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MARINE PLASTIC POLLUTION AS A PLANETARY BOUNDARY THREAT

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ABSTRACT

Plastic pollution has accumulated in the marine environment due to an exponential rise in its usage in contemporary civilization and insufficient waste management. There is mounting evidence of a variety of mechanisms via which marine plastic pollution has an impact at many levels of biological organization. Ecological communities and ecosystem functioning will inevitably be impacted. One unanswered question is whether, today or in the future, the concentration of plastic in the ocean will reach levels above a critical threshold, causing global effects in vital Earth-system processes, allowing marine plastic pollution to be considered a key component of the planetary boundary threat associated with chemical pollutants. The impacts of plastic pollution in marine ecosystems, as well as the 'core planetary limits,' biosphere integrity, and climate change, are reviewed and evaluated to see if there are any possible solutions to this issue. Because marine plastic pollution is irreversible and ubiquitous throughout the world, two critical criteria for a planetary boundary danger have already been fulfilled. Plastic pollution's effects on the Earth system are yet unknown, although routes and mechanisms for thresholds and global systemic change have been discovered. Regardless of whether plastic is recognized as a new entity in the planetary boundaries paradigm, marine plastic pollution is undeniably linked with global processes to the point that it requires careful control and prevention.

KEYWORDS: *Chemical, Environment, Marine, Plastic, Pollution.*

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