Alternative Solutions Over Plastics.

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***Abstract* — Businesses and consumers are emphasizing the importance of going green these days. Much effort has been dedicated to preserving the environment following the awareness of the amount of nonessential plastic waste produced from packaging goods. This paper investigates the application of edible packaging in the food packaging industry and evaluates the strengths, weakness, opportunities and threats (SWOT), segmentation, target market, positioning, differentiation and green marketing mix as a green marketing strategy.**

***Key Words* — Edible Film, Eco-friendly, Green Marketing, Edible Food Packaging.**

I. INTRODUCTION

In an effort to combat plastic pollution, Indian startup EnviGreen has come up with a combination of natural starch and vegetable oils that looks and feels just like plastic, but is 100 percent organic, biodegradable and eco-friendly. You can even dispose of such a "plastic" bag by eating it.

EnviGreen founder Ashwath Hedge came up with the idea for these revolutionary bags after seeing people struggling to find alternatives to plastic bags, following bans imposed by several Indian cities. "People were concerned about how they would carry products from the market now. Everyone cannot afford a bag worth Rs. 5 or Rs. 15 to carry a kilogram of sugar," he told The Better India. So the 25-year-old decided to work on something that would solve this problem while being environment-friendly.

II. PLASTICS.

Green plastics made from naturally occurring renewable resources are being widely publicized as a possible solution for concerns regarding the use of traditional petroleum based plastics. Bio plastics materials such as poly lactic acid (PLA) are often projected as replacement for traditionally made petroleum based plastics such as polyethylene terephthalate (PETE), polystyrene (PS), polypropylene (PP) in commodities application. The history of plastics made from non-petroleum resources goes back to 1868 when John W. Hyatt invented Celluloid . Celluloid was made from wood pulp, plant fibers (cellulose), or cotton fibers treated with nitrogen and camphor. Soon cellophane and rayon were invented by treating cellulose with other acids and solvents. In 1907 with the invention of first petroleum based plastics Phenol Formaldehyde (Bakelite) by Leo Bakeland, the history of bio based plastics took a twist. Since then bio plastics started merely getting sidetracked by petroleum based plastics. In 1920″s Henry Ford, in an effort to find applications for agricultural surplus, experimented with manufacturing automobile parts from plastics made out of Soya beans . The resin for soy plastics were not completely plant based whereas part of it was composed of phenol formaldehyde. Ford″s soy plastic idea did not survive due to variety of reasons including lack of molding technology for manufacturability of complex parts and noticeable formaldehyde odor from the parts . After the industrial revolution following Worlds War II the only non petroleum based plastic which was steadily growing in consumption was cellophane.

III. EFFECTS OF PLASTIC POLLUTION

It seems rather obvious that this amount of a material that isn″t meant to break down can wreak havoc on natural environments, leading to long-term issues for plants, animals, and people. Some of the major long-term effects of plastic pollution are:

It Upsets the Food Chain

Because it comes in sizes large and small, polluting plastics even affect the world″s tiniest organisms such as plankton. When these organisms become poisoned due to plastic ingestion, this causes problems for the larger animals that depend on them for food. This can cause a whole slew of problems, each step further along the food chain. Plus, it means that plastic are present in the fish that many people eat everyday.

Groundwater Pollution

Water conservation is already a concern in places ranging from California to parts of India, but the world″s water is in great danger because of leaking plastics and waste. If you″ve ever seen a garbage dump, imagine what happens every time it rains – then imagine that being in your drinking water.

Groundwater and reservoirs are susceptible to leaking environmental toxins.

Most of the litter and pollution affecting the world"s oceans also derives from plastics. This has had terrible consequences on many marine species, which can lead to consequences for those that eat fish and marine life for nutrients – including people.

Land Pollution

When plastic is dumped in landfills, it interacts with water and form hazardous chemicals. When these chemicals seep underground, they degrade the water quality. Wind carries and deposits plastic from one place to another, increasing the land litter. It can also get stuck on poles, traffic lights, trees, fences, tower etc. and animals that may come in the vicinity and might suffocate them to death.

Air Pollution

Burning of plastic in the open air, leads to environmental pollution due to the release of poisonous chemicals. The polluted air when inhaled by humans and animals affect their health and can cause respiratory problems.

It Kills Animals

Despite countless TV ads over the years showing ducks or dolphins trapped in six-ring plastic can holders, these items are still used and discarded en masse each day. Whether because the mass of plastic has displaced animals or the related toxins have poisoned them, plastic pollution does a lot of damage to the world"s ecosystems.

It is Poisonous

Man artificially makes plastic by using a number of toxic chemicals. Therefore, use of and exposure to plastics has been linked to a number of health concerns affecting people around the world. The processes of making, storing, disposing of, and just being around plastics can be extremely harmful to living things.

It is Expensive

It costs millions of dollars each year to clean affected areas after exposure, not to mention the loss of life to plants, animals, and people. As land becomes more valuable, just finding a place to put garbage is becoming a problem in many parts of the world.

IV. SOLUTION TO PLASTIC POLLUTION

The reality is that the only way this problem can be addressed is by individuals and companies around the world agreeing to implement practices that reduce waste on every level. The top tips for reducing plastic waste are:

Shop Friendly

Plastic bags were once a modern convenience but can be efficiently replaced by reusable bags, many of which fold up compactly in order to be portable. Just think about how many bags you typically carry out of a grocery store, and multiply that by the number of times you grocery shop. That"s a lot of plastic! Carry a bag and always reuse plastic bags as much as possible if you have them.

Get Rid of Bottled Water

People are meant to drink lots of water each day, and plastic water bottles have become a great way to stay hydrated throughout the day. However, most of these are only recommended for single use, and that means that every time someone finishes a bottle it goes into the trash. Many companies now sell reusable water bottles as a substitute, reducing plastic waste and exposure to leaking bottles.

Forget to-go Containers

You would be surprised at how much plastic is involved in the making and packaging of food containers. Think the coffee shop"s drink cup is paper? It"s likely lined with plastic for insulation (pour a cup of coffee on some cardboard and see what happens).

Plastic food containers, lids, and utensils are all easily replaced by reusable containers, which will cut down significantly on even a single meal"s waste.

Educate Businesses

Speak to local restaurants and businesses about options that they can switch to for packaging, storing, and bagging items. Many companies are starting to come up with excellent low-cost replacements, such as bamboo utensils in place of plastic ones.

Get Involved

Speak to lawmakers and get involved with government on any level, and you"ll see how many special interest groups have made it so that we are dependent on plastic without needing to be. Encourage development of items, and propose alternatives when applicable.

Recycle Everything

Try and select items that come in non-plastic recycled and recyclable packaging, to do your best to properly handle items that can"t be reused. Check everything before you put it in the trash, as more and more items are able to be recycled these days.

V. EDIBLE FILM

Edible film is defined as thin, continuous or unbroken sheets made up of edible substances. They are excellent alternative to conventional plastic or even biodegradable plastic in different industries. Natural polymers like lipids and protein are used to produce the environmental friendly edible films. They can be made of soy or milk protein molecules too . These films can be placed in between food element, act as a food wrapper and a pocket to hold food. Besides, they prevent oxygen absorption, offer physical protection and act as a substitute for plastics in wrapping materials. For a broader variety of application in the industries, antioxidant and flavors can be added .

VI.ENVIGREEN BIOTECH

Envigreen Biotech India Private Ltd produces India"s first 100% biodegradable substitute to plastics. The idea of creating these products took shape in 2012 with the support of scientists and environmentalists across the world. Inspired by „Swach Bharat", an initiative taken by the Honourable Prime Minister of India Narendra Modi, Envigreen is going to hit the Indian market this coming year.

Envigreen is not just a brand, it is a Green Technology. Envigreen"s products are made from natural starch, vegetable oil derivatives and vegetable waste. These products are non-toxic to the environment, animals and plants. Evergreen contains no conventional plastics at all.

Envigreen is on a mission to make the world plastic free and you can join us as a distributor to reach our goals. With Operations in the Middle East and South-East Asian countries, Envigreen operates from its corporate office in Bengaluru with global ambitions.

EnviGreen Biotech is the developer of a revolutionary material, possessing all the functionality and simplicity of conventional plastic, with none of its harmful effects to the environment – Unplastic.

Made from natural starch and vegetable oil derivatives, EnviGreen"s Unplastic is non-toxic to the environment and poses no threat of harm to Mother Nature. As it contains no conventional plastic at all, Unplastic is fully bio-degradable and does not endanger our plants and animals in the same way that regular plastic does.

The material has a wide variety of mechanical uses that allow it to replace standard plastic components. It dissipates electricity, is antistatic in nature and acts as a good oxygen barrier. This means that it can be utilised in wrapping of electronics, is dust-repellant and can help in corrosion prevention. The material also provides good resistance to oil and grease.

Unplastic does not harm the environment in any way as it naturally decomposes over time, or when submerged in water. It uses printing inks that are alcohol-based and free from heavy metals. The material is currently undergoing the EN 13432 Biodegradable Test, the industrial standard for compostable Bioplastics, after successfully passing an internal Compost Test.

VII. MATERIAL USED

These „Plastic" Bags Are Actually Made of Potato & Tapioca – and Can Become Animal Food on Disposal!
After researching the problem for about four years, Ashwath founded EnviGreen – a company that produces 100% organic, biodegradable, and eco-friendly bags.
They look like plastic bags but are made of materials like natural starch and vegetable oil derivatives. If placed in a glass of water at normal temperature, an EnviGreen bag dissolves in a day. And when placed in a glass of boiling water, it dissolved in just 15 seconds! These bags take less than 180 days to biodegrade naturally once discarded. So users can throw them away without worrying about harming the environment. The bags are even edible and will cause no harm to animals if ingested. The company uses 12 ingredients, including potato, tapioca, corn, natural starch, vegetable oil, banana, and flower oil.

VIII. IMPLEMENTATION

All raw materials are first converted into liquid form and then taken through a six-step procedure before the end product is ready.

"We don"t use any chemicals at all. Even the paint used for printing on the bags is natural and organic," says Ashwath. He adds that the cost of one EnviGreen bag is about 35% more than that of a plastic bag, but 500% less than that of a cloth bag. "To give you a rough idea, an

EnviGreen bag measuring 13 inches by 16 inches costs Rs. 3, while a plastic bag with the same dimensions will cost Rs. 2".

The Karnataka State Pollution Control Board (KSPCB), which has approved the use of these bags, conducted several tests to ensure there were no plastic elements in them. The tests included placing a hot iron on a small piece of EnviGreen sheet. The sheet neither melts nor sticks to the hot iron surface. The bags also don"t melt, drip, or release any toxic fumes when burnt, unlike conventional plastic bags. They have been tested by the Central Institute of Plastic Engineering and Sriram Institute for Industrial Research as well.

To prove his point, Ashwath has even consumed a bag after boiling it in water to show that it is edible.

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With his team of 60 people, Ashwath has now set up a factory in Bangalore that produces 1,000 metric tones of bags every month. "We had this unique idea of empowering farmers in rural Karnataka by sourcing all our raw materials from them. We are also planning to distribute seeds to help them produce the amount of materials required to make the bags," he says.

Currently, the company has not started sales in India, but the bags are already available in Qatar and Abu Dhabi.

"Just the city of Bangalore consumes over 30,000 metric tonnes of plastic bags every month. So we want to set up enough manufacturing facilities before we start distributing to individual customers and local shop owners. We have started supplying to corporate retail chains like Metro and Reliance, which will start using the bags from December this year," says Ashwath.

According to the Minister of State for Environment, Forest and Climate Change, 15,000 tonnes of plastic waste is generated in India every day, out of which 9,000 tonnes is collected and processed, while 6,000 tonnes is not collected.

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Once available for use, EnviGreen bags will not just help ease this problem but also help many consumers struggling to find a balance between their concern for the environment and ways of making things more comfortable in their daily lives.

CONCLUSION

Here, we can conclude that envigreen plastic products are very benificial as is does not cause any harm to any creature surviving over this planet. As per industrial and business point of view this product should be implemented throughout the country and lets make the nation pollution free.GO GREEN, YOU GRIN.

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