**Innovations in Applications and Prospects of Non-Isocyanate Polyurethane Bioplastics**

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**ABSTRACT**

Currently conventional plastics are necessary for a variety of aspects of modern daily life, including applications in the fields of healthcare, technology and construction. But they can also contain potentially toxic additives like stabilisers or colourants that have a negative impact on both the environment and human health. Therefore, researchers are exploring alternatives to plastic which is sustainable and environmentally friendly without compromising its mechanical and physical features. This review study highlights the production of highly eco-friendly bioplastic as an efficient alternative to non-biodegradable conventional plastic. Bioplastics are produced from various renewable biomass sources such as plant debris, fatty acids and oils. Since decades, polyurethanes (PUs) produced bioplastic have been manufactured using renewable biomass feedstock by poly-addition of di-isocyanates and polyols. The toxicity of isocyanates is a major concern with above-mentioned approach. Novel green synthetic approaches for polyurethanes without using isocyanates have been attracting greater interest in the recent years to overcome the toxicity of isocyanate containing raw materials. Polyaddition of cyclic carbonates (CCs) and polyfunctional amines appears to be the most promising method to obtain non-isocyanate polyurethanes (NIPUs). This method results in the creation of polymeric materials with distinctive and adaptable features with elimination of harmful compounds~~.~~ Consequently, non-isocyanate polyurethanes represent a new class of green polymeric materials. In this review study, we have discussed the possibility of producing new NIPUs, which has been accelerated by increased demand for efficient and eco-friendly plastic materials.

**Keywords:** Plastic pollution; Hazardous impacts; Bioplastic; Non-Isocyanate Polyurethanes;