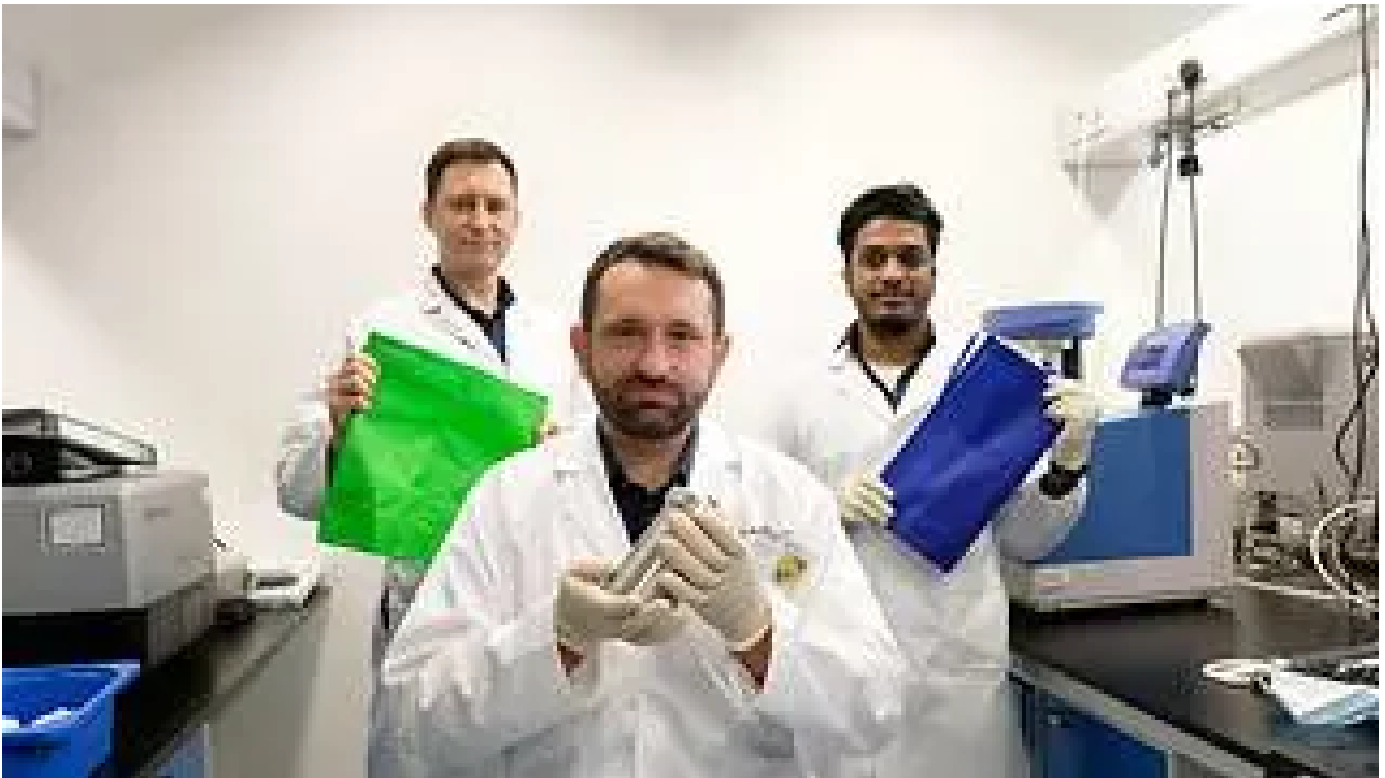


Singapore

Single-use plastic bags have 'lower environmental footprint' compared to paper and cotton bags in cities like Singapore: NTU study



Members of the research team include (from left to right) senior research fellow Dr Andrei Veksha, Assistant Professor Grzegorz Lisak and research associate Ashiq Ahamed. (Photo: NTU)

By [Ang Hwee Min](#)

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SINGAPORE: Scientists from Nanyang Technological University (NTU) have found that single-use plastic bags have “a lower environmental footprint” compared to single-use paper bags and multi-use cotton bags.

But the study came with the caveat that the findings applied only to Singapore, and possibly similar cities, where incineration was part of the city's waste management structure.

In the study, the scientists conducted a life cycle analysis of five types of bags to evaluate the environmental impact associated with their production, distribution, transportation, waste collection, treatment and end-of-life disposal.

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The study found that reusable plastic bags made from polypropylene non-woven plastic were “the most eco-friendly option”, followed by single-use plastic bags, said NTU in a media release.

Using plastic bags “may be the best option that is currently available” in cities like Singapore, said Assistant Professor Grzegorz Lisak, director of the Residues & Resource Reclamation Centre at the Nanyang Environment and Water Institute (NEWRI), who led the research.

“Our main message is that reusable plastic bags are the best option, provided that they are re-used many times - over 50 times to be precise,” he added.

“However, one surprising conclusion is that, in our model, in a single-use case, plastic bags, if treated properly afterwards, are less environmentally detrimental than the other types of bags in this study.”

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The scientists found that the global warming potential of a single-use kraft paper bag was more than 80 times that of reusable plastic bags. Single-use plastic and reusable cotton bags that have been reused 50 times were found to have more than 10 times the global warming potential of reusable plastic bags that were reused 50 times.

According to the study, a reusable plastic bag would need to be reused four times to offset the emissions equivalent to that of the creation of one single-use plastic bag.

Cotton and kraft paper bags have relatively bigger environmental footprints because of their “greater contribution to global warming” and “eco-toxicity potential in their production”, the study showed.



File photo of a kraft paper bag. (Photo: Pexels)

The production processes of cotton and kraft paper bags that consume “immense amounts of water and natural resources” are to blame for the relative negative environmental impacts, the study found.

“Hence, improving the production methods, optimising resource usage, and following sustainable practices could in future favour the usage of bags made from cotton and paper.”