

## CHEMICAL RECYCLING

*FEAD is the representative body of the private waste management and resource industry in the European Union. In this capacity, FEAD conducted an analysis of Chemical Recycling.*

Chemical recycling is currently being put forward by the chemical industry as an alternative route for treating waste. There are various research and innovation efforts on-going, and first experimental chemical waste treatment plants have been established.

In the light of this important new debate, the European waste management industry would like to issue some important observations that need to be considered when addressing the subject of chemical recycling.

Chemical recycling is a much broader concept than the recycling of plastics. As a result of the vivid debate surrounding plastic pollution, the issue of chemical recycling tends to be reduced to a technique to recycle plastic polymers. In reality, chemical recycling has a much broader scope that deals with a wide range of materials. It is therefore important to give consideration to all the aspects when addressing the topic.

Chemical recycling is usually referred to as “any process or technology that modifies the molecular structure of materials in order to produce valuable materials”. In other words, it usually refers to chemical reactions that take place on the polymeric structure of waste and subsequently converts it into oligomers, monomers or a mix of it.

The technologies can mainly be divided into solvolysis and chemical or thermal depolymerization. The end output can be either a new product or a fuel.

### FEAD Key messages:

- **FEAD considers that the definition of recycling is clear and well defined in the Waste Framework Directive. The majority of investments made by the mechanical recycling industry are based on this particular definition. Therefore, FEAD continues to support the existing legislative framework, as it provides a clear level-playing field for everyone. FEAD is categorically **opposed to the idea of changing the definition of recycling. The current definition already appropriately addresses “chemical” recycling: It allows to define a process as recycling, when as a result of this process, the output is a new raw material that is subsequently used in a product. The production of fuels should fall under the recovery of energy from waste.****
- **In order to be able to assess the overall benefit of chemical recycling for the environment, it is essential to conduct an independent study on its CO<sub>2</sub> footprint. Furthermore, the costs of chemical recycling as compared to mechanical recycling methods, should be thoroughly analysed.** To date, it is not clear whether the promoted technologies are environmentally and economically advantageous. An independent study

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DWMA, Netherlands

FISE, Italy

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LASUA, Latvia

PIGO, Poland

YTP,  
Finland

should evaluate the performance of chemical recycling over the entire lifecycle of wastes (LCA), from the moment of their disposal to the end of the recycling process. Such a study would help to increase transparency on the performance of different recycling methods and make them more comparable. Chemical recycling has been labelled as “pyrolysis”, “gasification” or “plastic to fuel” in the past. These processes produce (polluted) syngas, chars, and various harmful residues like tars. Furthermore, the feasibility of chemical recycling on an industrial scale, with large amounts of output of recycled materials and a positive recycling value, remains questionable.

- In order to create a level playing field between chemical and mechanical recycling, **chemical recycling installations have to be classified as waste treatment plants.** Consequently, they would need to comply with the waste legislation at the European as well as at the national levels. Input into chemical recycling has to be considered as waste (if not a by-product), as it is the case for any recycling or waste-to-energy process, in order to ensure traceability and safety along the entire waste value chain. The output of chemical recycling will also be considered as waste, unless the materials comply with European or National standards for End of Waste (EoW). In the latter case, the EoW streams will need to comply with the product norms and the REACH Regulation.

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For further information, please contact: [info@fead.be](mailto:info@fead.be)

FEAD, the European Federation for Waste Management and Environmental Services, represents the private waste and resource management industry across Europe. FEAD's members are national waste management associations covering 19 Member States, Norway and Serbia.

FEAD's members represent over

- 3,000 companies with activities in all forms of waste management;
- 60% share in the household waste market;
- Handle more than 75% of industrial and commercial waste in Europe;
- Combined annual turnover of approximately € 75 billion;
- Employment of 320,000 people who operate around 2,400 recycling and sorting centres, 1,100 composting sites, 260 waste-to-energy plants and 900 controlled landfills.

They enable the transition to a circular economy by producing resources that can be reinjected in the economy and by supplying energy. Our companies add value through innovative and cost-efficient collection, sorting, and recycling of secondary raw materials. As a result, they play a crucial role in achieving the best economic and environmental outcomes.