



REFERENCE SHEET

REFERENCE MATERIAL

IAEA-321

RADIONUCLIDES IN MILK POWDER

Date of issue: January 2000[⊕]

Recommended Values
(Based on dry weight)

Reference Date for decay correction: 1st January 1989

Element	Recommended Value Bq/kg	95% Confidence Interval Bq/kg	N*
⁴⁰ K	552	536 – 569	55
⁹⁰ Sr	3.3	3.16 – 3.44	17
¹³⁴ Cs	15.5	14.8 – 16.2	53
¹³⁷ Cs	72.6	71.1 – 74.2	49

* Number of accepted laboratory means which were used to calculate the recommended values and confidence intervals.

⊕ Revision of the original reference sheet dated February 1990

The values listed above were established on the basis of statistically valid results submitted by laboratories which had participated in an international intercomparison exercise organized between 1988-89. The details concerning the criteria for qualification as a recommended value can be found in the report (IAEA/AL/026) "Report on the Intercomparison Run IAEA-321: Radionuclides in Milk Powder" [1]. This report is available free of charge upon request.

Intended Use

This sample is intended to be used as a reference material for the measurement of radionuclides in milk products. It can also be used as a quality control material for the assessment of a laboratory's analytical work, for the validation of analytical methods and for quality assurance within a laboratory.

Origin and preparation of the material

A single batch bulk sample of approximately 500 kg of milk powder with elevated levels of radionuclides was collected from an European dairy products processing plant and dispatched to the Agency's Laboratories at Seibersdorf in autumn 1987. The material was bottled into plastic bottles in 250 g units without any further processing. Subsequently, the samples were irradiated to a dose of 2.5×10^4 Gy using a ^{60}Co source to ensure long-term stability of the material by inhibiting microbial action.

Homogeneity

The homogeneity of the bottled material was assessed for intake mass of 100 g by measuring the ^{40}K , ^{134}Cs and ^{137}Cs activities in ten bottles, chosen at random, using gamma spectrometry. Taking into account the statistical counting uncertainties, this material can be considered sufficiently homogeneous for an intake mass greater than or equal to 100 g.

Dry weight determination

All recommended values are expressed on a dry weight basis. Therefore the dry weight must be determined at the time of analysis, using separate sub-samples of at least 500 mg dried to constant weight in a drying oven set to 105 °C. Subsequent weighings should differ by less than 5 mg.

Instructions for use

The recommended minimum sample size for analysis is 100 g. Analysts are reminded to take appropriate precautions in order to avoid contamination of the material during handling. No special precautions are required for the storage of this material.

Legal disclaimer

The IAEA makes no warranties, expressed or implied, with respect to the data contained in this reference sheet and shall not be liable for any damage that may result from the use of such data.

References

- [1] Strachnov V., Burns K. and Dekner R., Report on the Intercomparison run IAEA-321: Radionuclides in Milk Powder. IAEA/AL/026, IAEA, Vienna, Austria 1990.

Issued & supplied by

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