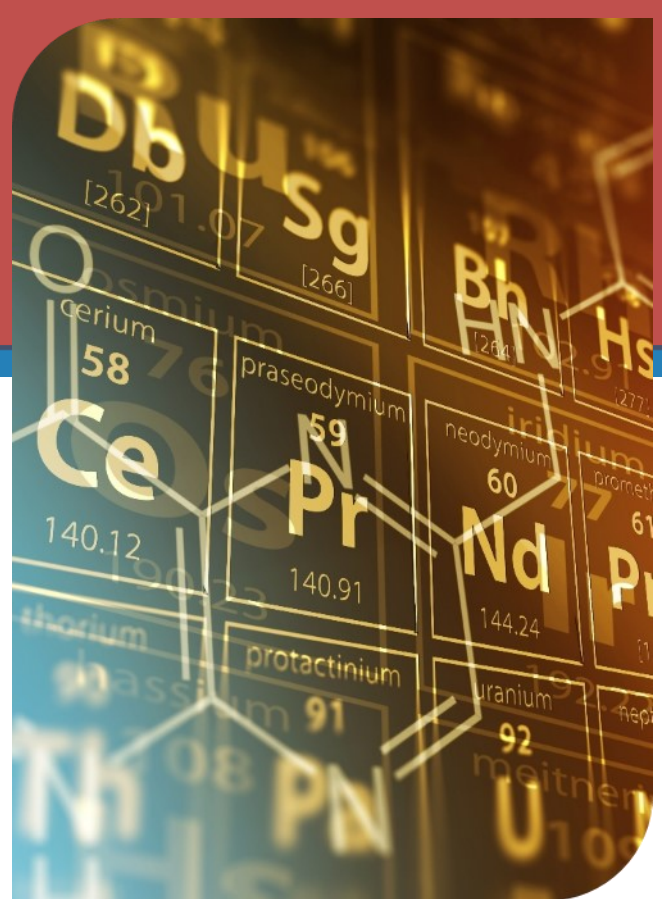


Determination of metals and minerals in food

Contamination with toxic heavy metals and their adverse health impacts are major environmental problems in the world. Heavy metals are high-density elements that can be toxic at high levels.

Metals can occur as residues in food because of their presence in the environment, as a result of human activities such as farming, industry or from contamination during food processing and storage. People can be exposed to these metals from the environment or by ingesting contaminated food or water. Their accumulation in the body can lead to harmful effects over time.¹



Commission Regulation (EU) 915/2023² – last amended version - sets, amongst others, maximum levels for **Pb, Cd and Hg, Arsenic and Inorganic Arsenic** in food. Meanwhile the Commission is also evaluating the introduction of **Nickel** in the Regulation.

Neutron proposal

Neutron performs the analysis of the following elements as per below details by ICP-MS technique with the **limit of quantification of 0,005 mg/kg**:

Aluminium as Al	Gold as Au	Silver as Ag
Antimony as Sb	Iron as Fe	Strontium as Sr
Arsenic as As (total)	Lanthanum as La	Tellurium as Te
Arsenic (Inorganic)*	Lead as Pb	Thallium as Tl
Barium as Ba	Lithium as Li	Thorium as Th
Berillium as Be	Manganese as Mn	Tin as Sn
Bismuth as Bi	Mercury as Hg	Titanium as Ti
Boron as B	Molybdenum as Mo	Tungsten as W
Cadmium as Cd	Nickel as Ni	Uranium as U
Cesium as Cs	Palladium as Pd	Vanadium as V
Chromium as Cr	Rubidium as Rb	Zinc as Zn
Cobalt as Co	Scandium as Sc	Zirconium as Zr
Copper as Cu	Selenium as Se	

* Regarding the inorganic arsenic detection, we offer two validated and accredited analytical methods: one through an internal method by ICP-MS and another performed by the chromatographic separation of arsenic species by HPLC-ICP-MS technique according to UNI EN 16802:2016 standard³.

Furthermore Neutron offers analysis of the following elements by ICP-AES technique which may be declared in food:

Analyte	Limit of Quantification
Iron as Fe	1 mg/kg
Copper as Cu	1 mg/kg
Manganese as Mn	1 mg/kg
Tin as Sn	1 mg/kg
Calcium as Ca	10 mg/kg
Magnesium as Mg	5 mg/kg
Phosphorus as P	5 mg/kg
Potassium as K	5 mg/kg
Silicium as Si	10 mg/kg
Sodium as Na	5 mg/kg
Sulfur as S	10 mg/kg

Neutron can also detect by ICP-MS other elements such as Iodine (0,005 mg/kg).

Methods Accreditation :

Neutron laboratory is accredited ISO 17025 for most Elements and Matrices.

For more information contact us or check the list of accredited methods directly on NEOTRON or ACCREDIA websites.

References:

1. Metals as contaminants in food, Panel on Contaminants in the Food Chain (CONTAM Panel), EFSA.
2. Commission Regulation (EU) 915/2023 of 25 April 2023 on maximum levels for certain contaminants in food and repealing Regulation (EC) No 1881/2006.
3. UNI EN 16802:2016: Food Products - Determination of elements and their chemical species - Determination of inorganic arsenic in foodstuffs of marine and plant origin by anion-exchange HPLC-ICP-MS .

Neutron, part of the Cotecna Group, is a global player in analytical services on food and feed products, supplements, materials in contact with food (FCM), cosmetics, and pharmaceutical products.



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