Climate change competition

This report represented from *Ahmed Mohamed Mohamed,* Through my role as pharmacy student at the faculty of pharmacy delta university, I choose to talk about The medical wastes and how it's affect in the climate change.

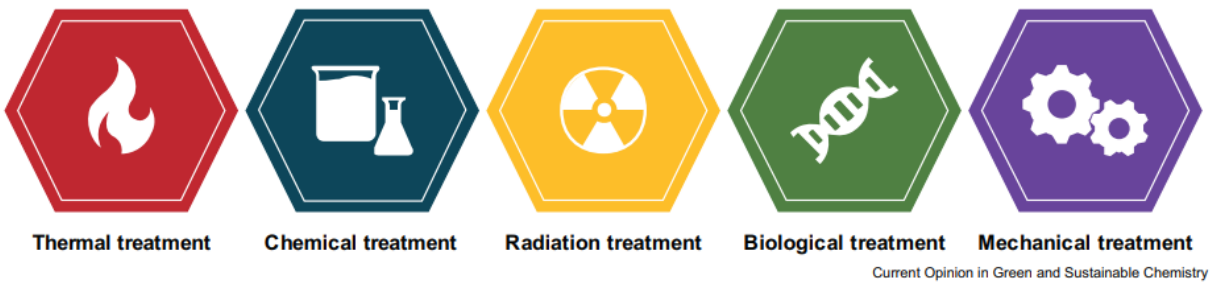
Firstly I will talk about my vision (plan) and explain how can solve the problem in my mission of this report.

Vision:

- Reduce the wastes of the drugs.
- Choose an alternative for plastic.
- Recycling the wastes.
- Raising the awareness of bad use of the drugs like antibiotic which is most frequently daily used drugs.

Mission:

Medical waste has increased in the past 3 years as a result of the coronavirus disease 2019 (COVID-19) pandemic. This condition is expected to exacerbate due to the growing healthcare markets and aging population, posing health threats to the public via environmental footprints, To alleviate these impacts, there is an urgent need for medical waste management.



And this figure shows the treatment methods

the current medical waste treatment methods, including thermal, chemical, radiation, biological, and mechanical treatments, where the thermal treatment is the most common technology worldwide.

Recycling of plastic wastes:

Plastic recycling can be described as the process by which plastic wastes are recovered and processed into useful products.

There has been growing awareness to reduce the use of plastics. However comprehensive efforts to understand how the medical plastics are disposed and handled by the common workers should be made. Circular economy and reduction of (plastic) waste are listed as major priorities for the European Union, leading to stricter legislation, including complete landfill bans, extended producer responsibility (EPR) and specific recycling targets [20] The EPR concept first introduced in Sweden is a strategy wherein the producers take in the responsibility of managing the products that needs disposal after the end use or their life time [21]. As mentioned earlier, plastics have revolutionized medical industry, especially the single use plastic, but they become a burden later. Many of which end up in marine ecosystems, by forming micro plastics. Also, the fossil fuels from where the plastic is produced, indirectly leads to contamination of water and air.

The plastic waste ending up in incinerators can lead to the release of toxic chemicals and gases.

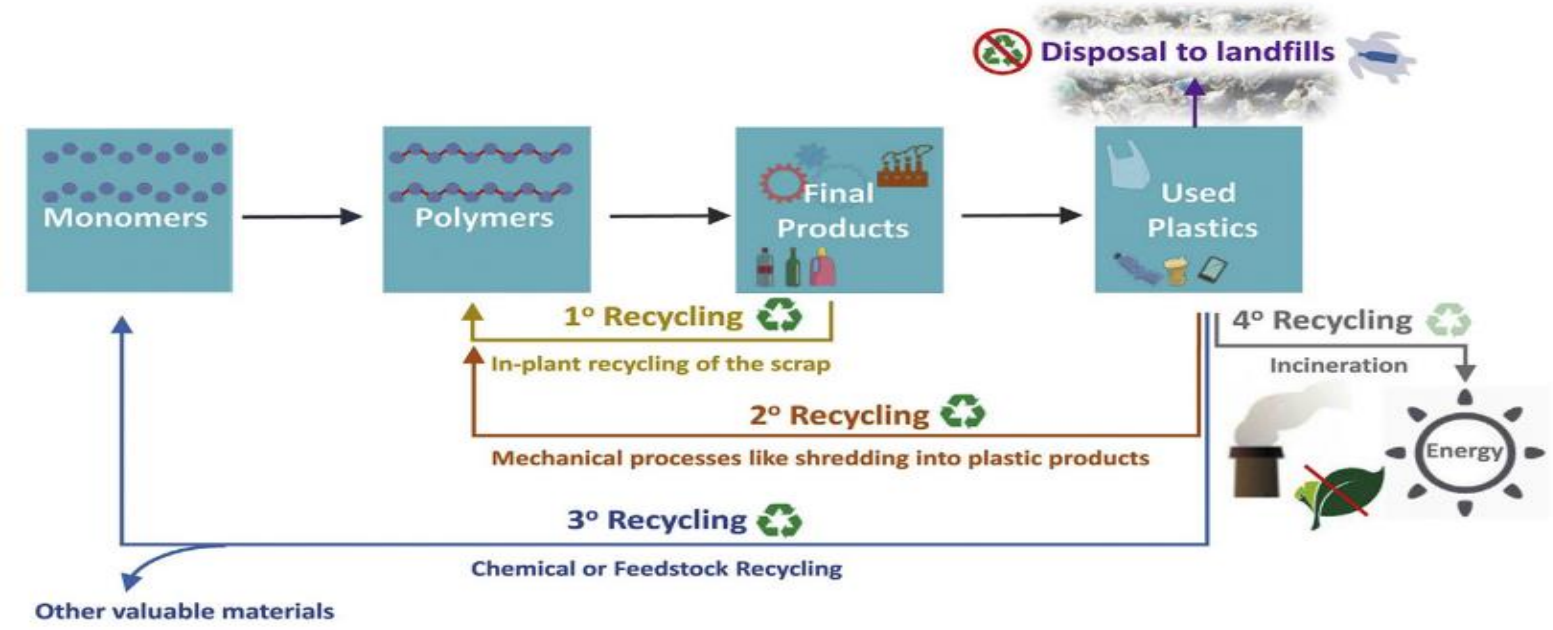
Though there are many plastic items which can be recycled, as they are not biohazards, they are not being recycled nowadays.

The main factor that limits the recycling procedure is the difficulty in sorting the plastic waste and risk of transmitting potential infections. However, the lack of sufficient landfills for waste disposal and increasing environment concerns makes recycling the need of the hour.

Recycling starts with identifying the materials for recycling, followed by sorting of the materials. Manual sorting is possible however the process is labour intensive. Here plastics are sorted based on their colour, shape, type of material etc. Automated sorting techniques received immense attention nowdays. Near infra-red (NIR) provides high speed of identification. This technique holds effective for transparent plastics. X-ray **fluroscence technique based on the organic nature of polymer has been used for separating PVC from PET**. Separation techniques like density separation.

Once the plastic wastes are collected, sorted and cleaned, there are usually four common plastic recycling routes:

- primary recycling.
- secondary recycling.
- tertiary recycling.
- quaternary recycling.



Primary recycling: It refers to the reuse of plastic scraps into products having similar characteristics of the original material. For example, PET can be recovered from used bottles for making similar new bottles.

The recycled scrap or waste plastics can be mixed with virgin material to ensure the required product quality, This process is highly established and is also known as closed loop process. This technique is used for single type plastics which are comparatively clean or uncontaminated.

Closed loop recycling has the advantage that the discarded wastes are easily integrated back into the production cycle.

Secondary recycling: also known as mechanical recycling is the recovery of plastic wastes by mechanical means.

Mechanical recycling involves collection, separation and sorting, washing to remove organic or other contaminants, and grinding of the material. Retaining mechanical properties after mechanical recycling is quite difficult. The drop in molecular weight after recycling and contamination with other polymers can result in reduction of mechanical properties.

Moreover, due to the reprocessing, recycled plastics are prone to thermo mechanical degradation, It is difficult to achieve mechanical recycling with highly contaminated waste.

An example of secondary recycling is in the production of flooring tiles from mixed polyolefins. Secondary recycling involves various methods of recycling like screw extrusion, injection moulding, blow moulding etc.

Tertiary recycling: or chemical recycling converts plastic materials into smaller molecules, usually liquids or gases that are used as the feedstock in a process that generates chemicals and fuels.

Chemical recycling uses a chemical process to recover the petrochemical components in plastics.

An example of this approach is pyrolysis, in which plastics are subjected to high temperatures in the presence of a catalysts.

The plastic waste is subjected to high temperature and pressure there by making the long chain polymers to small chain polymers which can be degraded easily, with less complication. The pyrolysis leads to three different byproducts (a) oils (b) gases and (c) hydrochar.

The oil can be used in many applications like furnace oil, and the gas formed, usually termed as syngas can be used to replace the natural gas or coal in many of the applications.

The final output from pyrolysis depends on feedstock and the technology employed. Recently, Aragaw et al. reported the conversion of PP face masks and PVC gloves into fuel energy by pyrolysis. The thermal treatment was performed at 400C for 1 h in the closed air system and pyrolysis converted more than 75% of waste to bio-crude oil (tar). Other methods of recycling include cracking, gasification and chemolysis.

Pyrolysis is done in the absence of air.

If the process is done in controlled environments, it is called gasification. Unlike pyrolysis, chemolysis use chemicals to depolymerize polymers.

Chemolysis is only possible for condensation polymers like PET, and polyurethane and not for polyethylene and polypropylene.

Chemolysis cannot be used for unsorted plastics or mixed plastics.

Polyamides cannot be depolymerized using simple chemicals. So, catalyst is used to reduce the length of the polymer chain, thereby reducing the energy and time needed for depolymerization of complex polymers.

There are two types of catalytic cracking: fluid catalytic cracking and vapour phase catalytic cracking. In the case of fluid catalytic cracking, the catalyst directly meets the molten polymers. In the vapour phase catalytic cracking, the vapour produced from cracking encounters the catalyst.

Quaternary recycling or incineration: This technique considerably reduces the waste volume and involves energy recovery from waste plastic by incineration.

This is usually employed when the wastes are highly contaminated and cannot be recycled by normal means.

Tire-derived fuel (TDF) is an example of quaternary recycling. This is also known as incineration process and results in waste residues and ultimately pollution.

The combustion usually releases harmful gases which can be controlled by adding activated carbon, acid neutralization, adding ammonia to the combustion chamber etc. The waste is reduced to almost 1% of initial volume and can effectively decompose toxic or contagious waste.

Hence this is an ideal recycling technique for medical wastes.

✓ We can also choose an alternative to plastic in pharmaceutical packaging:

The process of treating or recycling can cost us high sums, so I thought of alternatives to pharmaceutical packaging.

Film produced from renewable sources like sugarcane:

Conventional plastics are part of our everyday lives – from the frozen peas we bought in protective packaging, to pet treats in shelf-stable, high barrier bags. However, your consumers are increasingly concerned with the impact they are making on the environment.

Consumers today want to know not only what is in their food, but what is in their packaging. And, with corporate-led requirements for sustainable products, manufacturers are given the challenge to develop even more innovative solutions to reduce their environmental impact.

ensure that their suppliers meet the principles of sustainable development present in the “responsible ethanol sourcing” which covers aspects such as respect for biodiversity and good environmental practices.

WHAT IS SUGARCANE?

A renewable source alternative to traditional PE.

Where polyethylene is produced from fossil raw materials such as natural gas and oils, Sugarcane, also known as I’m Green™ Polyethylene, is a plastic made from a renewable raw material: ethanol from Brazilian sugarcane.

WILL I COMPROMISE QUALITY?

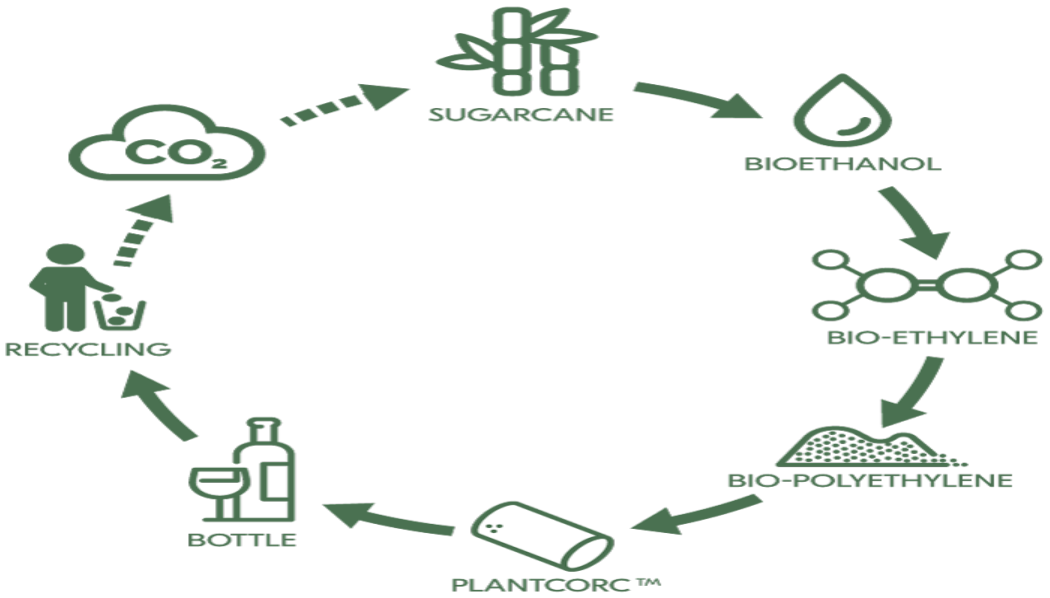
No—I’m green™ polyethylene exhibits the same characteristics as traditional polyethylene in regard to application flexibility, performance, and especially in terms of recycling.

WHY SUGARCANE?

I’m green™ Polyethylene captures and fixes CO2 from the atmosphere during its production, helping to reduce greenhouse gases emission. As sugarcane polymers are a renewable resource and don’t depend on fossil fuels, there is a substantial environmental benefit.

Do your customers know when they’re making a positive impact on the environment? By using a minimum of 25% Sugarcane resin (vs. manufacturing new resin), your packaging can proudly carry the I’m Green logo, which helps consumers identify truly sustainable products — increasing the value of your brand.

Find out the true impact your sustainable packaging choice will have on the environment with our interactive comparison tool.





✓ **<u>Raising the awareness of antibiotic resistance:</u>**

Through the campaigns that Aliens team do about antibiotic resistance as it the most used durgs through the day allover the world, so if we reduce the uses of it, we will decrease the wastes and the production energy and plastic etc..

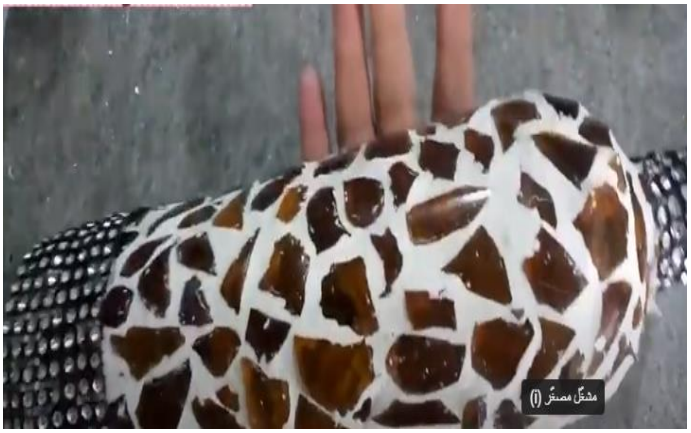






✓ **<u>And Finally we can use this wastes for Handmade</u>**













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Thank You