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Article Critique: “Production, use, and fate of all plastics ever made”

In an article written for sciencemag.org, Mr. Roland Geyer, Ms. Jenna Jamback, and Ms. Kara Lavender Law wrote a compelling piece on the lifecycle of global plastics, mentioning the production, use, and ultimate methods of disposal of plastics that were produced since the 1950s; a.k.a. the beginning of plastics production. The article contains data on the history of production of plastics, the types of plastics produced, and the methods used to dispose of plastics.

The article, written in 2017 estimates approx. 8300 metric tons of synthetics have been produced between when production began in the 1950s to the article’s most recent data in 2015. Some of the introductory statements contain some preluding information to the article, stating the growth of plastics production and the disparities of production share in middle- and high-income countries. I think that the article has a small weak point here in that they did not include the plastics production of low-income countries, and that may be because of the lack of research, so I suppose it would be understandable why that was not included.

Astonishingly, nearly half of all plastic ever produced was produced between 2002 and 2015, approx. 3900 metric tons according to the article. I have discovered a partial weakness in the article; however, again this is an understandable withholding of information, where the article states that they did not include the production of biodegradable plastics since there was not a large production of said plastics. The article comprises data on the disposal of plastics based on their use, mainly: packaging,

consumer & institutional products, others and textiles, electrical and electronic, transportation, industrial machinery, and building and construction. Out of all of these categories, packaging had an average lifecycle of **less than one year**, meaning that all of that plastic used in the packaging of foods that we see at the grocery store, gets immediately thrown away, and most of it ends up in landfills or the ocean.

The second shortest lifetime category is consumer and institutional products, which has an average lifecycle of approx. five years and the longest lifecycle of a category was building and construction at an average of thirty-five years. The article estimates that only approx. thirty per cent of all plastics ever produced are still in use, leaving 70% being either recycled or thrown in the trash or left somewhere to degrade and end up in the ocean. There are multiple forms of disposal for plastics, the first being recycling, disintegration through pyrolysis which turns plastics into fuels, combustion, and last and worst of all, littering. The best form of disposal, recycling, only accounts for approx. 18% of all disposal of plastics, and only 10% of that recycled plastic gets recycled a second time, and one can speculate that the recycle percentage drops drastically as a single piece of plastic is recycled more and more.

Overall, this article is very strong for a literature review on plastics. It is very useful for showing the lifecycle of plastics, as all the data is collected from global sources. There are some minor weaknesses, which I believe can be overlooked simply because there may have not been data available. I think that this is also a very good read for anyone that is interested in the data on the lifecycle of plastics simply because it makes one realize that they should be doing more to protect the environment. I do want to find another article on the actual waste management laws because I've noticed that on my recycling bin, there are only certain types of plastics that they wish to take in, leaving all other plastics to be thrown away, which I despise greatly, but unfortunately, I do not know how else to dispose of it.

Geyer, R., Jambeck, J., & Lavender Law, K. (2017, July 01). Production, use, and fate of all plastics ever made. Retrieved June 29, 2020, from https://advances.sciencemag.org/content/3/7/e1700782.full