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## CARBON DIOXIDE EMISSION ASSOCIATED WITH THE PRODUCTION OF PLASTICS - A COMPARISON OF PRODUCTION FROM CRUDE OIL AND RECYCLING FOR THE DUTCH CASE

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### Abstract

Literature data show that in general, plastics produced through the mechanical recycling route involve less carbon dioxide emission than when produced from crude oil. A review of readily available data shows that road transport of untreated waste plastics account for a significant portion of the carbon dioxide emission generated during recycling. Therefore, much carbon dioxide emission can be saved by optimizing the logistics in the recycling of plastics.

On the example of polyolefins originating from household packaging waste, this paper attempts to compare two different scenarios of mechanical recycling to the production of plastics from crude oil as a reference. The first scenario deals with packaging waste from selective collection, in which data from the current practice of the German DSD system were translated for the Dutch situation. In the second scenario, plastic packaging recovered from household waste using mechanical separation techniques is considered. It is assumed in the second scenario that the plastics are separated from the rest of the household waste and processed further to a compound close to the site at which the rest of the waste is disposed of, e.g. at an incinerator plant or landfill site. This scenario is assumed to involve the least of road transport of existing recycling options. The data presented in this paper represent the results of a preliminary study.

*Key words:* carbon dioxide emissions, plastics, recycling

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