

# Emergency method for measuring strontium levels in milk

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In a recently published study, UPV/EHU-University of the Basque Country's Nuclear and Radiological Safety research group has tested the viability of a method proposed by the International Atomic Energy Agency to measure radioactive strontium in milk for nuclear emergency response, so that it can be incorporated into routine radiological monitoring measurements.

Strontium (Sr) is an element which, in the event of a [nuclear accident](#), is released into the atmosphere. The chemical behaviour of strontium is similar to that of calcium and can accumulate in the soil, in plants and in animals, especially in bones. There are two main radioisotopes ( $^{90}\text{Sr}$  and  $^{89}\text{Sr}$ ), which, due to its fixation in the bones, poisons organisms over many years.

The International Atomic Energy Agency (IAEA) has proposed, among many other things, a method to rapidly detect radioactive Sr in milk in the event of a nuclear emergency or accident. However, such methods are not used in routine environmental measurements, in which the detection limits are much lower than in a [nuclear emergency](#). So a study conducted by the UPV/EHU group has obtained the conditions and parameters with which to apply the rapid method proposed by the IAEA in the radiological monitoring plans for routine environmental studies.

Raquel Idoeta, Ph.D., one of the researchers, says, "It is a [rapid method](#) that performs well and is fairly straightforward and low-cost to adapt." In the study, they carried out experimental measurements as well as

numerical simulations to determine the parameters and conditions of adaptation; they also, as Idoeta explained, made an economic assessment "to see how easy it would be for other labs to adapt it."

She says, "Any environmental lab that has equipment for detecting beta particles or which carries out strontium assessments hardly needs anything else to incorporate this method. A lab that routinely applies this [method](#) would not experience major problems in applying it properly in the event of an emergency to provide a rapid response when establishing [radioactive strontium](#) in milk, even though, in this case, it would be adapting the measuring volumes and times in line with what has been assessed in our study to meet the demands in environmental matters."

**More information:** M. Herranz et al, Analysis of the use of the IAEA rapid method of  $^{89}\text{Sr}$  and  $^{90}\text{Sr}$  in milk for environmental monitoring, *Journal of Environmental Radioactivity* (2017). [DOI: 10.1016/j.jenvrad.2017.06.003](#)

Provided by University of the Basque Country

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