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Reuse of reverse osmosis concentrate for burnt clay bricks production

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It has been widely accepted that supply of good quality drinking water is one of the most important interventions to prevent the widely spread Chronic Kidney Disease of unknown etiology (CKDu) in the North Central Province. Therefore strategies such as installing Reverse Osmosis (RO) plants to supply potable drinking water for CKDu affected areas were implemented. However, treated effluent of a plant varies from 30-50%, so that a large amount of water concentrate is released to the environment which may create environmental pollution in long term practice. A project was carried out at Sangilikanadarawa RO plant in Medawachchiya DS division during the period of March to June to investigate the possibility of manufacturing clay bricks using RO concentrate as the water source. The bricks were casted using two different water samples namely well water and RO concentrate following four steps: winning of clay with different water samples, molding, drying and firing. After drying of raw bricks firing was done for five days using local fire wood. Twenty four numbers of bricks in each sample were subjected to tests for sound, hardness and visual inspection while laboratory tests such as dimension, compressive strength, water adsorption were conducted for both samples. The test results showed that the compressive strength of bricks made using RO concentrate was significantly higher than the groundwater, with no significant changes identified for other characteristics in both the samples. Based on the results, it can be concluded that Reverse Osmosis concentrate can be used for the brick manufacturing process.

Keywords: CKDu, RO concentrate, brick manufacturing, burnt bricks quality, compressive strength

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