



Plastic-The Malleable Gold and the Need of Paradigm Shift

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Abstract

Plastic which has become an indispensable part of our life on one side it has simplified our living by providing numerous solutions without which we cannot live an easier life, has also saved the cost, materials, energy and other factors of production which would have been used to serve the same purpose which plastic has served (though not as efficiently as plastic). Here if we closely observe the so called and much hyped hue and cry made regarding the menace of the trash generated out of plastic and the damage it is being done by it to the environment i.e. to land, soil and water, the use of plastic is no way connected to this menace it only the after use treatment or disposing of the plastic and not the use of it. The need of the hour is the paradigm shift in this as we are wrong in our approach towards plastic. We need to find a solution for the after use rather than imposing a ban on its use.

Keywords: Invention, usage, necessity, renewability, environment.

Introduction

Welcome to Plastic Age, Human civilizations has witnessed Stone Age, Copper Age, Iron Age and now Plastic Age. If we closely study the respective age one thing is very common i.e. the usage of a particular thing gave the name to that age. Nevertheless to say the all the things used are found in the crest of the Earth. The Necessity which is the mother of Invention led to discovery of them in their age one after the other. Each of them had their own pros and cons and the cons of each of them led to the shift in usage of one over the other. The beauty is that all of them are still available for our usage but our liking or preference of one over the other has resulted in exploring it. Plastic is a 21ST century invention whereas all the others have been a usage discovery. Let's no get into the difference between Discovery and Invention, but this invention has in its true sense has certainly changed the way we think, walk, eat, sleep, communicate, transport, travel, entertain, play, work, enjoy life etc. and what not of our life or activities of our lives. Before we move further let's know a bit of this lovely raw material called as Plastic which has become an indispensable part of our life.

The use of the word plastics as a collective noun, however, refers not so much to the traditional materials employed in these crafts as to new substances produced by chemical reactions and molded or pressed to take a permanent rigid shape. The first such material to be manufactured was Parkesine, developed by the British inventor Alexander Parkes. Parkesine, made from a mixture of chloroform and castor oil, was "a substance hard as horn, but as flexible

as leather, capable of being cast or stamped, painted, dyed or carved." The words are from a guide to the International Exhibition of 1862 in London, at which Parkesine won a bronze medal for its inventor ^[1]. Since then there have been many modifications in the composition of Plastic which made it better over its predecessor. This attribute is very low in other metals or things as compared to plastic.

Plastic is material consisting of any of a wide range of synthetic or semi-synthetic organic compounds that are malleable and so can be molded into solid objects ^[2]. Plastic, the 21ST century invention emerged as a substitute to almost most of the traditional metals. The use of plastic has its own advantages to name a few its Cost effective, Lighter in weight, Huge varieties to explore, Easily malleable, Customizable, Appeal ability, Reusable, Handy, Durability, Everlasting, Easily destroyable, User friendly, accessible to all, availability in abundance, offers Comforts. And the list goes on and it is difficult to even think in the present day to world to impose a blanket ban on its use. This is because of the fact that the use of plastic is much more than the abuse of it. The Pellet bullets is one of the best example of it as what else do we need to say about the advantages of it. It is a life saver as its hit doesn't cost a life and also a deterrent to the agitators. The use of plastic has been a boon to the medical industry right from disposable vials to packing of medicines and what not. Due to their low cost, ease of manufacture, versatility, and imperviousness to water, plastics are used in a multitude of products of different scale, including paper clips and spacecraft.

Plastics aren't simply one material made the same way every time. Although plastics can be broken down into broad types or categories, there actually are thousands of different plastics, each with its own composition and characteristics^[3]. The utility and convenience in use of plastic is such that it is impossible to impose a blanket ban on the use of plastic. Plastic unlike other is abundantly available and consumes less power and efforts to produce unlike other industrial metals, saving on power and also saving on Carbon credits which is a win-win situation for us. The use of plastic in automobiles has reduced the weight of the vehicle by 30% thereby increasing on fuel efficiency which is again leading to reduced oil import bill apart from providing clean air also. Replacing conventional materials used for common containers and packaging with plastics "resulted in an 80% reduced energy demand and a 130% reduced global warming potential impact^[4].

Plastic has a multidimensional and multiple uses abilities. It has both industrial and personal uses. It is a boon for the packaging industry as without the use of plastic in packing of the products and produce for a fraction of price when compared to other raw materials. "Plastic packaging also conserves energy and natural resources compared to its alternatives. Specifically it would require 1.5 times more aluminum, 4 times more steel, and 20 times more glass than plastic to carry the same volume of a beverage." It improves the visibility, durability, presentation, enhances beauty of the goods. The benefits of the plastics are such that as of now there is no alternatives or substitutes to it available at the same price and of same or even offering utility closer to it. And it's likely that these numbers will continue to improve as advances in plastics continue, in particular the ongoing reduction in the weight of plastics needed for certain applications.

Good and bad are the two sides of a thing if we take one side the other side automatically follows with us, whether we accept it or not we have to take both. The success and dominance of plastics starting in the early 20th century led to environmental concerns regarding its slow decomposition rate after being discarded as trash due to its composition of large molecules. Toward the end of the century, one approach to this problem was met with wide efforts toward recycling.

We have now come across a word called as "Trash" the meaning of it as per Collins dictionary is 'substance consisting of unwanted things or waste material.' According to a new study by researchers at the Earth Engineering Center at City College of New York, sometime around the late 1990s we began to see a decrease in the rate at which we generate waste compared to economic growth. Typically, as Gross Domestic Product (GDP) increases, the amount of trash increases along with it, at about the same rate. The researchers note that both GDP and waste generation tracked each other from 1960 on, as expected, until the late 1990's. Then, as GDP continued to climb, waste generation began to climb more slowly.

Despite occasional downturns in the economy, since 1960 the U.S. standard of living, GDP, and personal consumption have climbed relentlessly. Along with our production of trash. Conventional wisdom at the time said that our garbage crisis was being caused in large part due to the rapid growth of plastics, particularly plastic packaging and "over-packaging." The conventional wisdom, still assumed today, is that plastics create more waste than alternatives and result in a glut of new and unnecessary waste. In other words, plastics caused our garbage crisis and continue to exacerbate the problem today.

As noted, the researchers look at economic growth and consumption and compare them to the growth in trash. They use data from studies that measure waste generation slightly differently to account for variations in methodologies. Then they plot the findings on charts, where GDP shows its inexorable march higher, but waste doesn't keep pace. In fact, the charts show that the waste generation rate has flattened. It's no longer growing as the economy continues to increase its output.

Then the researchers look for reasons why. They examine the makeup of "municipal solid waste" (MSW) from 1960 to the mid-2010s. As a percentage of MSW, every traditional material declined over this time while plastics increased. At first this may seem to correspond with conventional wisdom. "See plastics are causing our garbage crisis!" But remember: economic growth is far outpacing waste generation, which is a very positive trend for our environment. Something must be "decoupling" the growth in GDP from the growth in waste, leading to less stress on the environment.

The answer lies in the nature of plastics: lightweight yet strong. We may be making more products and packaging year after year, but the products and packaging typically are lighter and use less material. Less material results in less waste in the first place, which leads to a slowdown in waste generated. As plastics replaced heavier materials, we were able produce more stuff without producing the same amount of waste.

There are numerous examples. For example, if we note that plastics used in containers and packaging weigh a quarter of the materials they replaced. That's incredible. While still delivering the same goods, plastics reduce material use by four times! It also develop scenarios in which plastics have not replaced traditional materials over time to see what impact that would have on waste generation.

"To understand the impact of plastics on MSW, this study quantitatively analyzed hypothetical scenarios in which plastic was removed from the waste stream and was substituted with glass, metal and other materials in its product applications. For US packaging, the combined weight of alternative packaging that would be needed to substitute US plastic packaging is about 4.5 times more than the weight of the plastic packaging that is replaced. For all other product applications, the plastics material substitution ratio is 3.2, meaning that it would require 3.2 times more material by mass for the same product if plastic was replaced. This analysis demonstrates that if glass, metal and other materials were not substituted by plastics, MSW generation would remain coupled to (personal consumption) growth." This obviously runs counter to conventional wisdom^[5].

Since plastics used in packaging form a highly visible part (approximately 20 percent by volume but less than 10 percent by weight) of the waste stream, most recycling efforts have focused on containers. Almost all bottles, food trays, cups, and dishes made of the major commodity plastics now bear an identifying number enclosed in a triangle together with an abbreviation. In addition to such labeling, in many localities consumers are encouraged to return empty beverage containers to the place of purchase by being required to pay a deposit on each unit at the time of purchase. This system helps to solve two of the major problems associated with economical recycling, since the consumer seeking return of the deposit does the sorting and the stores gather the plastics into central locations. An added attraction of deposit laws is a notable decrease in roadside litter. However, while such measures have helped to raise dramatically the recycling rate of plastic bottles-especially those made of polyethylene

terephthalate (PET) and high-density polyethylene (HDPE)-less than 5 percent of all plastic products are recycled after first use. (On the other hand, most plastics are used in long-term applications such as construction, appliances, and home furnishings, for which efficient recycling is difficult) [6]. In most plastic recycling operations, the first step after sorting is to chop and grind the plastic into chips, which are easier to clean and handle in subsequent steps making it available for reuse.

Conclusion

Hence it would be apt to conclude that Plastic which has become an indispensable part of our life on one side it has simplified our living by providing numerous solutions without which we cannot live an easier life, has also saved the cost, materials, energy and other factors of production which would have been used to serve the same purpose which plastic has served (though not as efficiently as plastic). Here if we closely observe the so called and much hyped hue and cry made regarding the menace of the trash generated out of plastic and the damage it is being done by the it to the environment i.e. to land, soil and water, the use of plastic is no way connected to this menace it only the after use treatment or disposing of the plastic and not the use of it. The need of the hour is the paradigm shift in this as we are wrong in our approach towards plastic. We need to find a solution for the after use rather than imposing a ban on its use.

A similar problem was also faced and resolved by us is regarding the biomedical waste. Bio-medical waste means “any solid and/or liquid waste including its container and any intermediate product, which is generated during the diagnosis, treatment or immunization of human beings or animals or research activities pertaining thereto or in the production or testing of biological or in health camps.

Biomedical waste poses hazard due to two principal reasons – the first is infectivity and other toxicity and plastic is bit different and better than this as its effective but is toxic [7]. When we have a legislation to deal with biomedical waste, so why not provide a concrete solution to the plastic menace also. To deal with bio medical waste an act was passed by the Ministry of Environment and Forests in 1986 & notified the Bio Medical Waste (Management and Handling) Rules in July 1998, it is the duty of every “occupier”, (in the case of AIIMS, the Director, AIIMS) i.e. a person who has the control over the institution or its premises, to take all steps to ensure that waste generated is handled without any adverse effect to human health and environment.

The biomedical waste management policy followed at AIIMS is as per the Biomedical Waste Management Rules 2016, notified by the Ministry of Environment, Forest and Climate Change, Government of India as per the gazette notification dated 28th March 2016. Prior to this notification, AIIMS had been following the Bio-medical Waste (Management & Handling) Rules 1998 notified by the same ministry. At present, the biomedical waste management at AIIMS has been outsourced to a common biomedical waste management facility, M/S Biotic Waste Solutions Pvt. Ltd [8].

A ban on single use plastic or multiuse plastic will not serve the purpose. Instead of it if we provide an effective mechanism as Plastic Disposing Units (PDU) in society which will melt, crush the plastic and an amount equivalent to the same if it can be credited to the linked bank account then there will not be any plastic to go in trash or in the crest of the mother earth, then there is no question of a plastic menace.

Isn't it wonderful.....

References

1. <https://www.britannica.com/technology/history-of-technology/Atomic-power#ref368073>
2. <https://en.wikipedia.org/wiki/Plastic>
3. <https://www.plasticsmakeitpossible.com/about-plastics/types-of-plastics/professor-plastics-how-many-types-of-plastics-are-there/>
4. <https://www.plasticsmakeitpossible.com/aboutplastics/wh-yarewecreatinglessgarbagestudypointstoplastics/>
5. <https://www.plasticsmakeitpossible.com/aboutplastics/wh-yarewecreatinglessgarbagestudypointstoplastics/>
6. <https://www.britannica.com/science/plastic/Recycling-and-resource-recovery>
7. <https://www.aiims.edu/en/departments-and-centers/central-facilities/265-biomedical/7346-bio-medical-waste-management.html>
8. <http://vikaspedia.in/energy/environment/waste-management/bio-medical-waste-management/what-is-bio-medical-waste.>