Vultures scavenge for food among rubbish, including plastic waste, strewn on a beach near the Costa del Este neighbourhood of Panama City. Photograph: Luis Acosta/AFP/Getty

Plastics

More than 170tn plastic particles afloat in oceans, say scientists

‘Cleanup is futile’ if production continues at current rate, amid rapid rise in marine pollution

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Wed 8 Mar 2023 19.00 GMT

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An unprecedented rise in plastic pollution has been uncovered by scientists, who have calculated that more than 170tn plastic particles are afloat in the oceans.

They have called for a reduction in the production of plastics, warning that “cleanup is futile” if they continue to be pumped into the environment at the current rate.

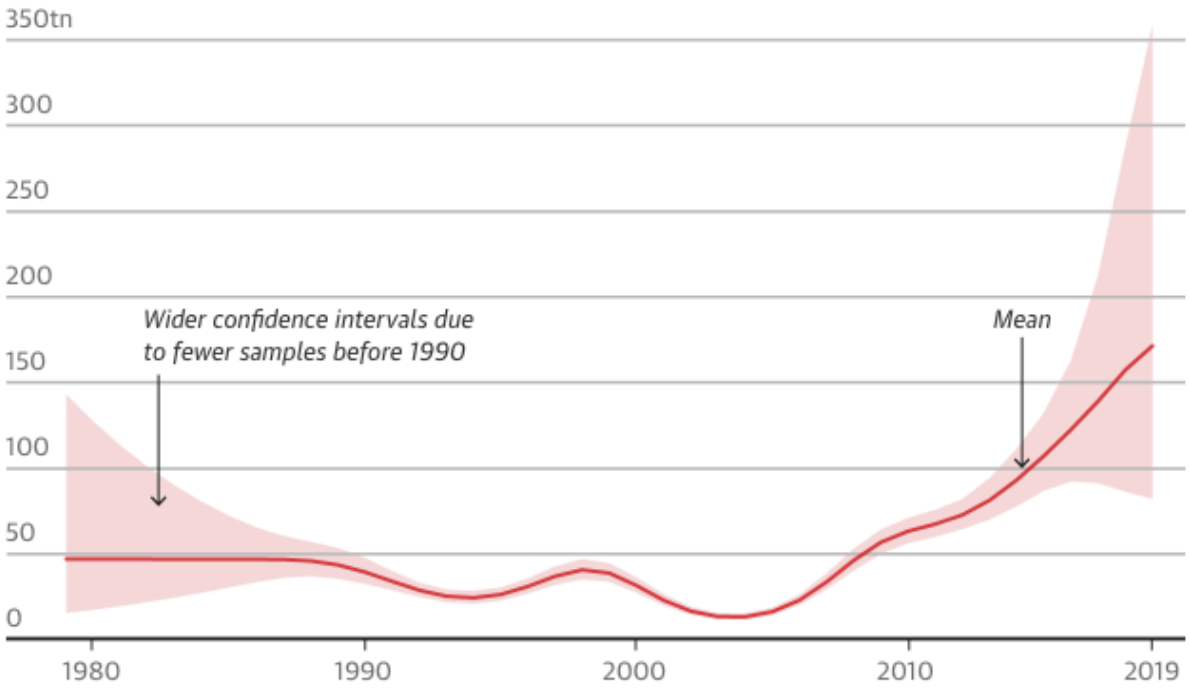
The research, by the 5 Gyres Institute and published in the journal Plos One, evaluates trends of ocean plastic from 1979 to 2019. The authors noted a rapid increase of marine plastic pollution and blamed the plastics industry for failing to recycle or design for recyclability.

Dr Marcus Eriksen, the co-founder of the 5 Gyres Institute, said: “The exponential increase in microplastics across the world’s oceans is a stark warning that we must act now at a global scale, stop focusing on cleanup and recycling, and usher in an age of corporate responsibility for the entire life of the things they make.

“Cleanup is futile if we continue to produce plastic at the current rate, and we have heard about recycling for too long while the plastic industry simultaneously rejects any commitments to buy recycled material or design for recyclability. It’s time to address the plastic problem at the source.”

There has been a rapid rise in the abundance of ocean plastic since 2005

Estimated global count of microplastic particles in the ocean surface layer, trillions



Source: Plos One/M Eriksen, W Cowger, LM Erdle, S Coffin, P Villarubia-Gómez, CJ Moore et al, 2023

The researchers looked at 11,777 samples of floating ocean plastics to create a global time series that estimated the average counts and mass of microplastics in the ocean surface layer, lining up the data with international policy measures aimed at reducing plastic pollution to evaluate their effectiveness.

It found that from 2005, there had been a rapid increase in the mass and abundance of ocean plastic. This could reflect exponential increases in plastic production, fragmentation of existing plastic pollution or changes in terrestrial waste generation and management.

The scientists estimate at least 170tn plastic particles are present in the oceans, with a combined weight of about 2m tonnes.

They say without immediate global action on plastic production, the rate of plastic entering aquatic environments is expected to increase approximately 2.6-fold from 2016 to 2040.

Scientists have called for governments to take action to stem the plastic tide. Dr Edward J Carpenter, of the Estuary and Ocean Science Center at San Francisco State University, said: “We know the ocean is a vital ecosystem and we have solutions to prevent plastic pollution. But plastic pollution continues to grow and has a toxic effect on marine life. There must be legislation to limit the production and sale of single-use plastics or marine life will be further degraded. Humans need healthy oceans for a livable planet.”

The paper is timely, as UN member states are meeting to decide policy on plastic pollution this spring.

Researchers have warned that international policies on plastic are fragmented, lack specificity and do not include measurable targets. They have called for corporate responsibility for plastic production to be enforced globally, with legally binding legislation that addresses the full life cycle of plastic, from extraction and manufacturing to its end of life.