Recycling Household Wastes into Energy Sources

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INTRODUCTION

- Dealing with waste and garbage is a growing environmental problem.
- Recycle or Create energy out of waste?

RESEARCH QUESTION

What are the most effective ways to recycle household wastes to create a source of energy?

PROBLEMS

The common ways of disposing household wastes cause undesired accumulation which creates the following problems:

1.Harms the environment
2.Causes disease/bacteria habitats
3.Causes extinction of some species
4.Contaminates ground water

Figure 1: Landfill in Sharjah [1]

SOLUTION

Biogas: any gas fuel that is derived from the decay of biodegradable waste.

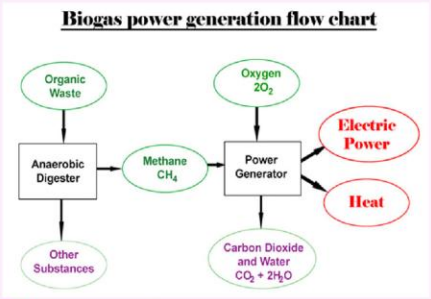

Figure 2: Biogas production [2]

Plastic Pyrolysis: combustion in the absence of oxygen.It utilizes plastic to produce energy.

• Plastic can be converted into:

1. Liquid : fuel
2. Gas: heating source or liquefied
3. Solid can be used on farm fields

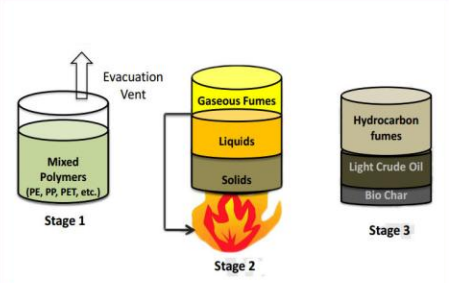

Figure 3: Pyrolysis process [3]

Sludge: the solid waste that is produced through the treatment of wastewater.

- It cannot be dumped without treating
- Treated by anaerobic digestion
- Product of anaerobic digestion is methane gas

EVALUATION

	Advantages	Disadvantages
Biogas recovery	• non-polluting renewable energy source • Reduces green-house effect • The technology is cheap	• corrosive to metals • efficiency of biogas systems
Methane recovery	• Can be used as a substitute for fuel • Eliminates odor in landfills	• Cause entrapment of infrared heat • Using digesters: expensive
Plastic pyrolysis	• Substitute for fuel • Reduce the amount of plastic wastes	• Might be toxic • Cost of reducing the toxic: expensive • monopoly of oil companies

Figure 4: Evaluation

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