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DEPLOYMENT OF CLEANER PRODUCTION METHODOLOGY TO LOWER THE CARBON FOOTPRINT IN THE MANUFACTURE OF HEALTHCARE PRODUCTS

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ABSTRACT

Some organizations in South Africa focus on traditional end-of-pipe technologies in favour of Cleaner Production (CP) technologies. The case study that manufactures healthcare products was using a lot of energy, water, raw materials, which ultimately led to waste and greenhouse gas emissions like CO_2. With the goal of lowering CO_2 emissions from the manufacturing processes, a CP strategy was used to investigate the healthcare product manufacturing facility. The research framework was characterised by premise selection, cleaner production audit, carbon footprint estimation, as well as generation, evaluation and implementation of CP options. An energy, raw material, and resource consumption and waste assessment was carried out through a CP audit and the product's carbon emission was found to be 323 kg CO_2 per 1000 litres of healthcare product. This study identified 20 cleaner production options to lower the carbon footprint. The implementation of CP options, which primarily focused on design modifications, enhanced operational efficiency, and improved waste management reduced the carbon footprint of healthcare products by approximately 82065 kg of CO_2 annually. It was noted that the transition to cleaner production methodologies requires initial investments and a commitment to change management. However, the long-term benefits, including cost savings, regulatory compliance, improved corporate image, and environmental stewardship, far outweigh the initial challenges.

Keywords: Cleaner Production, Carbon footprint, GHG emissions.