

Extracting valuable resources from waste to make new bioplastics

April 12 2013



Credit: AI-generated image ([disclaimer](#))

An old British phrase states that 'where there's muck, there's brass' - meaning that where there are dirty jobs to be done there is money to be made. This rings true to this day where many valuable resources can be recovered from waste products. Municipal solid waste (MSW), agricultural residues and sewage sludge from water treatment plants

contain a lot of reusable carbon.

Recovering this carbon not only helps to preserve the environment but also extracts a valuable product which can be used for making commercially viable materials such as bio-based plastics and polymers.

With this in mind, the SYNPOL ([Biopolymers](#) from syngas fermentation) project, funded under the 'Food, agriculture and fisheries, and biotechnology' Theme of the EU's Seventh Framework Programme (FP7), is developing a processing platform which treats and recycles biological- and chemical-derived wastes and raw materials in a single integrated process.

The products derived from the fermentation of syngas ([synthesis gas](#)) generated from urban, agricultural and water-treatment waste will be used to develop cost-effective and commercial new biopolymers.

'Two major advantages of the SYNPOL project are that the waste streams used for syngas production are not competing with those of the food value-chain, as is the case for biodiesel production; and that our final product, the [bioplastic](#) produced by bacteria, will be 100 per cent biodegradable', explains Dr Oliver Drzyzga, project manager from the Biological Research Centre in Madrid (CIB), part of the Spanish National Research Council (CSIC).

The SYNPOL team believes that the application of this biotechnological approach will not only benefit the environmental management of terrestrial wastes, but also reduce the harmful environmental impact of petroleum-based plastics. The SYNPOL project will ultimately enable the EU to take a global lead in syngas fermentation technology for waste revalorisation and sustainable biopolymer production.

'More than 25 million tons of plastics are disposed of annually in EU

landfills or directly into the environment, posing a huge environmental burden due to their recalcitrance towards degradation,' says Professor José Luis García López, the project's coordinator and principle investigator. 'Thus, there is a strong and urgent need for alternative processes to address the development and application of industrial biotechnologies for the conversion of waste materials into sustainable and cost-efficient bio-products such as new biopolymers.'

More information: www.synpol.org/

Provided by CORDIS

Citation: Extracting valuable resources from waste to make new bioplastics (2013, April 12) retrieved 20 March 2024 from <https://phys.org/news/2013-04-valuable-resources-bioplastics.html>

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