

# Determination of Heavy Metals

Heavy metals are found naturally in the earth crust. They contaminate the food chain primarily during the cultivation of crops but also during the production process. While some metals are essential for human health (e.g. zinc, iron or copper), in high doses they may cause acute or chronic toxicities. A long-term exposure to heavy metals has carcinogenic effects and damage the central nervous and circulatory systems.

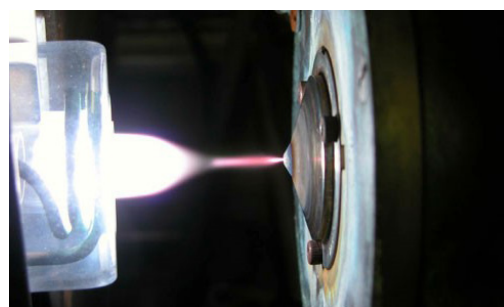
**As**  
Arsenic is a toxic metalloid which commonly occurs in waters in concentrations of 0.1-2 µg/l. The concentrations in mineral waters may rise to hundreds of µg/l. The source of increased intake of arsenic may also be marine fish living in waters with increased arsenic content, e.g. due to underwater volcanic activity.

**Cd**  
Cadmium is emitted into environment through industrial processes. It can remain in soils for several decades and is taken up by plants, thus entering the food/feed chain. Increased amounts of cadmium are found in molluscs and crustaceans, lower amounts in cereals, grains, mushrooms, fruits, and leafy vegetables. Animal foods of concern include the liver and kidneys of pigs and cattle.

**Pb**  
Lead is a carcinogenic metal that enters the environment mainly through industrial emissions. Cereals and herbs can contain high levels of lead. Lead can also be transferred to animal foods via contaminated plant feed. Lead reduces the amount of haemoglobin in erythrocytes, leading to anaemia, and damages the peripheral and central nervous system.

**Hg**  
Mercury has been mostly released into the environment as a result of human activity. It exists in various forms: metallic, inorganic and organic (e.g., methyl- and ethylmercury), which all have different toxic effects, including on the nervous, digestive and immune systems, on lungs, kidneys, skin and eyes. The organic form (methylmercury) bioaccumulates in fish and shellfish.

Our accredited laboratories determine heavy metals using modern instrumentation ICP-MS (Inductively Coupled Plasma – Mass Spectrometry), an ultra-trace analytical technique for determination of trace amounts of elements. This method allows to detect almost all elements of the periodic table, from lithium to uranium in units down to ng/l.



Due to their potential health risk, the concentration of heavy metals is monitored and regulated by both EU and national legislations. At the EU level, the limits are set by the Commission Regulation (EC) No. 1881/2006 of 19 December 2006, setting maximum levels for certain contaminants in foodstuffs.

## What ALS can offer?

- Determination of wide range of metals
  - Heavy metals Pb, Cd, Hg, As
  - Metals Fe, Zn, Ni, Cr, etc.
  - Minerals Ca, P, Mg, Na, Fe, Cu, Se, K, etc.
- To help our clients meet the legislative requirements

Apart from the state-of-the-art facilities, we offer:

- Evaluation of the results by our highly skilled professionals
- Rapid turnaround
- GMP+ protocol for feed

**For further enquiries please contact our customer service at +420 226 226 998 or [czsupport.food@alsglobal.com](mailto:czsupport.food@alsglobal.com).**