

Exploring Seaweed Bioplastics to Substitute Harmful Foam Food Containers


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Four UGM students discovered the potential of seaweed-based bioplastics to answer the 'styrofoam' problem in Indonesia. Research by the Indonesian Institute of Sciences revealed styrofoam dominated 59% of plastic waste entering Jakarta Bay in 2015-2016. Styrofoam, in this matter, is a generic term to refer to a foam takeout container popularly used in Indonesia due to its cost-effectiveness and lightweight feature. Despite the advantages, the foam container sadly threatens the environment and our own health. Benzene and styrene from polystyrene foam are toxic, carcinogenic, and can cause various diseases such as headaches, nervous disorders, leukemia, etc.

"Seaweed in Indonesia is quite abundant and has the potential to be manufactured as a safe and environmentally friendly packaging material in the future," said Ilham Firdausi, head of the research team, on Tuesday (5/8).

Ilham and his three colleagues, I Nyoman Anggie Pratishta, Arif Ramadhan, and Dimas Wahyu Prasetyo, seek to substitute the toxic packaging form with an eco-friendly alternative made from seaweed. According to Ilham, carrageenans of seaweed are the key ingredient in the manufacturing of seaweed packaging, along with glycerol, water, and beeswax. Carrageenan is one of the phycocolloids that has excellent film-forming ability. This promising innovation received funding from the Ministry of Education, Culture, Research, and Technology at the 2021 Student Creativity Program.



“Styrofoam waste has no economic value. It just pollutes the environment as it requires ages to decompose,” said Arif, another member of the team.

Arif hopes this idea can help overcome plastic waste, foam food containers, and marine pollution in Indonesia. Seaweed-based packaging is biodegradable, safe, and an organic fertilizer alternative for plants. Currently, the team is set to continue their research to determine the best formula for more convenient packaging.

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