

Escape the vapes: Scientists call for global shift to curb consumer use of disposable technologies

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Scientists have called for a concerted global effort to stem the tide of disposable electronic technologies—such as vapes—contributing to

international waste accumulation and environmental degradation.

Writing in the journal *Science*, researchers from across the UK have [highlighted](#) how disposable vape sales quadrupled in the UK between 2022 and 2023, with consumers now throwing away around 5 million devices each week.

In the United States, 4.5 disposable vapes are thrown away each second, and it is fast becoming an issue replicated right across the world.

One of the main upshots, scientists say, is that vapes and other disposable technologies including mini-fans and single-use headphones often contain valuable resources such as lithium and other [rare earth elements](#).

These elements are increasingly being seen as critical for green industries such as electric vehicles, but their use in existing devices has significantly diminished their global availability.

And while the technology is marketed as recyclable, it is sold without clear recycling instructions and offers minimal incentives to consumers to return the valuable materials once they have finished using them.

To address this, the researchers have called for urgent reform of disposable electronics practices in the technology industry, to avoid continued resource depletion and [environmental degradation](#).

They have also said the premise of disposal electronics and other single-use items should be questioned at its core, and that such products "may be too dangerous in the long term to justify keeping them on the market."

The letter has been authored by experts in environmental science,

materials science, [marine biology](#), consumer behavior and ethics from Abertay University, University of Dundee, University College London and the University of Plymouth.

Their call comes as world leaders are meeting in Ottawa, Canada, for the fourth session of the Intergovernmental Negotiating Committee (INC-4) convened to negotiate an international and legally binding Global Plastics Treaty.

It also follows recent legislation introduced in countries including the UK and Australia to limit the availability of disposable vapes, as part of a wider drive to reduce the impact of smoking and electronic alternatives.

The letter's lead author Laura Young, an award-winning environmental campaigner and Ph.D. researcher at Abertay University and the University of Dundee, said, "Right now, we have a narrow and rapidly closing window of opportunity to address the e-waste crisis. Throwaway electronics have entered the mainstream, the prime example being the rise and prevalence of disposable vapes.

"These small electronic devices promote the casual disposability of precious Earth materials and the creation of excessive amounts of e-waste. Legislative action, most notably the UK Government's commitment to ban disposable vapes, begins to address this, however action beyond a product-by-product, country-by-country approach is required. Therefore, we must now leverage past successes in waste reduction on a global scale, to tackle this crisis before it consumes us."

Professor Richard Thompson OBE FRS, Head of the International Marine Litter Research Unit at the University of Plymouth said, "Throwaway, disposable living is a very recent and regrettable consequence of technological innovation. It is just a few decades since

the first single-use plastic products were manufactured, but the associated—and highly persistent—waste now contaminates every corner of our planet.

"Disposable vapes are among the more recent such items to hit the market and we urgently need to recognize that our appetite for cheap and convenience-driven throwaway goods comes at immense cost to the environment and human health."

Dr. Rebecca Wade, Senior Lecturer in Environmental Science at Abertay University, said, "In our letter we state that 'the premise of disposal electronics should be questioned at its core.' This is a critical cross-sector agenda. As soon as we take a step back from the commercial opportunities and so-called convenience of disposal tech we see the problems writ-large.

"They range from obvious short-term issues such as littering and the associated harm to the environment and wildlife, to refuse management and long-term issues of global resource depletion. Our planet, our societies and the future of our technological industries cannot afford to squander our precious resources in single-use products."

More information: Laura Young et al, Dangers of disposable electronic devices, *Science* (2024). [DOI: 10.1126/science.ado6757](https://doi.org/10.1126/science.ado6757).
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