NUFYP C15 TEAM PROJECT PRESENTATION

Plastics

Made by Taikozha Turdyakyn, Adil Leiman, Zhansaya Chembayeva and Bekbarys Aidaraliyev

What are the current effects of plastics during disposal on the environment and what can we do to change this?

TEAM PROJECT'S TITLE

OUTLINE

MAIN POINTS RELATED TO THE TOPIC

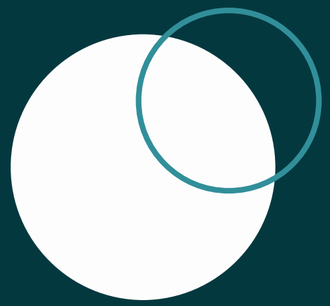
The urgency of the problem: Benefits and Drawbacks

Pros and cons of different methods of disposal

Effect on environment

Possible solutions

URGENCY



WHY IT IS SO IMPORTANT?

Benefits

IRREPLACEABLE TOOL

most common and popular tool because of its features

FLEXIBILITY TO USE

variety of sizes and shapes

USE IN VARIOUS FIELDS

automotive, agricultural, health, construction/building, packaging, and textiles

USE IN DAILY LIFE

to store food, water, and household tools

TOXIC TO THE ENVIRONMENT

AND TO HUMANITY

MOST COMMON POLLUTANT

50%

OF PLASTIC HAS BEEN PRODUCED IN THE PAST 15 YEARS

2 MM TO 381 MM

INCREASE IN PLASTIC PRODUCTION FROM 1950 AND 2015, WHICH PREDICTED TO DOUBLE BY 2050

Methods of disposal

PROS AND CONS

There are three methods of disposal.

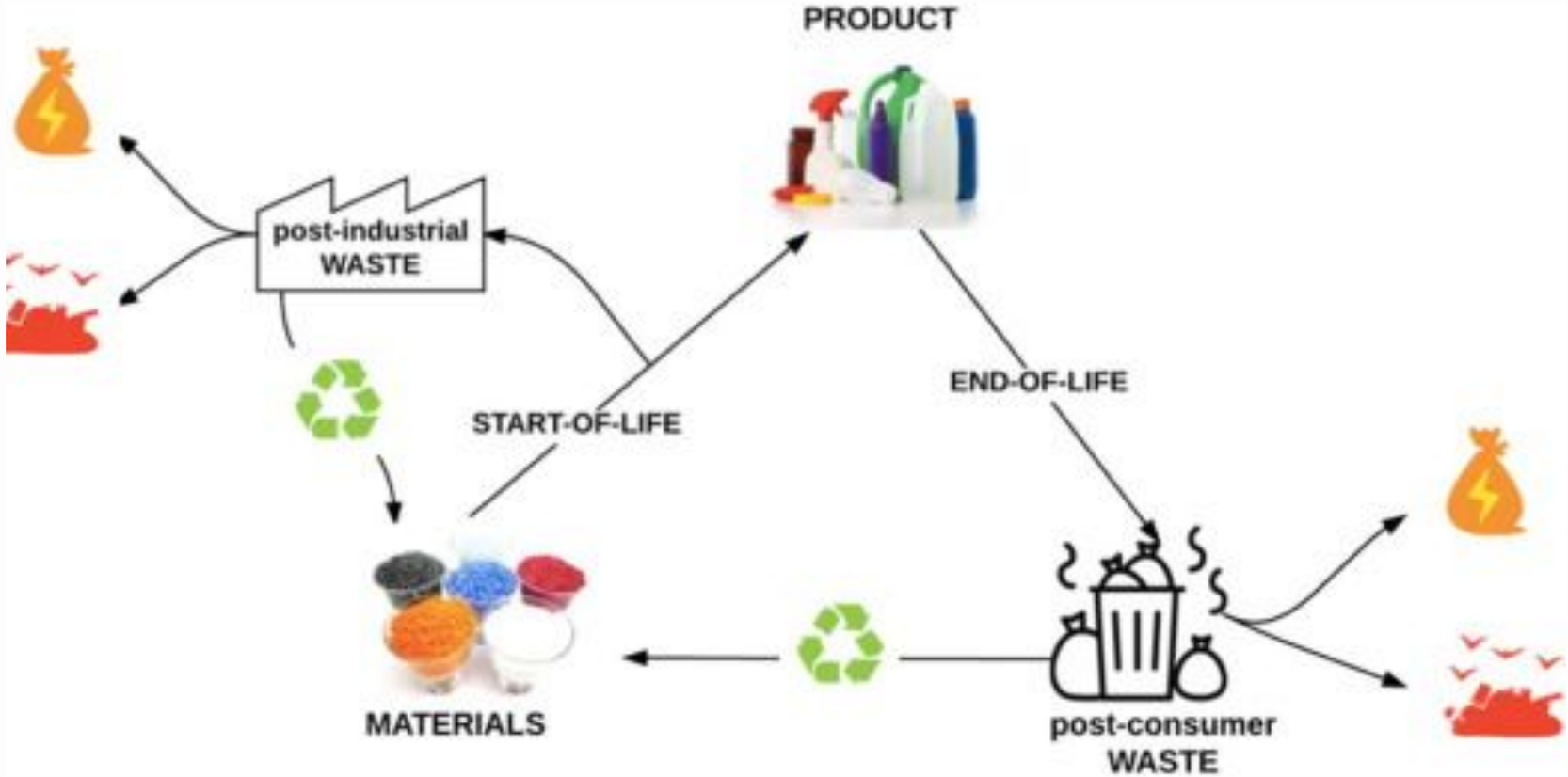


FIGURE 1. LIFECYCLE OF POLYMER MATERIALS.

SOURCE: (RAGAERT ET AL., 2017)

3 different methods

Figure 2. Discarding.

Source: (Interesting Engineering, 2018)

DISCARDING

Most common

Too much place

Affects the environment

Economically unprofitable

Figure 3. Incineration.

Source: (IPEN, 2019)

INCINERATION

Release of toxic substances

Released heat can be used

Figure 4. Recycling.

Source:

(Advanced Waste Solutions, 2019)

RECYCLING

Most beneficial

Reusing

Non-incineration method should be used

Effect on environment

GREENHOUSE EFFECT

EFFECT ON SURROUNDING AREAS

EFFECT ON PLANTS

EFFECT ON ANIMALS

POSSIBLE SOLUTIONS

REDUCING PLASTIC CONSUMPTION IN DAILY LIFE

- Keeping out of unnecessary packaging
- Eco-fiendly alternatives

USING BIODEGRADABLE POLYMERS

- Ability to decompose
- Renewable biogenic carbon contained
- C-14 product signature as a indicator of biogenic carbon's proportion
- Should be economically obtainable and suitable in use

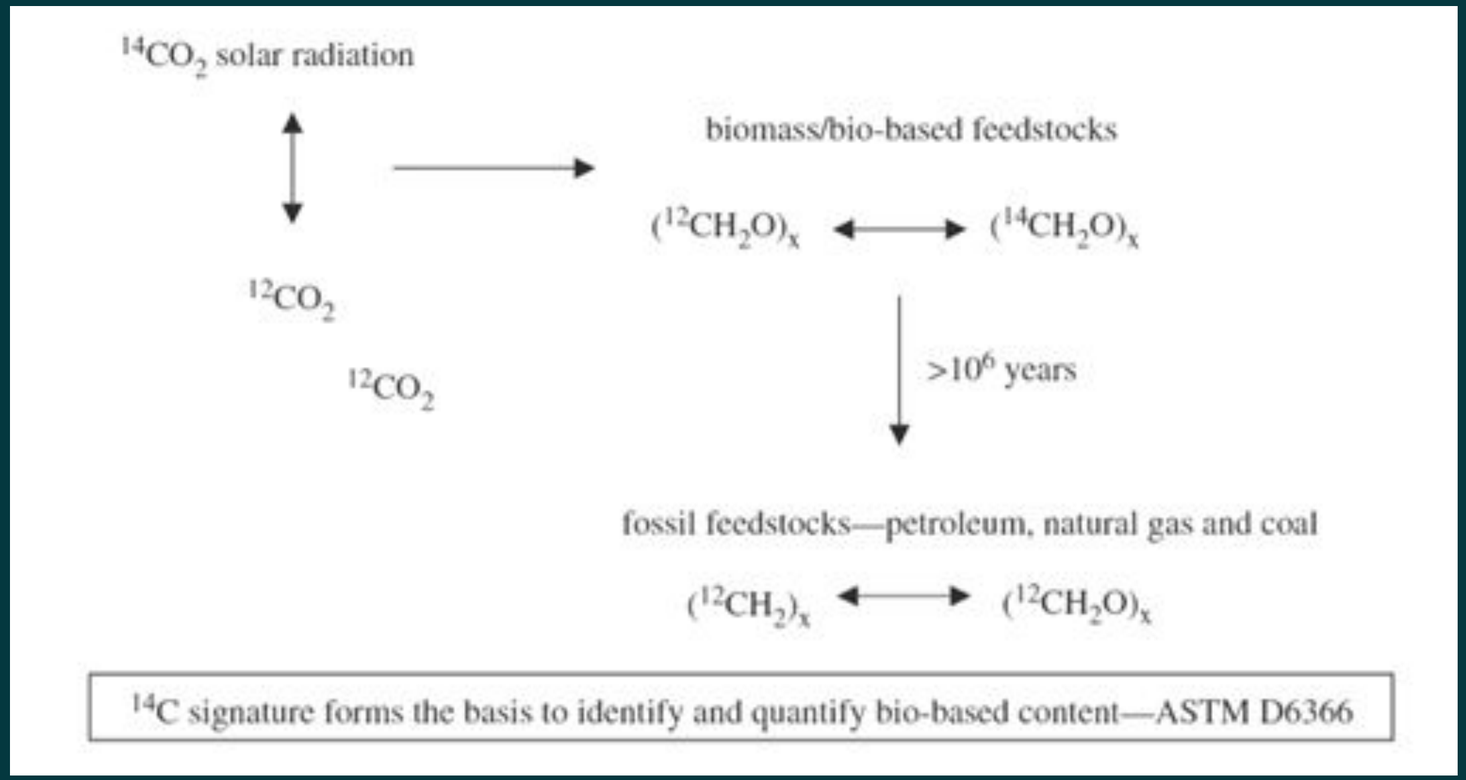
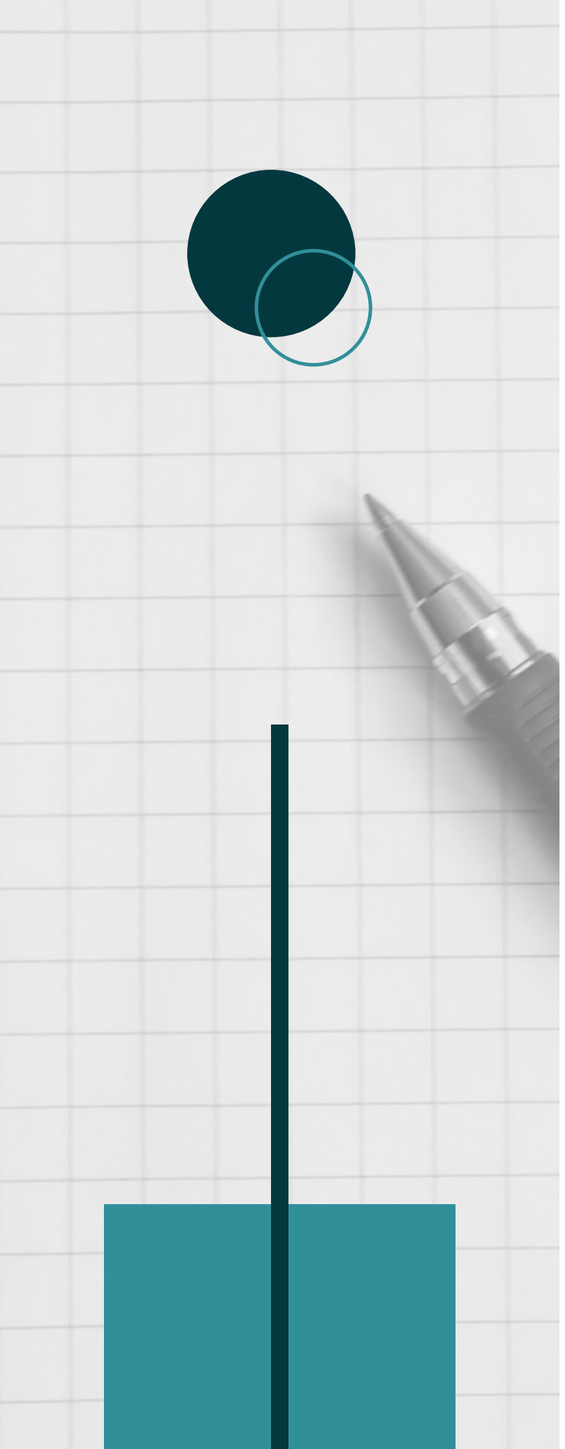


FIGURE 5. CARBON-14 SIGNATURE OF BIO- AND PETROCHEMICAL POLYMERS.

SOURCE: (SONG ET AL., 2009)

Conclusion

- Disposable tableware, bags, packaging, bottles, and various containers are in daily usage today.
- All of them harm the environment.
- Recycling, incineration, and discarding are different types of disposal.
- Only 5% is recycled.
- Reduce production and use of plastic is the best solution
- Popularization of other alternatives
- Preventing environmental disaster



Q&A SECTION

Reference list

- Rodrigues, M., Abrantes, N., Gonçalves, F., Nogueira, H., Marques, J., & Gonçalves, A. (2019). Impacts of plastic products used in daily life on the environment and human health: What is known? Environmental Toxicology and Pharmacology, 72, 103239. https://doi.org/10.1016/j.etap.2019.103239
- Geyer, R., Jambeck, J. R., & Law, K. L. (2017). Production, use, and fate of all plastics ever made. Science Advances, 3(7), e1700782. https://doi.org/10.1126/sciadv.1700782
- Verma, R., Vinoda, K. S., Parireddy, M., & Gowda, A. N. (2016). Toxic Pollutants from Plastic Waste - A Review. Procedia Environmental Sciences, 35, 701-708. https://doi.org/10.1016/j.proenv.2016.07.069
- Prata, J. C., Silva, A. L., Costa, J. P., Mouneyrac, C., Walker, T. R., Duarte, A. C., & Rocha-Santos, T. (2019). Solutions and Integrated Strategies for the Control and Mitigation of Plastic and Microplastic Pollution. International Journal of Environmental Research and Public Health, 16(13), 2411. https://doi.org/10.3390/ijerph16132411
- Ragaert, K., Delva, L., & Van Geem, K. (2017). Mechanical and chemical recycling of solid plastic waste. Waste Management, 69, 24–58. https://doi.org/10.1016/j.wasman.2017.07.044
- Stefanini, R., Borghesi, G., Ronzano, A., & Vignali, G. (2020). Plastic or glass: a new environmental assessment with a marine litter indicator for the comparison of pasteurized milk bottles. International Journal of Life Cycle Assessment. https://doi.org/10.1007/s11367-020-01804-x
- Song, J. H., Murphy, R. J., Narayan, R., & Davies, G. B. (2009). Biodegradable and compostable alternatives to conventional

Reference list (pictures)

- https://inteng-storage.s3.amazonaws.com/images/AUGUST/sizes/plastic-waste_resize_md.jpg
- https://ipen.org/sites/default/files/styles/large/public/screen_shot_2019-08-13_at_12.50.36_pm.png?itok=EDfmVuvM
- https://advancedwastesolutions.ca/wp-content/uploads/2019/05/recycle.jpg

THANK YOU FOR ATTENTION