



# Environmental Impact of Rigid Plastic Waste and their Recycling Facilities

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## DESCRIPTION

Rigid plastic waste refers to the plastic residues that are not easily recyclable by conventional means and have a large volume or shape. They include items such as plastic toys, sandboxes, kiddie pools, canisters, bowls and laundry tubs. These types of plastic waste often end up in landfills, incinerators or oceans, where they pose a threat to the environment and human health. According to the Plastic Waste Management Rules, 2016, the Producers, Importers and Brand Owners (PIBOs) of plastic packaging are responsible for ensuring the processing of their plastic packaging waste through recycling, re-use or end of life disposal. However, many PIBOs do not comply with their Extended Producer Responsibility (EPR) obligations and fail to collect and recycle their plastic packaging waste. As a result, a large amount of rigid plastic waste is generated by consumers who discard them in the street, contaminate them with food or other waste, or do not have access to proper recycling facilities.

The impacts of rigid plastic waste are manifold and can be carried by wind or water into rivers, oceans and other ecosystems, where they degrade slowly and release toxic chemicals. They can also attract and accumulate other pollutants such as heavy metals and pesticides. Plastic pollution can harm wildlife, marine life and human health by causing entanglement, ingestion, injury and disease. Rigid plastic waste contributes to greenhouse gas emissions when they are burned in incinerators or open fires. They also emit methane when they decompose in landfills. Moreover, the production of new plastics from fossil fuels requires a lot of energy and resources that contribute to global warming.

Resource depletion of plastic waste represents a loss of valuable materials that could be reused or recycled into new products. The production of new plastics from virgin materials requires more water, oil and land than recycling existing plastics. This puts pressure on the natural resources and increases the

environmental footprint of plastics. There are several possible solutions for reducing and managing rigid plastic waste. Chemical recycling is a process that converts plastics back into their original components, such as oil or monomers. This allows for the creation of new plastics with the same quality and properties as virgin plastics. Chemical recycling can overcome some of the limitations of conventional recycling, such as contamination, color or composition. However, chemical recycling also has some challenges, such as high energy consumption, technical complexity and economic viability.

Mechanical recycling is a process that involves shredding, washing and melting plastics into pellets or flakes that can be used to make new products. Mechanical recycling can reduce the amount of plastic waste that goes to landfills or incinerators and save energy and resources compared to producing new plastics. However, mechanical recycling also has some limitations, such as degradation of quality and performance over time, difficulty in separating different types of plastics and contamination by additives or impurities. This is a strategy that aims to minimize the generation of plastic waste by changing the design, production and consumption patterns of plastics.

## CONCLUSION

Rigid plastic waste is a serious environmental and social problem that requires urgent action from all stakeholders. By adopting a combination of solutions that involve chemical recycling, mechanical recycling and prevention and reduction, we can reduce the negative impacts of rigid plastic waste and create a circular economy for plastics that benefits both people and the planet. Prevention and reduction can involve using alternative materials (such as paper, metal or bioplastics), reducing the amount or weight of plastic packaging, increasing the durability or reusability of plastic products, promoting consumer awareness and behavior change, implementing bans or taxes on single-use plastics or incentivizing collection and recycling schemes.

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