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Environmental and Health Aspects of ChemCycling®: A Measurement Program

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A substantial amount of mixed plastic waste (MPW) and end-of-life tires (ELT) currently ends up in incineration, landfilling or even unmanaged in the environment. Globally, only 20% of plastic waste was recycled in 2018, while 30% went to landfill, 20% into energy recovery and another 30% remained unmanaged. One emerging option for managing these waste streams in a circular and proper way is chemical recycling via pyrolysis.

ChemCycling® makes use of pyrolysis oils from MPW and ELT as alternative feedstocks for the manufacture of plastics and chemicals in BASF's interconnected production network. This promising approach can contribute to: (i) improved and circular waste management; (ii) reduced CO_2 emissions by displacing incineration; (iii) saving resources by substituting fossil-based feedstocks; (iv) the removal of pollutants; (v) the manufacture of virgin-like plastics and chemicals. However, from time to time chemical recycling via pyrolysis is also criticized with regards to toxic substances.

BASF is fully committed to protect human health and the environment by taking a proactive approach to product stewardship and applying highest regulatory standards. We have therefore set up an extensive measurement program to contribute to creating fact-based transparency on environmental and health aspects of using pyrolysis oils as feedstock in ChemCycling®.

Our approach for the measurement program will be presented and the rationale behind will be explained in detail. Available results will be presented and evaluated and the possible next steps will be discussed.

Keywords: circular carbon economy, chemical recycling, end-of-life tires, measurement program, mixed plastic waste, pyrolysis.