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WASTE UTILIZATION FROM BIODEGRADABLE AND NON BIODEGRADABLE RESOURCES

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Abstract:

Biodegradable waste is a type of waste which can be broken down, in a reasonable amount of time, into its base compounds by micro-organisms and other living things. There are numerous biodegradable products can be used for various purposes & which further made use in to the generation of electricity, heat as well as compost, biogas and biodegradation. Non-biodegradable waste is those that cannot break down or degrade for many years, or change into manure and piling up it causes pollution. Recycling of it is possible and useful as well as combustion of it for steam and electricity can be done. Landfills are another threat to environment which needs to be managed properly. Among non-biodegradable plastic usage is more in advanced lifestyle, which have dangerous impact on ecosystem and human beings.

Keywords: *biodegradable, non-biodegradable, uses of biodegradable and non-biodegradable.*

Introduction:

Biodegradable waste is a type of waste which can be broken down, in a reasonable amount of time, into its base compounds by microorganisms and other living things, regardless of what those compounds may be. Biodegradable waste is animal and plant matter that breaks down naturally with exposure to microorganisms, heat and oxygen.

Recycling biodegradable waste into a nutrient-rich, usable material is often called "composting." composting requires to follow guidelines to create a substance that can later be added to soil to make it better for gardening or other plant growth.

Biodegradable waste can be commonly found in municipal solid waste (sometimes called biodegradable municipal waste, or BMW) in the absence of oxygen much of this waste will decay to methane by anaerobic digestion which is a threat to environment.

Non-biodegradable waste is those that cannot break down or degrade for many years. These are waste that cannot change into manure and they pile up causing pollution. Burning of these fuels causes more pollution in the environment. The non-biodegradable waste became useful when they can be recycled. So any non-biodegradable waste can be dumped in a recycling center and can be made useful for other things.

The waste like thin paper boards usually do not dissolve, they remain like debris is not affect by natural processes causing damages to environment. Non-biodegradable wastes are major concern to environmentalists and many are adapting to more eco-friendly lifestyle. Waste grows as the population increases. It is important to understand the effects the non-biodegradable waste on our planet. The non-biodegradable waste is discarded in the landfills will only accumulate.

List of Biodegradable Waste:

- Food and kitchen waste, green waste,
- Recycled material: Paper, glass, bottles, cans, metals, certain plastic, etc.
- Inert waste: construction and demolition waste, dirt, rocks, debris.
- Composite waste: waste clothing, tetra packs, waste plastics such as toys.
- Domestic Hazardous waste (also called “household hazardous waste”)
- Toxic waste: medication, e-waste, paints, chemicals, light bulbs, fluorescent tubes, spray cans, fertilizer and pesticides containers, batteries, shoe polish.

Uses of Biodegradable Waste:

Biodegradable waste can be used for composting or a resource for heat, electricity and fuel by means of incineration or aerobic digestion. Swiss kompogas and Danish ALKIN process are examples of anaerobic digestion of biodegradable waste. While incineration can recover the most energy produces electricity directly through combustion or produce a combustible fuel commodity, such as methane, methanol, ethanol or synthetic fuels. Anaerobic digestion plants retain the nutrients and compost for the soil and

still recover some of the contained energy in the form of biogas. Kompogas produced 27 million Kwh of electricity and biogas in 2009.

Biodegradation:

It is the chemical dissolution of materials by bacteria or other biological means. Although often conflated, biodegradable is distinct in meaning from compostable. While biodegradable simply means to be consumed by microorganisms and return to compounds found in nature, "compostable" makes the specific demand that the object break down in a compost pile. The term is often used in relation to ecology, waste management, biomedicine, and the natural environment (bioremediation) and is now commonly associated with environment friendly products that are capable of decomposing back into natural elements. Organic material can be degraded aerobically with oxygen, or anaerobically without oxygen. Bio surfactant, an extracellular surfactant secreted by microorganisms, enhances the biodegradation process.

Biodegradable matter is generally organic material, originating from living organisms, or artificial materials that are similar enough to plant and animal matter to be put to use by microorganisms. Some microorganisms have a naturally occurring, microbial catabolic diversity to degrade, transform or accumulate a huge range of compounds including hydrocarbons (e.g. oil), polychlorinated biphenyls (PCBs) , polyaromatic hydrocarbons (PAHs), pharmaceutical substances, radionuclides, pesticides, and metals. Decomposition of biodegradable substances may include both biological and abiotic steps. Products that contain biodegradable matter and non-biodegradable matter are often marketed as biodegradable.

Life Span of Material:

Just because an item is biodegradable does not mean that it will break down quickly. According to a chart from the Coral Reef Alliance, a banana peel degrades in two months, while notebook paper will break down in three months. Harder substances take longer. Soda cans can take up to 350 years, while the plastic rings that hold together a six-pack of those cans can take up to 450 years. Glass bottles and Styrofoam products might never

biodegrade. The danger is that products that do not biodegrade will continues to pile up over time, requiring more and more land devoted for holding waste.

Contents:

Approximated time for compounds to biodegrade in a marine environment

Product	**Time to Biodegrade**
Apple core	1-2 months
General paper	1-3 months
Paper towel	2-4 weeks
Card Board Box	2 months
Cotton cloth	5 months
Plastic coated milk carton	5 years
Wax coated milk carton	3 months
Tin cans	50-100 years
Aluminium cans	150-200 years
Plastic bags	10-20years
Soft plastic (bottle)	100 years
Hard plastic (bottle cap)	400 years

List of Non-Biodegradable:

- Plastic products like grocery bags, plastic bags, water bottles, etc.
- Metals, metal cans, tins, metal scraps, etc.
- Construction waste, rubber tires, man-made fibers like nylon etc.
- Computer hardware like glass, CDs, DVDs, Cellophane, processed woods, cable wires, Styrofoam etc.
- Electronic waste, e-waste, e-scrap, or Waste Electrical and Electronic Equipment (WEEE) describe loosely discarded, surplus, obsolete, or broken electrical or electronic devices. Some electronic scrap components, such as CRTs, contain contaminants such as lead, cadmium, beryllium, mercury, and brominated flame retardants.

Plastic:

Plastic pollution has become a global phenomenon across the globe and even to the most remote locations. Harmful chemicals contained in plastics are present in the bloodstream and tissues of almost each one of us. Plastic is not biodegradable. It only breaks down into smaller particle whereby its toxic chemicals are ingested by wildlife which we have also consumed.

Two classified plastic-related chemicals are of critical concern for human health: biphenyl-A or BPA and phthalates, an additive used in the synthesis of plastic. Experts explain that plastics are polymers- long chains of molecules usually made of carbon, hydrogen, oxygen and/or silicon, which are chemically bonded or polymerized. BPA is a basic building block of polycarbonate plastics, such as those used for bottled water, food packaging and other items. Since the

1940s, BPA has been recognized as an endocrine disrupting chemical that is said to affect normal hormonal function.

Aside from the health risks about BPA another fact is that other ingredients such as plasticizers are usually added to plastics. There potentially toxic components also leach out gradually for some time. Like for example, the most common is a chemical known as di-ethylhexyl phthalate or DEHP. In some products the chemical may go directly into the bloodstream which cannot detoxify. This means unhealthy exposure levels, and can indirectly impact in susceptible populations such as newborns; infants and pregnant or nursing mothers are particularly on a high risk for toxic exposure or passage of BPA and additives like DEHP.

Recycling:

Separate glass, plastic and metal from other non-biodegradable waste for recycling. Many urban and suburban areas have curbside recycling programs; if such a program is not available, take recyclable materials to the nearest collection facility for processing. Recycling saves space in landfills and reduces the amount of virgin materials that must be mined or manufactured to make new products, saving energy and reducing global climate change in the process.

Combustion:

Some non-biodegradable waste like used rubber tires and plastic cam be burned at combustion facilities. Most of these facilities use the heat generated by incineration to make energy in the form of steam or electricity, which reduces their demand for other nonrenewable resources, including coal and waste, mostly used tires. Combustion of municipal waste Landfills will reduces the volume of trash that ends up in landfills.

Landfills:

Landfills provide long-term storage for non-biodegradable waste. Ideally, landfills are carefully situated to prevent contamination from entering surrounding soil and water, and managed to reduce odor and pests as much as possible. Federal regulations require careful monitoring in and around the site.

Hazards Waste Disposal:

Some products like motor oil, pesticides, batteries and paint are potentially hazardous to sanitation workers and the general population as a whole. They are also more dangerous to the environment then inert materials like plastic or rubber. Many communities offer special collection and disposal programs to deal with household hazardous waste as safely as possible. In areas with no such programs, it's legal to dispose of house hold hazardous waste in the trash. Follow any special disposal instructions listed on the original container. Before doing so, however, contact the manufacturer or retailer of the material you need to dispose of to ask if they accept old materials for

Pros and Cons:

Biodegradable products or materials are naturally broken down by biological agents, such as bacteria and fungi, into raw materials. The goal of supplementing biodegradable products in everyday life is to recycle our natural resources and keep the earth clean and free of growing landfills. According to the environment today, not all products that claim to be biodegradable are safe or effective. Some products may produce harmful toxins as they break down while others can take more than 30years to break down, or cannot break down in landfills. Read the product labels and

reviews when shopping for biodegradable items to add to your homes, office etc.

Compost:

All biodegradable waste reduces itself over time to compost, an organic natural material. This is because all biodegradable waste comes originally from natural products, such as trees and plants, whereas non-biodegradable waste, including many plastic is manmade. This compost can then be used to help plants grow to make more biodegradable materials.

Reduced Landfills:

Non-biodegradable waste has to be disposed of in some way. A lot of it is recycled and reused, but the rest goes into landfill sites or garbage dumps. Landfills take up a large amount of space and, as the materials contained will not decompose, cannot be moved. In addition, the waste contained can pollute the local area as chemicals and other toxins leak from the waste. Reducing landfill sites will help clean up the environment and save on land space.

Environmental Impact:

A more serious problem with non-biodegradable waste is the garbage that does not end up in the garbage can but is instead dropped in the street, left on the beach or generally discarded. This material is harmful to plant and animals. The waste pollutes the soil and is hazardous to animals that eat or get trapped in it.

Waste:

A major problem with biodegradable waste is that is not disposed of properly. It is often not composted and is put out with the regular garbage when it needs to be treated separately. Eco friendly waste can be used to make compost for agriculture or for biofuels, but instead it ends up in landfill sites with non-biodegradable waste.

Conclusion:

Using more biodegradable materials will reduce the need for landfill sites. A key issue in the environmentalism argument is the reduction in non-biodegradable waste, or garbage that will not decompose. Instead there is a large push toward making as many products and packages as possible

out of biodegradable products to reduce the strain on landfills, reduce pollution and clean up the environment. The benefits of biodegradable waste are numerous.

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