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Plastic Backbone of Modern Civilization

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ABSTRACT

Plastic, the backbone of modern civilization but the chief root of all Environmental problems pose health hazards, is a non-biodegradable Polymer. Its misuse is also responsible for blocking the drainage causes so many diseases & affect the fertility of soil2 also. Plastic is the potential sources of highly toxic dioxins, on ignition, a powerful reproductive hormones disrupter. The suitably controlled incineration of plastic wastes are the best method for minimizing hazardous nature but the toxic emissions remain unsolved, which affect the Ecosystem. Plastic waste is recycled for good road construction.

Keywords: Environment, Health Hazard, Non-Biodegradable, Polymer, Potential source, Dioxin, Reproductive, Hormone Ecosystem & Recycle.

Introduction:

Nature is the first precious creation of Almighty & the man, the second but the best boon. Plastics are one of the most important petrochemical based materials and these are used in every aspect of life. Conventional plastics are imposing very serious threats to our environment. Today the life cannot be thought without plastics. Although plastics collection for recycling is widely carried only a small proportion is actually remade into materials. The majority is incinerated to reclaim energy (Panda, 2010; Yu, 2006). There are many other reasons that motivate industries and researchers to find alternatives to nonrenewable resources; however, it is noted that all replacements for current plastics should meet some important conditions, they need to be low cost, renewable, sustainable and biodegradable.The relation between them is profound but everlasting. If this equilibrium disturbs, then the hazardous Environmental problems arise. Plastic is a man-made, non-biodegradable synthetic macro molecular polymer of petrochemical hydrocarbons. This polymer is found every where in today life & will remain undegraded in the environment for a long period unlike foods & paper wastes, which is too much useful for human life but it has an adverse effect on the environment. Now –a-days plastic pollution is globalised. It cannot be neglected practically. Owing to ecological imbalances, we are facing diversified environmental problems of the tolerable limits of the ecosystem has crossed & it is now hard to return it original equilibrium.

The new discovery of the last century is the plastic worst open a new vista for chemists, industrialists as well is Indian people vis-à-vis Universe. It is popularly known for its durability, flexibility & economically cheap. Plastic was a post war phenomenon for India, although the first plastic product "CELLULOID" was known since 1882. Up to 1940, the global production of it was about four lac tones, but now it crosses the data of 100 million tones1 (et al 1993). Recently, the scope of plastic has spread over each & every wing of scientific branches. As plastics are foes of Environment, the plastic industries promote a new "friendly Environmental" product, they deliberately ignore the highly toxic nature of plastic production, whether the product is known as "degradable", "recyclable" or any other "green marketing" catch word.

Objectives

1. To compare the effect of green additive polymers on different properties such as weight loss, tensile strength and elongation at various intervals of time buried in soil.

2. To investigate the effect of different concentrations of mucilage and starch on the

biodegradability of polyethylene.

3. To propose mechanism of reaction.

Colours & their effects :

Plastic of different metallic salts indicate different colors such as Barium-green, lead-black, chromium-red plastics. Unknowingly, if we keep rasmalai, curd, fruits, vegetables etc. into them, then these are contaminated. These colours containing organic dyes are not to food grade & are extremely harmful causing food poisoning commits renal failure & even cancer too.

Uses:

There are several commercial applications of non-degradable plastics such as gelling, water-bindings, viscosity enhancing properties alginate is widely used in foods and in textile printing, welding rods; for medical & engineering purposes in encapsulation of cells, coloured bottles etc. It is used for packing, protecting, serving & even disposal of all kinds of consumer goods. Now, plastics most commonly is applied in using for land fill and finally reused their wastes in the road construction on recycling them.

The Management of disposed plastics:

Disposal of plastic is a myth. It defies any kind of attempt at disposal - be it through recycling, burning or land filling.

The major problem of plastic waste collection is done through "organized sectors i.e. rag pickers or kawariwala" a source of their livelihood. The above process is carried out through unscientific method, causes "Environmental pollution as well Eye sore" that destabilize the Ecological system.

Environmental pollution & health hazards:

Plastic is one of the most toxic pollution in developing scientific era. It plays the villainic role from its start & imposes serious threat for all earthly living creatures. Chemicals like benzene, vinyl chloride i.e. plastics are responsible for an array of maladies ranging from birth defects to cancer, damage the nerves, immune systems & also adversely affect blood & kidneys i.e. even to death.

The misuse of plastic wastes frequently log the drains, as a result back flow by which so many diseases break out through accumulating of sewage. These wastes have been identified as bloated receptacles of stagnant water enough to breed mosquitoes. The land gets littered through plastic garbage presenting an ugly & unhygienic scene. This littering also reduces the rate of rainwater percolating, resulting in lowering of water level in cities.

Consumption of plastic waters obstruct straying animals intestines leading to painful ultimately death. It pollutes the soil to a large extent, which alters the chemical & biological system. As a result, hazardous chemical can enter into human food chain, disturbs the biochemical process & finally lead to serious effect on living organism.

The liberalization makes Indian pious rivers the Ganges, Yamuna & other down stream, receive countless poly bags daily with worshiping goods offering to the Almighty. It has a plethora of harmful effect on human life as well aquatic one.

The children face so many problems in the long run such as carcinoma impotency, skin diseases etc on chewing/sucking plastic made toys.When plastic wastes consigned to incinerate, their toxic emission contain highly concentrated HCl, Cl2, HCN, CO, CO2, NOx, dioxins & other toxics can cause respiratory bronchial problems, skin allergies, eye infections, nausea, congaing, vomiting, reproductively disorders, even multi cancers. Toxins also releases. Work at depletion of the Ozone Layer. Dioxin, the most toxic releases a powerful hormone disrupter damages the fertility of reproduction in human & animals. The risk of getting multicancer from dioxin is increasing on. These highly toxic gases affect human health, plant kingdom, atmosphere destroying Ecosystem. The synthesis of biodegradable and useful polymers like BIOPOL is under investigation for the removal of plastic hazards.

Control of plastic pollutions:

The recyclisation of plastic waste is the best

method for controlling the hazardous nature of plastics & reused in road construction – on mixing "BITUMEN" for higher softening point & durability polymer coated indicates higher marshall value .

To control the toxic emissions during incineration ,a highly encouraging & appreciable effort has been done by G.H.Raisoni College of Engineering ,Nagpur3 to convert plastic wastes & scraps into liquid hydrocarbons.

Band to use plastics :

If a ban is put on the use of plastics emotionally, the real price would be much more high, the chances of contamination much lower. The risks of the family health & safety would increase and above all environmental burden would be manifold.In soil the blended plastics degraded under the influence of soil microorganisms. Blending of hibiscus mucilage and potato starch with synthetic plastics found a possible way to make it biodegradable. This thesis describes studies on biodegradation of LDPE/ mucilage and LDPE/potato starch blends. It was illustrated that the blending of hibiscus mucilage and potato starch accelerated the biodegradation of material in natural environment and thus reduce the life span of synthetic LDPE. The loss of mass of hibiscus mucilage and LDPE blend was found 25.8 % after six months of soil burial, where as the blend of potato starch with LDPE was found 21.42 %. Tensile strength of mucilage blend was decreased by 12.1 %, whereas of starch blend was decreased by 11.29% and elongation is reduced by 54.1 % and 28.17 % respectively after six months of soil burial. The density is decreased by 14.3 % and 8.67 % for mucilage and starch blends respectively after six months of soil burial. Further the crystallinity is deviated by 20.78% and 12.64 % for mucilage and starch blends respectively. All the above variations shown that the biodegradation occurred in soil by microorganisms, which were present in the soil. From the above results it has also been observed that hibiscus mucilage blend was degraded more than the potato starch blend under the same conditions of disposal/burial.

Conclusion :

On blending of hibiscus mucilage the melting points decreased by about 10C where as crystallization temperature increased by about 30C of compounded polymers. The crystallinity decreased with the increase in concentrations of hibiscus mucilage. After six months of soil burial negligible change in crystallinity of virgin LDPE observed, where as distinguishable decrease in degree of crystallinity of hibiscus mucilage compound was observed. On addition of potato starch almost no change observed in the melting peaks as well as in crystallization peaks of compounded materials. The crystallinity decreased with the increase of potato starch concentrations. After six months of soil burial negligible change in crystallinity of virgin LDPE observed, where as markable decrease in crystallinity of potato starch compound was observed. As hardness and strength decrease with decreasing crystallinity.

Indeed, the material examined underwent enhanced biodegradation, but the course of concentrations, condition and duration used to increase the rate of biodegradation, is totally different from the previously used concentrations, condition and duration. Here we can say that hibiscus mucilage is a very good enhancer, initiator and propagator for the biodegradation of plastics.Plastic waste has a hidden source of potential energy along with alternative raw materials of recycling provides net-environmental & economic benefits. Plastic goods enhance the life style & standard of mankind economically. Within the mystery or history of plastics three R's i.e. Reuse, Reduce & Recycle notice us for three considerations to ensure the best waste management option for net-environmental damage ,gain , & economic sense. I would like to Suqqest to Govt. for states as well as Center to adopt a policy to make cities pollution free to save the environment for mankind & other living beings along with plant kingdom too, banning the production of cheap quality plastic materials for common use. Therefore, it is our turn to stop the production of such type of plastics & we would generate contemplating bio-degradable plastic, which will arrange a new market very soon.

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