RAPID METHOD FOR THE DETERMINATION OF RADIOSTRONTIUM IN MILK

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ABSTRACT

A rapid method for the determination of ^{90}Sr and/or total strontium ($^{89,90}Sr$) in milk has been studied. The method can be used in case of an intentional contamination of milk or in the event of a radiological emergency resulting from a nuclear incident.

The rapid method consists of separation of fats and proteins by coagulation, followed by purification steps such as carbonate precipitation, removal of remaining organic matter, ferric hydroxide scavenging, and finally adsorption on Sr-resin, elution, and determination of radiostrontium using either gas proportional or liquid scintillation counting.

Alternatively a DGA-resin and Sr-resin are used sequentially to determine ^{90}Sr and total $^{89,90}Sr$, respectively. Following the purification steps, the solution is first passed through the DGA-resin, to adsorb, elute and determine ^{90}Y (corresponding to ^{90}Sr) using either gas proportional or liquid scintillation counting leading to the determination of ^{90}Sr. The flow-through from the DGA resin is passed through the Sr-resin for adsorption, elution, and determination of total strontium ($^{89,90}Sr$) or ^{90}Sr (if ^{89}Sr is absent).

These methods would enable processing of larger sample volumes (up to 1L) which allows a detection limit of 0.05Bq/kg.