

A Decade of Assessment of the Natural and Artificial Radioactivity in Feedstuffs and Food Commodities Imported and Exported by Brazil

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Abstract

Natural and artificial radionuclides in feedstuffs with concentration levels surpassing the brazilian (CNEN-NN 3.05, January 2005) and international (IAEA 115 Safety Series, 1996 and Codex Alimentarius, 2006) limits are harmless to the human health and an effective control is needed in order to only allow consumption of products presenting radiation levels below limits.

Since 1988, after the Chernobyl accident, the Environmental Radiometric Laboratory at the Nuclear and Energy Research Institute, IPEN-CNEN/SP (Instituto de Pesquisas Energéticas e Nucleares), performs, on a regular basis, analysis of potassium-40, cesium-134 and cesium-137 concentrations in feedstuffs and food commodities imported and exported by Brazil.

The present work covers mostly a decade of results, from 1996 to 2007, assessed from the measurements of almost 2600 samples. The imported products were from several foreign countries like South Africa, Poland and Belgium and the exported ones are originated from 14 Brazilian States and 111 regions.

Nearly 90 different kinds of feedstuffs and food commodities were measured, including condensed milk, milk powder, soy beans, sugar, raw coffee beans, etc. All samples were analyzed by high resolution gamma-spectrometry and the results, compared with brazilian and international limits, released as a technical report.

The radioactivity present in all analyzed products was within the international limits, allowing to conclude that consumption of such goods offers no health risk derived from radiation. Potential relationships between the type and the origin of the products exported and imported by Brazil and the radionuclides concentrations are also approached.

Finally, all results will contribute to the establishment of a radiometric database for the radionuclides concentrations in the feedstuffs and food commodities produced in Brazil.

KEYWORDS: *Radioactivity in foodstuff; Gamma spectrometry; K-40; Cs-134; Cs-137.*

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