MICROORGANISMS ELIMINATION IN ANTIQUITY PAPER BY GAMMA IRRADIATION

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A not controlled microorganism growth originates the partial or total loss of information in documents of historical value. When suspicion of microbiological contamination is necessary carry out the analysis (cultivation isolation and identification) in order to detect the microorganism's presence that could be noxious for the documents, and based on this determine the most appropriate methods for their elimination. A physical process to destroy microbial populations is the sterilization by using gamma radiation. However it is necessary to evaluate the microstructural change that suffers the material after the irradiation with a lethal dose for the microorganisms. In this work we present the study of irradiated antiquity paper irradiated to different doses of gamma irradiation (2000 – 10000 Gy). The characterization applied to the historical paper before and after to irradiation was evaluated in its mechanical properties (tension) and microstructure by Scanning Electron Microscopy

(SEM). Simultaneously we identified the microorganisms present in the samples. A similar analysis was made in commercial “cauche” paper used as prototipe. The microbiological analysis after the gamma irradiation shows that 7000Gy eliminated the microorganisms and little changes in the mechanical properties (~ 15 %) were detected in both paper samples. The importance of this sterilization method is that present an alternative for the historical documents preservation.