



A Three-Step Fractionation Scheme for Non-Process Elements in Green Liquor Dregs from a Kraft Pulp Mill

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Abstract: In order to assess the potential release of non-process elements (NPEs) from green liquor dregs under changing environmental conditions, NPEs in dregs were extracted by three-stage fractionation method between water-soluble (H₂O), ammonium-acetate (CH₃COONH₄) and hydrochloride acid (HCl) fractions. The H₂O extraction most effectively released potassium (K) from the dregs. If we compare the extractable concentrations of NPEs in the dregs to their total concentrations determined using USEPA 3051 digestion (3 mL HCl and 9 mL HNO₃), the ratio of the extractable K concentration in the H₂O fraction to its total concentration was 94.8%. For sulphur, this ratio was 94.0% and for Na it was 92.8%. From an environmental perspective, when the green liquor dregs are disposed of in a landfill or utilized, the above-mentioned NPEs are most likely to be released from the residue.

Keywords: *Causticizing, Extraction, Forest industry, Heavy metals, Pulping, Landfilling, NPEs, Sulphate process, Waste*

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