E2-08: Preservation of some Sri Lankan woods by the copper, chromium and arsenic (CCA) method

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In Sri Lanka, wood is preserved mainly by organic chemicals. Among the water borne preservatives CCA (which consists of $CuSO_4$, $K_2Cr_2O_7$ and As_2O_5) is very popular. It has recently been introduced to Sri Lanka and is imported from Australia and Korea. The CCA treatment is carried out by the full cell process at Kaldemulla, Boosa and Keppetipola. The imported preservative should be analyzed to determine if the correct percentage of Cu, Cr and As is present.

The degree of preservation of some common Sri lankan woods was studied. Colorimetric method was successful for studying the Cu, Cr and As levels in both the preservative and the treated woods. Titrimetric method was successful only for the preservative. The correct amount of $CuSo_4$ is necessary as it acts as a fungicide, As_2O_5 acts as an insecticide and $K_2Cr_2O_7$ reduces the leaching and corrosiveness of metals.

The degree of penetration and retention of CCA was tested on Red gum, Kempas, Hulanhic, Pinus, Cypress, Jak, Coconut, Mahogany, Salidna and Citridora. 5g of wood dust from a depth of 10 mm was used for the analysis. Cypress showed the highest penetration. (Cu 0.45%, Cr 0.76%, As 0.23%). Lower penetration was shown by the heartwood of Jak (Cu 0.05%, Cr 0.08%, As 0.06%). The rest showed medium penetration (Cu 0.1 - 0.3%, Cr 0.1 - 0.5%, As 0.1 - 0.2%). Retention of CCA was good in all the wood samples (Cu 0.05 - 0.43%, Cr 0.04 - 0.73%, As 0.03 - 0.2%). This was tested after leaving the samples of wood in water for one month, the leaching of CCA was negligible. There was no fungal attack on the wood samples. The CCA method can be used to preserve Sri Lankan woods.