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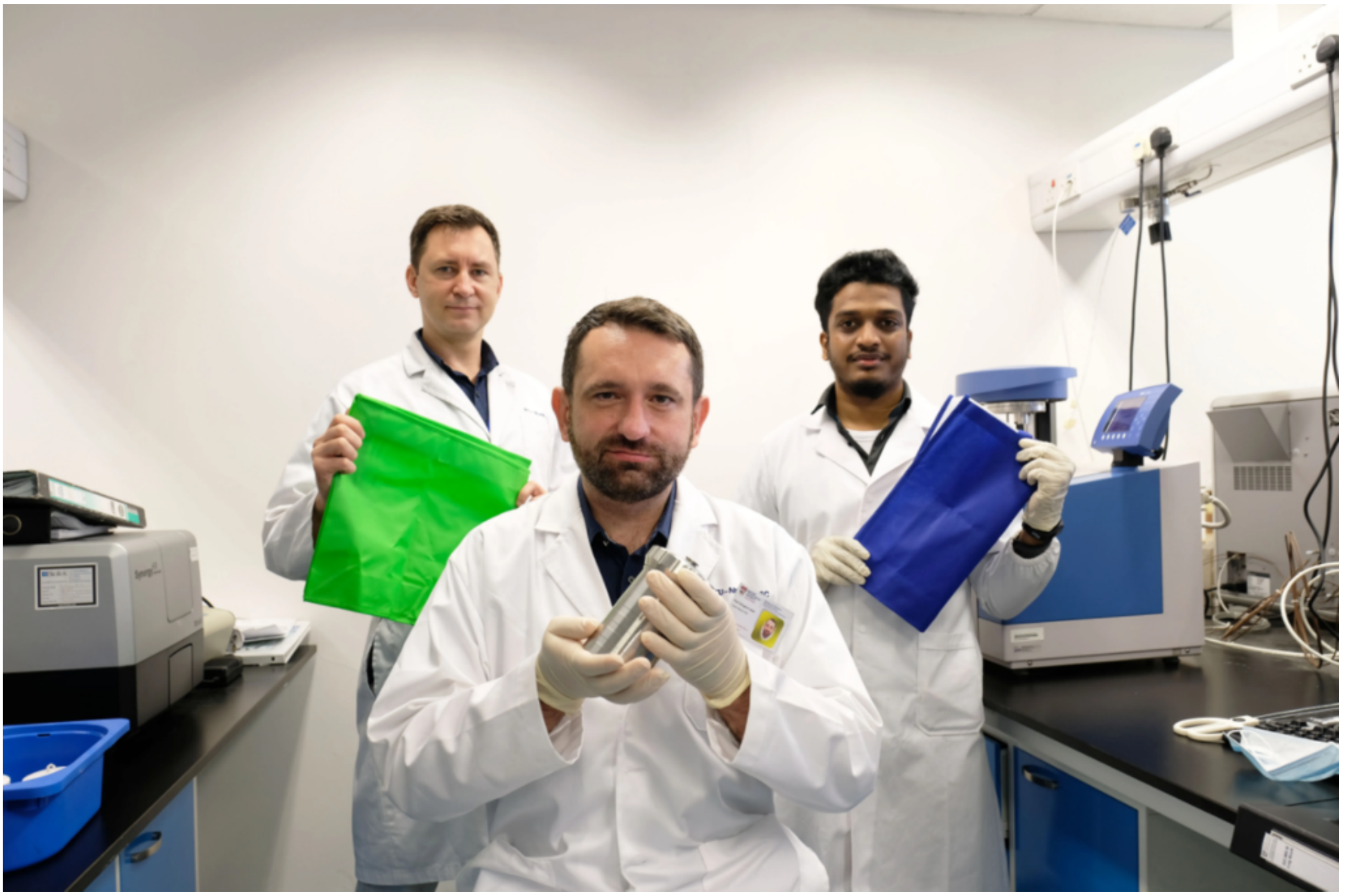
# Plastic bags more eco-friendly than paper and cotton bags in countries like Singapore: NTU study

*By* **LORAINE LEE**



NTU Singapore

(Left to Right) Members of the Nanyang Technological University research team include Dr Andrei Veksha, Senior Research Fellow at the Residues & Resource Reclamation Centre at the Nanyang Environment and Water Institute (NEWRI), Assistant Professor Grzegorz Lisak, Director of the Residues & Resource Reclamation Centre at NEWRI, and Research Associate Ashiq Ahamed.

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In a study released on Wednesday (Oct 14), scientists said that this was true in cities and countries like Singapore with densely populated metropolitan areas where waste is eventually incinerated.

The NTU scientists came to this conclusion after carrying out a life cycle analysis of five types of bags to evaluate their environmental impact associated with its production, distribution, transportation, waste collection, treatment and end-of-life disposal.

Reusable plastic bags made from polypropylene non-woven plastic were the most eco-friendly option followed by single-use plastic bags made from high-density polyethylene.

Director of residues and resource reclamation centre at the Nanyang Environment and Water Research Institute Assistant Professor Grzegorz Lisak, who led the research, said that the finding that single-use plastic bags — if treated properly — are less environmentally detrimental was "surprising".

"It is essential to evaluate the implications case by case for dealing with plastic waste," he said.

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Reusable plastic bags need to be reused four times to offset the emissions from the creation of one single-use plastic bag.

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

"In a well-structured closed metropolitan waste management system with incineration treatment, using plastic bags may be the best option that is currently available, provided that there is no significant leakage of waste.


***In the study's model, both single-use and reusable plastic bags were reported to be less environmentally harmful than paper and cotton bags in cities like Singapore. Photo: NTU Singapore***

The study also found that the global warming potential of kraft paper bags are 80 times that of reusable plastic bags while single-use plastic bags and cotton reusable bags are ten times.

Cotton and kraft paper bags require large amounts of water and natural resources, leaving a bigger environmental footprint, read the report.

In places like Singapore, where waste is incinerated, the timeline of biodegradation of paper, cotton and other biodegradable materials is irrelevant.

Such bags are suitable for countries that use landfills and regions with higher leakage of waste into the natural environment, the study highlighted.

resource usage and following sustainable practices.

The team recommended fully utilising reusable plastics bags to reduce the consumption of single-use plastic bags.

Asst Prof Lisak said that based on 2018 statistics, reducing the single-use plastic grocery bag consumption in Singapore by half could prevent over 10 million kg-$CO_2$ emissions a year.