

Demystifying Chemical Recycling Webinar – August 14

Questions & Answers

Q: What are the energy & other environmental impacts of chemical recycling, and how do they compare with mechanical recycling?

A: There's a lot more work to be done to understand this better, and it is part of the next phase of work that Closed Loop Partners (CLP) will undertake. Inevitably the impacts will vary on a technology by technology basis, but as we develop better insights, we may begin to see patterns. For example, this may mean that mechanical recycling remains a more economical and environmentally preferable route, particularly for some more common or already recyclable materials.

Q: In terms of feedstock for chemical recycling, what counts as viable material and how does contamination affect this?

A: It depends on the specific technology in consideration. We see technologies in the market that are processing unsorted MRF waste and others that require a very clean stream of PET. The solutions we find most interesting are ones that have feedstock made up of the materials that have traditionally been challenging to process via mechanical pathways, such as multi-layer packaging, and plastics # 3-7. In terms of contamination, this depends on the technology. Some technologies will have a lot more tolerance than others.

Q: Will the outputs of chemical recycling “count” as recycled content? What could they be used for?

A: In terms of how they could be used (if the outputs are not fuels) the possibilities are pretty open-ended, both inclusive of new plastics and otherwise. It depends on the technology whether the outputs will be base monomers, polymers etc. and the potential applications for each specific process, but for “chemical recycling” as a whole, there are lots of possibilities. The uptake will depend on their (relative) cost of course, but there's certainly no theoretical limits on producing e.g. food grade materials, healthcare applications.

Q: Can you clarify the scope of mass balance?

A: Mass Balance is one of the several known chain of custody approaches to trace flow of material and provide a set of rules for how to allocate the recycled content to different products. For it to work, we need to come up with a basis for calculation and develop robust, generally applicable allocation rules. The Ellen MacArthur Foundation suggests that using chemical value-related properties (e.g. the lower heating value (LHV)) as the basis for calculation. LHV is interlinked with the number of hydrocarbons in a compound. The report can be found [here](#).

Other mass-based tracking systems have relied on conversion factors which are determined at the manufacturing plant level and can be applied to any type of process. The boundaries of these traceability systems will likely extend from the processing plant (where plastics are first converted from scrap form) to the last point at which an environmental claim is made.

Q: Can you tell us a bit more about CLP's Circular Plastics Initiative and TRP's Film and Flexibles Taskforce?

A: *Accelerating the Circular Supply Chain For Plastics* Phase 1 report is out ([link here](#)) and over the next year CLP will be looking more into the economic & environmental analysis of some of these end market technologies.

TRP's Film & Flexibles work is exploring the potential for collecting these challenging materials through different channels. TRP and CLP are working closely together on these areas to complete the supply chain picture as best we can - please reach out to [Laura Thompson](#) directly if you'd like to know more!