

Title: *The Solution to Managing Plastic Waste in the United States of America*

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Abstract:

Recently there has been significant attention given to the Chinese restrictions on contamination levels for the import of recyclable plastic material. Specifically, the accepted contamination level have been reduced in 2017 from 4-5% to 0.5%. This has led to an enormous change in the amount of plastic material that has been delivered to China. In 2017 there was 1,258,000 tons yet in 2018 it was reduced to 70,000 or nearly a 95% decrease. Particular to the United States of America (USA) this has raised awareness among the public and politicians leading them to advocate for policies that restrict consumers from using plastics for a variety of applications. However, those policies will not have a meaningful impact because they target an extremely small, albeit visible, fraction of the consumer plastic market (e.g. drinking straws and plastic bags).

Furthermore, our research demonstrates that the introduction of plastics into the consumer market in the USA has actually initiated a decoupling of MSW generation. A comparison of waste generation rates for each material category found in MSW reveals that plastics increased by nearly 84 times from 1960 to 2013 while total MSW increased only 2.9 times. The increase in plastic waste generation coincides with a decrease in glass and metal found in the MSW stream demonstrating an overall reduction by weight and by volume in MSW generation of approximately 58% over the same time period.

Moreover, there is a solution that can be implemented in the USA to sustainably address the issue of smaller markets for plastic waste in China and likely other countries. That solution is to extract more energy from current waste to energy (WTE) facilities and to construct or expand more facilities that span conventional WTE to pyrolysis systems that convert plastic to usable oils.

This presentation will review the current situation in the USA regarding plastic production and consumption and will show that conversion of plastics into energy using existing WTE facilities does not change the emissions profile. Finally, a brief summary of plastics to fuel-oil system will be presented demonstrating the combustion performance of the fuel-oil compared to high quality fuel such as kerosene.