

My name is Ana Paula Gómez Uribe a cultural heritage conservator and restorer. I work in the Museum Strengthening Program of the National Museum of Colombia - Ministry of Culture, and I am currently the main counterpart of the ARCAL RLA1019 project in Colombia and I coordinate the collaboration between the country's museums and the services of the Directorate of Nuclear Affairs of the Colombian Geological Service (SGC) to make peaceful and correct use of nuclear techniques in favor of the conservation of the national cultural heritage. An agreement is currently being drawn up between the National Museum of Colombia and the Directorate of Nuclear Affairs of the Colombian Geological Service so that more cultural entities benefit from the application of nuclear techniques for the treatment of their heritage affected by a fair or poor state of conservation.

Last year, within the framework of this project, gamma-ray irradiation was carried out for the first time on an artistic heritage asset of the Nation: the work "Mutantes" by Carlos Rojas, which is a work of contemporary art from the National Museum of Colombia and whose mixed technique with wood presented a biological attack of xylophagous insects. The selection of this artwork to be irradiated was based on the fact that it was chosen by the Museum's curators to be part of the permanent exhibition for room 15. The artwork had to be free of any biological infestation to avoid the risk of contaminating other objects in the exhibition room. Its large format, made up of 13 vertical wooden modules, each approximately 1 meter high, made the conservation area consider methods for treating biological attack that could cover the entire surface of the work. These modules were built by master Rojas from recycled wood that he found on the street and never had a previous preparation treatment. Already part of the Museum's collection, they were temporarily stored in the reserves of the General Archive of the Nation until 2021, when 4 of the 13 modules with an active biological attack by xylophagous insects were inspected and identified.

From the nuclear affairs directorate of the Colombian geological service, radiation with gamma rays of 8 kGy was experimented with, which can reduce microbial load and insects according to the literature. Given that other food or cosmetic products with similar densities and geometries are irradiated in the SGC, routine doses were used. This process was accompanied by a microbiologist who made a micro-culture of the affected area before and after the process. However, due to several factors, the results were not conclusive, but under macroscopic inspection, it was found that the treatment was effective.

The ideal is that this process can be repeated with other heritage objects that present different techniques and materials in small, medium, and large formats and that belong to collections of Colombian museums, as is the case of a large-format tapestry by the Colombian artist Olga de Amaral. of the Museum of Antioquia in the city of Medellin.

TC Latin-America / 29

Preservation and conservation of information contained in glassy materials from cultural collections with processing by ionizing radiation

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Glass-based photographic materials are commonly found in historical cultural heritage collections. Inadequate storage conditions for these materials lead to problems of biodeterioration, mainly by fungi.

Processing by ionizing radiation with electron beam has a biocidal effect to combat fungal contamination. However, a known undesired effect on glassy materials is increased opacity which affects the readability of images on photographic glass negatives.

In this way, the study proposes a methodology to minimize the darkening effects of the glasses that are subjected to irradiation.

For this work, glass samples were subjected to irradiation with electron beams at doses of up to 25 kGy, under different controlled temperature conditions, and the effects analyzed by UV-visible spectrophotometry and colorimetry analysis.