



# WASTE MANAGEMENT

## Waste Journey

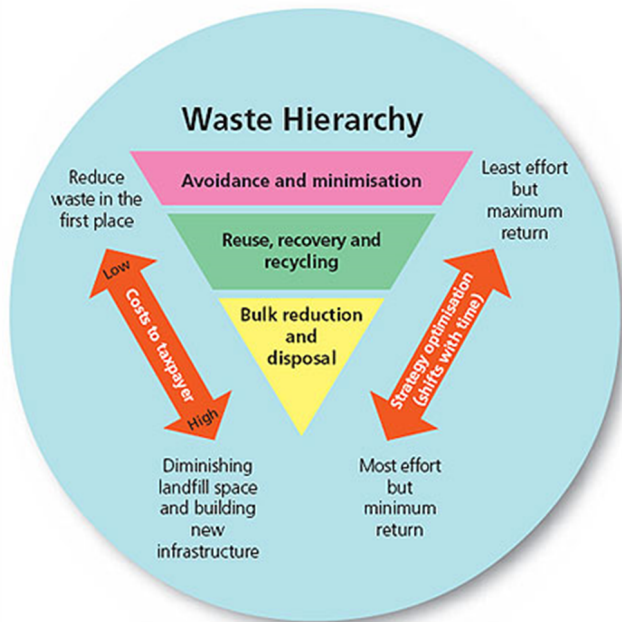


# WASTE

- Waste is a movable thing from the production or consumption which we want to get rid of. We know municipal and industrial waste which can be defined as non-hazardous or hazardous waste.
- At all stages of waste handling (collection, collection, and transport), waste must be secured in such a way that the environment is not endangered.



# WASTE





# SORTING OF WASTE

- Sorting is the division of waste according to the type or the separation of waste which, after separation, can be classified as separate types



# COLLECTING AND WASTE TRANSPORT

- At all stages of waste handling (collection and transport), waste must be secured in such a way that the environment is not endangered.



# WASTE RECOVERY

- Waste recovery is an activity that leads to the use of physical, chemical, or biological properties of waste.
- These include metal recovery, solvent regeneration, composting and energy recovery.



# WASTE DISPOSAL

- Waste disposal is a Physico-chemical treatment of waste that leads to a change in the properties of the waste.



# SEPARATION PROCESSES IN WASTE TREATMENT

- Waste treatment is divided into mechanical, physical, and chemical methods.
- Mechanical ones include crushing, grinding and sorting, and separation.
- An interesting procedure is, for example, corona separation, which separates particles based on their conductivity.





# SEPARATION PROCESSES IN WASTE TREATMENT

- This method could be used to separate the residue (Al + foil) after processing the composites.
- Used with waste adjustment.



# SEPARATION PROCESSES IN WASTE TREATMENT

- Here we know the physicochemical, biological, thermal treatment, and landfilling.
- Waste can be solid, liquid, or gaseous.
- Physico-chemical methods are applied usually to liquid waste.
- These include for example filtration, sedimentation, sorption, evaporation, or crystallization.



# SEPARATION PROCESSES IN WASTE TREATMENT

- Examples of chemical treatment are for example neutralization or redox reactions, solidification, and vitrification.
- Thermal treatment includes combustion and pyrolysis.



# THE JOURNEY

- The waste gets to facilities where is seen the potential of materials or energy.
- For example, if you separate plastic waste, the employees of waste companies take it as a mixture, which they have to sort again, depending on the very type of plastic waste.



# THE JOURNEY

- We know several types of plastic materials in the waste:
  - polyethylene terephthalate PET,
  - high-density polyethylene HDPE,
  - low-density polyethylene LDPE,
  - polyvinyl chloride PVC,
  - polypropylene PP,
  - polystyrene PS,
  - polycarbonate PC marked as OTHER.



# THE JOURNEY

- PET bottle, PP is the material from which the lids are made,
- HDPE is used to make packaging for drugstores and household products,
- LDPE is, for example, foil and PVC found in special hospital applications or in floors and other durable materials,
- Polystyrene is used, for example, for thermal insulation.

***All these types of plastics must be separated.***



# PET RECYCLING

- We can recycle PET bottles well, but they also have limits.
- The material specifically produced is colored with ingredients so that the bottles in which we buy drinks are more beautiful.
- Found black, blue, pink, or light blue bottles.
- Here, the more colors (the bottle becomes opaque), the bigger the problem.



# PET RECYCLING

- If we recycle a bottle, we tear it into small pieces, heat it, and create a mass that has certain properties.
- The most important property is the viscosity of the mass.
- It is how fast or slowly the heated material flows, or how it can be stretched (like chewing gum).
- Paint as an admixture in the chemical composition of the material affects the viscosity of PET material and, or does not stretch on the thread, it even tears.





# PET RECYCLING

- This applies to all plastic materials.
- They have their chemical composition.
- A kind of chemical formula that when we change, we can't create products that have become waste at the beginning.