



University of Cyprus  
Department of Education



# Zero plastics to landfills by 2020!



**KEEP  
CALM  
AND  
RECYCLE  
PLASTIC**



This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No 665100.



Wow! Look at how many plastic bottles end up in the garbage!

Imagine how much plastic waste we produce each year..



I know that China is the leading plastics producer and Europe ranks second.

Hopefully, more of the plastic waste in Europe is recycled.

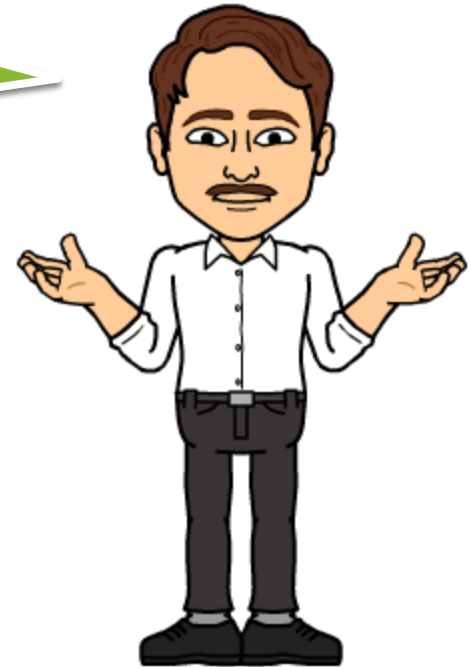




**While visiting the 3MC recycling company...**

# Scientist- Recycling Company

Hello! My name is Mr.Green and I am working for the 3MC Company, a recycling company. I am a Waste Management Engineer and I am mainly involved in the recycling process of plastic.



# The recycling process of plastic waste.

Could you please describe the recycling process of plastic waste?



Well, there are **three** main stages that should be considered for the plastic recycling.



# Recycling process

1. Sorting

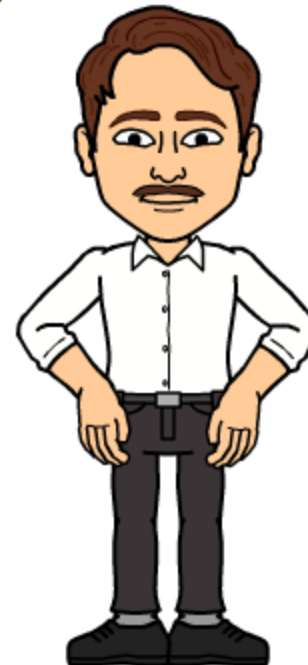
2. Baler/Shredding

3. Making pellets



# 1. Sorting

First of all, it's the **sorting** of the plastic waste. Once the plastics are collected, they are sorted and divided into two categories, the soft and the hard plastic using a specially designed machine.



## 2. Baler/Shredding

The next step is to cut the plastics into tiny chunks or pieces.

During the second stage of the recycling process, the **soft plastic** is pressed in a machine. After that, it turns into a cube that can be sold as recycled material to industries.

However, the **hard plastic**, is transferred in the crushers as to be grinded and take the shape of a flake.



# For example:

Soft plastics like Nylon could be pressed.

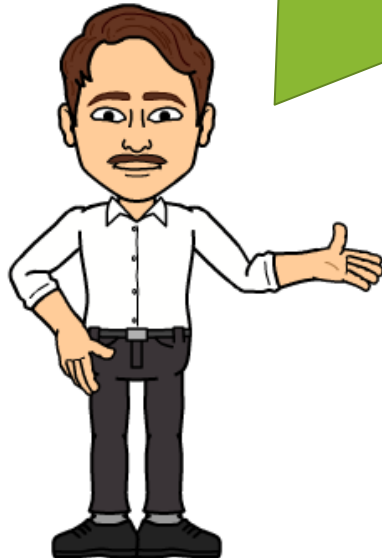


Hard plastics such as Beach beds, flasks and water bottles, are cut out and grinded



### 3. Making pellets

The last stage refers to the production of the final product. The soft pressed material or the hard crushed material can be melted and turned into *pellets* that are ready for reuse or be redesigned into new plastic products.



# The scientist's concern...

Wow this is very interesting! Are there any challenges in this process?

Of course! I think the most interesting but at the same time challenging stage is the sorting of the plastic waste. If something goes wrong with the sorting, the recycling process goes to waste!

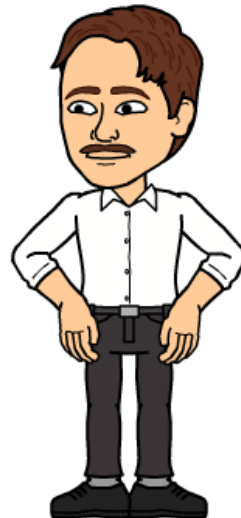
In order to avoid this, there are some methods to identify the type of the plastic. This is the most demanding part of this stage and we should be very focus while doing that.



Could you please tell us more about the methods you use in order to identify the type of plastics?



Of course. Every plastic has different characteristics but most of the times it is difficult to identify the type of the plastic. Usually the plastic is destroyed or dirty and it's hard to read the name label that indicates the type of the plastic.



# Identification of plastic type

I use mainly **two methods** to check the type of plastic:

**The first one** is to combust the plastic. The fume, the smell and shape of the flame (i.e. flickering) can indicate the type of the plastic. If still I cannot identify the type of the plastic, then I implement the **second method** by putting the plastic into the water and see if it floats or sinks.





I have an idea! We could help Mr. Green sorting the plastic waste. Therefore, after having collected the plastic waste we could contribute in the second stage of plastic recycling process. We could identify the type of the plastic using the two methods proposed by Mr. Green: combustion or floating/sinking method.

