

Transforming plastic with sunlight

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The discovery dispels the theory that sunlight exposure simply physically fragments plastics into smaller particles that are chemically similar to the original material and persist in the environment. The effects of these breakdown products on aquatic ecosystems are currently unknown.

By comparing the breakdown under sunlight of different single-use poly(ethylene) bags and pure poly(ethylene) film, it was discovered that the bags produced between 5000 and 15,000 compounds under sunlight exposure, compared with about 9000 with the pure polyethylene. This shows that the composition of the plastic and its additives influences both how fast it breaks down and what it breaks down into.

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1. What monomer forms the polymer poly(ethylene)?
2. Suggest environmental problems of single use plastics.
3. Suggest how the sunlight breaks down the poly(ethylene).