

RADIOENVIRONMENTAL STUDY AND CHEMICAL CHARACTERIZATION OF GOLDEN WATER IN BARKER CAVES

Miriam S. Kundt*¹; Fernanda Cifarelli¹; Edgardo D. Cabanillas^{2,3}; María Rosa Eppis³; Juan C. Furnari¹

¹ *Gerencia de Capacitación, Química Nuclear y Ciencias de la Salud – CNEA.*

² *CONICET,* ³ *Unidad de Actividad Combustibles Nucleares – CNEA.*

Abstract

It is possible to find in the northern mountains of Tandilia, caves of a natural or anthropic origin. These caves are often visited by tourists, explorers and scientists. An exclusive feature up to now, at least in the international literature, is the deposits of “golden water”. In our country, these waters were described for the first time in 1897, as waters with fluorescence that might be caused by algae.

Due to the fact that some inhabitants suspected that the water could contain uranium, a study was carried out at the lab of physical and chemical control of the CNEA by means of total reflection X-ray fluorescence and it determined a complete absence of uranium, although it informed on the presence of potassium, calcium, iron, titanium, manganese, zinc and strontium as majority elements, being the presence of titanium rather unusual in the water.

The objective of the present paper is to study the composition of the chemical elements that constitute this kind of water and the determination of the levels of natural radionuclides present in some caves in Tandilia, especially radon gas.

To that end, new samples of water have been taken and a new study of X-ray fluorescence and X-ray diffraction is being carried out that will lead to the confirmation of titanium and its quantification, as well as the chemical composition of the water. On the other hand, the levels of radon gas and other radionuclides are assessed by means of a liquid scintillation counting,

The results of these studies will allow to determine if the tour guides of the caves should be protected from radiation and get to know the chemical composition of the golden water in order to understand its origin and its possible biotechnological implications.

KEYWORDS: *radioecology, golden water, radon, Tandilia, fluorescence, radionuclide.*

* Presenting author, E-mail: mskundi@hotmail.com