

# RADIONUCLIDES IN FOODSTUFFS AND FEED

**ALS Radiology laboratory has sufficient instrumentation and methods appropriate for the determination of artificial and natural radionuclides in foodstuffs and feed. HRGRS (high-resolution gamma-ray spectrometry) method is used for the determination of I-131, Cs-134, Cs-137, Am-241 and K-40. Radiochemical methods are used for determination of Sr-90 and C-14. All methods are validated and accredited.**

ALS laboratory uses high resolution gamma-ray spectrometry for the determination of various gamma-radiation emitting radionuclides. HRGRS is a non-destructive testing method and enables determination of most radionuclides present in the sample relatively quickly.

The releases from nuclear reactor accidents contain a greater amount of the short-lived radioisotopes. In several weeks following a nuclear accident predominant radionuclides are Cs-134 and Cs-137.

Sr-90 and Cs-137 are a by-product of the fission of uranium and plutonium in nuclear reactors and in nuclear weapons. Sr-90 is found in waste from nuclear reactors.

## **Caesium 134, Caesium 137**

It is among the most problematic of the short-to-medium-lifetime fission products because it easily moves and spreads in nature. Together with Cs-134, I-131, Sr-90, Cs-137 was among the isotopes distributed by the reactor explosion that constitute the greatest risk to health.

## **Potassium 40**

K-40 is the largest source of natural radioactivity in animals including humans, because it is biogenic element.

## **Strontium 90**

Sr-90 behaves like Ca and therefore tends to concentrate in the bones and teeth.



**COUNCIL REGULATION NO. 3954/87 (EURATOM)** laying down maximum permitted levels of radioactive contamination of foodstuffs and of feedingstuffs following a nuclear accident or any other case of radiological emergency.

Maximum permitted levels (Bq/kg)	Baby food	Dairy products	Other foodstuffs	Liquid foodstuffs	ALS LORs
Isotopes of Strontium, notably Sr-90	75	125	750	125	5
Isotopes of Iodine, notably I-131	150	500	2000	500	1
All other nuclides of half-life higher than 10 days, notably Cs-134 and Cs-137	400	1000	1250	1000	5

ALS also provides testing relating to the Technical Regulation of the Russia-Kazakhstan-Belarus Customs Union (CU) TR TS 021/2011 on Food Safety, which includes requirements for radionuclides Cs-137 and Sr-90 in specific foodstuffs.



ALS code	Parameters	Method	LOQ (Bq/kg)	TAT	Accreditation
B-RAD	Cs-134, Cs-137, K-40	Non-destructive determination of radionuclides by high resolution gamma-spectrometry	Cs = 5; K = 10	7 days	YES
B-SR90-PRO	Sr-90	Determination by proportional detector after separation	5	35 days	YES

**For more details, please contact us.**

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