X-RAY FLUORESCENCE TECHNIQUES APPLIED TO CHEMICAL CHARACTERIZATION IN PRESERVED WOODS (*Eucaliptus ssp*)

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Due to its versatility, easy handling and mechanical properties, make this wood is a type of material comparable to steel, concrete and polymeric materials, allowing its use in different applications. The chemical wood preservatives aim to increase wood natural durability. The regulated wood preservative products are CCA (chromated copper arsenate), CCB (copper chromium and boron salt) and CA-B (copper azole type B).

Brazil produces around 1.2 mi m³ of treated wood to meet the annual demand of the railway, electric, rural and construction sectors. Analytical techniques, such as Flame Atomic Absorption Spectrometry (FAAS) and Inductively Coupled Plasma Optical Emission Spectrometry (ICP OES) have been used for the evaluation of wood preservative treatment processes.

X-Ray Fluorescence Spectrometry (EDXRF: Energy Dispersive X-Ray Fluorescence and PXRF: Portable X-Ray Fluorescence) have been strongly recommended for wood treatment control process and wood waste assortment by Forest Products Industry Technology Roadmap[1].

In this work, the sapwood blocks samples, with the dimensions 3.0 cm x 3.0 cm x 2.0-3.0 cm (width x length x thickness, respectively), were obtained from *Eucalipstus ssp* tree, and they were separated in five groups. Five different concentrations of CCA solutions were applied, in order to obtain different retentions (4.0, 6.5, 9.6, 12.8 and 17.0 kg of CCA/m³ sapwood). Cu, Cr and As contents were determined by EDXRF and PTXRF, using the Fundamental Parameters method in treated sapwood blocks, directly without any chemical treatment. The grounded treated sapwood samples were also analyzed by FAAS and Instrumental Neutron Activation Analysis (INAA).

A comparative study of the results of the analytical methods was carried out and performance criteria such as sensibility and accuracy are discussed.

REFERENCES

1)Agenda 2020 Technology Alliance, U.S. Department of Energy, American Forest & Paper Association Georgia Institute of Technology, Forest Products Industry Technology Roadmap (2010), Georgia, United States of America.