

Breakout Session Report Out

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Biological Recycling

Session Report "Volunteer"

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Objective

Identify where biology can have the most impact on dealing with plastic waste

- Enzymatic recycling
- AD
- Composting
- Biodegradability

Major Challenges

- These are insoluble and recalcitrant substrates and we are trying to use enzymes to break them down. What would this full process look like? Cell free vs. consolidated
- No solely biological system has been able to do the job to this point
- Having this be a consumer driven model will be a challenge. If it's not making the consumer lives easier, it might never happen
- How do we get everyone in the supply chain to coordinate?
- How do we get an integrated TEA across the supply chain
- “The 3 – 7 Problem”

Opportunities

- There is a lot of diversity in nature that can tackle a mixed stream of plastics (hybrid systems)
- AD/Compost is a natural end of life for food packaging
- For the “3 – 7 problem”, can you funnel all these currently un-processable plastics to a secondary MRF with more capabilities?
- We can leverage a lot of BETO funded research into handling recalcitrant heterogeneous polymers