



Newsletter

Voice of Environment

(Organization for Clean, Green & Sustainable Environment)

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Waste Management



Voice of Environment Newsletter

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FROM THE EDITORIAL DESK

Gung Ho!

It is very heartening to realize that the third issue of **'Voice of Environment'** Newsletter is seeing the light of the day. We feel elated to present before you this issue. The main theme of this newsletter revolves around pertinent environmental problems and search for sustainable solutions to the problems in the long run. The authors of the different issues come from interdisciplinary backgrounds with prolific academic profile. The entire globe is under the immediate threat of climate change, one of the greatest problems of this century. Shrinking forests, increasing population, skyrocketing pollution, erratic weather patterns are creating havoc everywhere across the planet. This is the time to be very worried about our Mother Earth and about our very existence on this planet. Extreme climate events are taking its toll on the global population and economy at large. This is the time to bring out environmental awareness and do every bit of our local actions for a sustainable future. Small sustainable local actions can result in positive actions on a global scale. This Newsletter would also contribute in its' own way to develop environmental consciousness among people across every social strata. We thank all the people who were directly and indirectly involved in the conceptualization and publication of this Newsletter. They are friends in need. We sincerely hope that our humble effort would bring smiles in the face of countless readers. We as editors of this Newsletter anticipate feedback from all of our readers. There would be a separate section 'Letters to the Editor' from this issue where comments and suggestions for the betterment of this Newsletter are invited. We also propose to begin a separate section 'On a lighter note' from next issue where one can send cartoons and photo-stories related to various environmental aspects. We would also start 'Case-Studies' and 'Success Stories' from the next issue. We invite such case studies and success stories from all of our readers. It is important to note that our readers are our backbones and their contributions and suggestions for the betterment of this Newsletter are supreme. **VOE** neither has specific financial base nor is eligible for any international funding. So, we look forward to economic contributions and other tangible or non-tangible support from our readers who want this Newsletter to remain active and running. All readers interested in personal donations/contributions in whatever way they can write to our email: voiceofenvironmentngo@gmail.com and CC to voeditor@gmail.com

Happy Reading!

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Date 13-11-2018

It gives me a great pleasure to know that the organization “Clean Green & Sustainable Environment” is publishing the news letter “Voice of Environment”. It is essential now that the voice of environment has to be heard by every human being. Environment has become a key word only in recent years because of rapid degradation of the environment only during the last 200 years. Rapid degradation of the environment is the outcome of uncontrolled population growth and industrialization. The exponentially growing population encroached upon the natural habitat converting them in to human controlled areas. Increasing demand of human combined with increasing population resulted in setting and mushrooming of industries with their ancillaries. The environment is degrading fast beyond the resilience ability of human being which is the range of the human being to adjust to the changing environment. Greedy polluters, for their little gains, suppress the voice of sufferers and put the life of others in jeopardy. It requires continuous voice to arouse the policy makers, listen to the public and take appropriate actions. Minamata disease of Japan and Silent Spring by Rachel Carson against pesticides, required much efforts to convince the policy makers to take action against pollution. Many organizations and individuals like Dr. Rajendra Singh for water are devoted to spread awareness on environment, however, we need many more environmental stewards to help educate the masses, and government, and develop technologies of sustainability. Man is the only organism who is so much selfish to think about the environment only in relation to his present or only up to his life time, disregarding the need for his future generation. All other organisms have developed mechanisms to keep their population size controlled and maintain a clean environment. Therefore raising voice is essential to bring mass awareness towards degrading environment. I appreciate most the efforts of the organization “Clean Green & Sustainable Environment” for publishing the newsletter “Voice of Environment”.

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It gives immense pleasure that, 'Voice of Environment' (VoE) is publishing yet another issue of newsletter addressing the current issues and scenarios in the field of environmental sciences. The earlier issues were huge success among the VoE followers and I am sure that, this issue also will be a handy resource for all of us.

As the group called VoE unfolded, took the toddler steps to a national gathering of environmental science degree holders and is surely poised to be of a crucial organization in the field of environment science in the coming years. For this to happen we all had to play our role in totality so that the organization can bring about the sea change and to overcome the hurdles/ bottlenecks in creating employment opportunities in the field of environmental sciences. I strongly feel that VoE should consider dedicating one of the future newsletter for this theme.

I wish all the success to the endeavours of VoE and hope to see this platform shaping into an interactive, goal oriented organization imparting the much needed guidance to environmental science degree holder in orienting themselves and to shape their career in the field of environmental sciences.

DEEPESH V

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MESSAGE

It is my immense pleasure to know that a news letter "Voice of Environment "is published to discuss on different environmental issues. Our environment is changing and degrading day by day with the tremendous growth of population. As the world population continues to grow geometrically, great pressure is being placed on arable land, water and environment to provide an adequate supply of resource while maintaining the integrity of our ecosystem which finally goes to deteriorate the environment along with time impacting human health. Generally it has been seen that people living in city areas are more vulnerable to health risks and diseases especially where population is high and urbanization is rapidly expanding in an unplanned manner.

Due to the haphazard growth of urban population, the people in urban areas are facing different environmental issues. Problems of solid waste disposal, urban water crisis, flashflood, air pollution, water pollution are present day's headache of the urban dweller. To mitigate the problems and to discuss the problems a platform is always necessary in regional or global level. I hope "Voice of Environment" will be an excellent platform where people can share the problems and find out the solution.

I want to congratulate the people related with Voice of Environment for taking the initiative to publish such type of good news letter which is really relevant in present day context. I hope this newsletter will be very useful for researchers, environmentalists and social activists related with environment to find out the data and materials on identifying and discovering the gaps in this research areas and environmental problems.

My very Best Wishes is always with this endeavor and other Voice of Environment activities to help build a sustainable environment. I hope Voice of Environment the Newsletter will be just an effort but a success story to bring true environment lovers together for a better world.

DR.LAKHIMI GOGOI

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Message

I have read out two successive newsletters Voice of Environment has so far published & it's quite significant that most of the writers have expertise hold on dealing with short, medium & long term environmental issues. I would like to thank the entire team of the organization designing, editing & publishing the newsletter. I am patiently waiting for the 3rd newsletter to be published which is almost on the verge of appearing before us. I pass my profound wish & congratulations to the whole team for their tremendous commitment to create meaningful applied awareness on prevailing environmental issues.

Kumar Deepak

**Environment Officer (Policy, Planning & Management), EcoDRR
United Nations Development Programme/UNDP
Duty Station: India**

CALL FROM THE WILD!

DEAR READERS,

"OUR OUTREACH TEAM NEEDS THE HELP OF READERS IN POPULARIZING SUBJECTS RELATED TO NATURE CONSERVATION OR CURRENT ENVIRONMENTAL ISSUES"

YOU CAN SHARE ANY NEWS, ARTICLES, PHOTOGRAPHS, CONFERENCE OR WORKSHOP ALERTS AND SEND IT DIRECTLY TO email: VOICEOFENVIRONMENTNGO@GMAIL.COM AND CC TO VOEEDITOR@GMAIL.COM

VOE PUBLISHES ISSUES FOUR TIMES A YEAR ON MARCH, JUNE, SEPTEMBER AND DECEMBER. SO THE NEWS TO BE PUBLISHED MUST REACH THE EDITORIAL TEAM WELL IN ADVANCE.

WE WOULD BE HAPPY TO HELP YOU!

THANK YOU.

TEAM VoE

(Together We Can and Will Make a Better Tomorrow!)

PLASTIC, A RESOURCE OR A WASTE

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Today we cannot think our life without plastic but the National Green Tribunal (NGT), India is serious to ban the plastic. The first synthetic plastic is said to be the Bakelite, invented by Baekeland in 1907. However, the word plastic was introduced some twenty years later in 1927. The invention of synthetic plastic was followed by synthesis of several other, large variety of plastics. Polyethylene terephthalate (PET or PETE), high-density polyethylene (HDPE), polyvinyl chloride (PVC), low-density polyethylene (LDPE) polypropylene (PP) and polystyrene (PS) are the major types of plastics with several other types, also. Plastic has slowly become an integral part of human requirements. Plastic carry bags, packaging material, bottles, cups and various other items have slowly replaced everything made of other materials. It is durable, easy to produce, lightweight, unbreakable, odourless and chemically resistant.

According to estimate of Central Pollution Control Board about 15,000 tons of plastic waste is released every day in the nation, annually 500 billion plastic bags are used worldwide. Production of plastic is increasing every year instead of degreasing. We have gone from 311 million tons in 2014 to an estimated 622 million tons in 20 years. This is equivalent to 622 billion kilos! The production of plastic has increased every year by 8 percent. Most of this is thrown into our environment finding its way in to water ways, ponds, rivers, landfills and ocean. One quarter of a ton of plastic enters our oceans every second. That is one full lorry every minute, 1,440 lorries every day and eight million tons every year. About 94% of all this plastic sinks to the seabed. If we continue in this way our oceans will have more plastic than fish by 2050. Plastic is one of the most abused contaminant of the environment, causing clogging of the water channels like waste water drains, water canals, death of cattle and aquatic organisms through chocking, deposits along the margin of water bodies like ponds and lakes, deposited on the land it forms impervious layer below the soil impeding the penetration of plant root and thus their growth as well as prevents rainwater percolation. Plastic wastes are taking up a heavy amount of space on our planet, the kind we can't afford to give up anymore without taking steps towards utility-focused recycling of these products.

Half life period of plastics varies from a few years to 450 to 800 years, where half life period is the time to degrade half of the given amount of the plastic.

Reduction to one-fourth of initial amount will require again equal to half life period equaling 900 to 1600 years and so on. Thus, complete degradation of plastic may require several thousands of years. This is the major concern against throwing the plastic in to the environment. On the other hand burning of the used plastic will release large amount of carbon as carbon di-oxide along with several other carbon compounds including some toxic and carcinogenic substances.

This is really a big problem. Ban plastic and it can severely affect the quality of life for a low-income family. If it is left as such it becomes an environmental problem and if it is destroyed through burning, it will increase carbon concentration in the atmosphere, contributing towards global warming. Thus, if the plastic could be used beneficially, stabilizing it for a long time, not only the environmental problem will be solved but will keep the carbon fixed and keep it away from the atmosphere for a very long time. A hope has emerged. Invention of **Rajagopalan Vasudevan** does not only give our planet a possibility of a greener future but a sustainable one as well. Vasudevan is actually a chemistry professor from Madurai who invented a groundbreaking technology that helps in creating roads by reusing plastic wastes. Pollutant free and completely eco-friendly, the invention has rapidly gained worldwide recognition and **Padma Shri** award in 2018. He believes that plastic is a gift of God and has the power to be a wonderful resource. A Govt. order in 1915 has made it mandatory for all road developers in the country to use waste plastic for road construction. The national government has since sanctioned at least 16,000 km across the country to be paved in the material as well. Of this, 8,600km have already been completed. VolkerWessels, a construction services firm, headquartered in Holland, also wants to roll out plastic roads. Popularly known as the Plastic Man of India, Vasudevan's technology is a perfect example of *Jugaad* or 'frugal innovation'. Where the government normally spends millions for building stable roads for the monsoon, this technology is not only cost efficient but also environment friendly. Additionally, the maintenance costs are also lower compared to other roads. These roads are then designed in a manner that they can accommodate pipelines inside them as they are hollow. Moreover Vasudevan has stated that his technology needs no interference from strong machineries as they are supposed to be created in warehouses and then installed onto pathways directly, thus reducing onsite production costs. "It's time we stop seeing plastic as the enemy and turn it into our biggest resource," says Dr. Vasudevan, however, the real challenge lies, in collecting all of the voluminous post-consumer packaging. Today, self-help groups from various states across India, local citizens and schools are engaged in helping Dr Vasdevan collect waste plastic. Let's join hands with Dr. Vasudevan, help collecting plastic waste to be used in the construction of plastic waste.

MANAGEMENT OF MARINE LITTER ON THE BEACHES OF INDIA

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Marine litter (ML) includes any form of anthropogenic manufactured or processed materials discarded, disposed of, or abandoned in the marine environment, either deliberately or unintentionally, and may be transported to the ocean by rivers, drainage, sewage systems or by wind (UNEP, 2011). The majority of ML consists of plastics and plastics are generally divided into macro-plastics and the smaller micro-plastics; the plastic particles <5 mm in diameter are nano-plastics (UNEP, 2016). In most cities, there is no complete waste management system in place and the threat to coastal and riverine ecosystem from marine debris is evident. Indiscriminate dumping of solid waste on land reaches the drains, rivers and estuaries and finally ends up in the sea. Each time polythene covers, carry bags, or synthetic packaging materials are carelessly dropped on the streets or disposed into open drains, creeks and rivers, the wind and rain carry these trash into the sea as run-offs. Fishing nets are cut when they get entangled with rocks in fishing grounds and sometimes old nets are used which also get torn in the sea, and fishermen abandon them and this also adds up as marine litter. Litter pollution in a given area can be of local origin – directly discarded on the beach or in the sea in that area – or can be transported from inland via rivers and runoff or transported from distant regions via ocean currents and the prevailing wind. The global production of plastic has grown from 1.5 million tons in 1950 to 322 million tons in 2015 (Ramamurthy *et al.*, 2018).

Coastal litter impacts in multiple ways, the most importantly, they degrade the quality and health of our oceans, damage coastal and marine habitats and harm marine biota (Kaladharan *et al.* 2017). Moreover, there is an increasing concern about the risks and possible adverse effects of micro-plastics to organisms and human health (Thompson *et al.*, 2009). A preliminary study was carried out at Girgoan, Juhu and Versova beaches in Mumbai to ascertain the impact of marine litter on the beach. Beach litter samples were sampled using a rope quadrat of (10 x 10m) operated in triplicate from all the stations with 100 m interval on a line transect. Beach litter collected from within the three quadrates were pooled together, cleaned of adhering sand and moisture and then weighed using a top pan balance. Samples were collected between the shore of the beach to the waterline. ML comprises of various material types, and can be classified into several distinct categories such as plastics, metal, glass, processed timber, paper and cardboard, rubber, clothing and textiles and tar balls (Galgani *et al.*, 2010). From Mumbai

beaches, more than 36 types of litters were collected. The average approximate weight at Girgoan was 900g, Juhu - 850g and Versova about 1400g. The readings clearly indicate that Versova beach is the most littered. Probably, the intense use of beaches for recreation, tourism, and religious activities has increased the potential for plastic contamination in urban beaches in Mumbai (Jayasiri *et al.*, 2013). The amount of litter on Mumbai beaches increases many folds with the advent of monsoons.

As far as management of marine litter in India is concerned, various researchers have suggested diverse measures. According to Ramamurthy *et al.* (2018), to combat marine litter issues institutional strengthening, capacity building, public awareness and a continuous review of the monitoring, innovation and improvement of the activities needs to be addressed in a timely manner. As India does not have National Marine Litter policy, it is the right time to have the same. According to Kripa *et al.* (2016), since most of these items can be recycled and reused, proper management measures to segregate and process the waste at the production/collection level will solve the problem to a large extent. A district level committee can be constituted to draft an action plan to solve the problem. Funds for this activity also should be provided. Prevent/reduce litter reaching the marine environment and provide incentives to fisher for marine litter collection and the development of new recycled plastic products. According to Kaladharan *et al.* (2017), inculcate the habit of using alternate eco-friendly material for frequently consumed item such as stationery, packaging etc., segregation of waste from domestic sources into bio-degradable, metallic and plastic items with proper incentive for doing such activities. Wherever items like bottled water is sold, facilities for use of refillable bottles rather than disposable bottles must be promoted. According to Chung-Ling Chen (2015), restriction of the use of plastic bags is one of such measure, which significantly reduces plastic waste. Monitoring is instrumental in devising effective management strategies to prevent specific types of litter from entering the sea. Encourage people to embrace the notion of waste as a resource and choose the products that generate lower quantities of litter, dispose of waste in a more environmentally sound way and participate in beach cleanups. Establishment of comprehensive national marine litter programmes and a global reduction of the production of plastic waste/products through extended producer responsibility should be at the heart of all management solutions as this would ultimately be reflected in decreased inputs into our oceans.

Based on their principle purposes, the measures can be divided into four categories: preventive, mitigating, removing and behavior-changing. General public can play a very important role. Public participation is necessary for a proper waste management system. Beach

cleaning is an effective way to reduce and prevent litter from being washed into the seas. Focus on land-based pollution transported to the Ocean and close them. Implementation of international conventions tools to mitigate the marine pollution. Solutions are required such as curbing plastic use, clean-up drives, educational programmes, public awareness, bringing down plastic production. The UNEP has recently initiated a special program ‘Global Initiative on Marine Litter’, which needs to be followed religiously and finally management of wastes through waste minimization activities by the 3 R’s that is Reduce, Reuse and Recycle.

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PLASTIC POLLUTION

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What is Plastic Pollution?

As the world population continues to grow, so does the amount of garbage that people produce. On-the-go lifestyles require easily disposable products, such as soda cans or bottles of water, but the accumulation of these products has led to increasing amounts of plastic pollution around the world. As plastic is composed of major toxic pollutants, it has the potential to cause great harm to the environment in the form of air, water and land pollution.

Put simply, plastic pollution is when plastic has gathered in an area and has begun to negatively impact the natural environment and create problems for plants, wildlife and even human population. Often this includes killing plant life and posing dangers to local animals. Plastic is an incredibly useful material, but it is also made from toxic compounds known to cause illness, and because it is meant for durability, it is not biodegradable.

*I Am Concerned About The Air We Breathe And The Water We Drink. If Overfishing Continues, If Pollution Continues, Many Of These Species Will Disappear Off The Face Of The Earth.–
Bernard Marcus*

Causes of Plastic Pollution

While solving the problem of plastic pollution may seem as easy as just implementing recycling or cleaning up empty bottles, the truth is that the plastic causing the pollution can range in size from big to microscopic. The major contributors to this problem today include:

- 1. Plain Old Trash**
- 2. It is Overused**
- 3. Fishing Nets**
- 4. Disposing of Plastic and Garbage**

Even recycling doesn't cut down on plastic, as it essentially uses the existing plastic, albeit in a new form. The process of recycling plastic can also lead to plastic irritants being released in a number of ways.

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:

1. **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 every day.
3. **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.
3. **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.
4. **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.
5. **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.
6. **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.

7. **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. Plus, excess pollution has led to decreased tourism in affected areas, significantly impacting those economies.

How to Beat the 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:

1. **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.
2. **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.
3. **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.
4. **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.
5. **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.

6. **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.

Remember that because plastic doesn't break down easily (if ever), recycling plastic means that it is still plastic, just being used for a different purpose. Therefore, you're not actually reducing plastic amounts or exposure, even in the recycling process.

Plastic pollution, its implications and corrective measures

We are living in a fragile environment, sharing our space and resources with other organisms in a closed system called the ecosystem. Organisms interact with each other and the outcome of this interaction swings towards both positive and negative terminals. One such outcome is pollution, which takes different forms and has wide ranging impacts. A classical human induced pollutant is plastic, which is a term commonly used to describe a wide range of synthetic or semi-synthetic materials that are used in a huge and growing range of applications. Derived from the Greek word "plastikos", meaning fit for moulding, it can be cast, pressed, or extruded into a variety of shapes - such as films, fibres, plates, tubes, bottles, boxes, and much more. Currently, most plastics materials are derived from fossil feed stocks such as natural gas, oil or coal. However, it is important to stress that only 4 to 6 per cent of all the oil and gas used in Europe is employed in the production of plastic materials.

Some Key Findings

- The global production of plastics in 2014 was 311 million tonnes. It has been estimated that in 2010 alone, between 4.8-12.7 million metric tons of plastic found their way into our oceans.
- Plastic debris and micro plastics are transported by ocean currents across borders.
- Our annual plastic production is equivalent to the weight of all the adult humans on the planet (Walpole et al. 2012)
- In 2007 it was estimated by water-filtration company 'Brita', that Americans throw away 38 billion plastic water bottles per year; it takes 1.5 billion barrels of oil to produce them (Kiley, 2007). United States alone gets through 50 billion bottles annually.
- The two other major market segments for plastic products are building and construction (20.4%), and car manufacturing (7.0%) (Plastic Europe, 2009)
- The market size for plastic additives was USD 38.31 Billion in 2015 and is projected to reach USD 50.86 Billion by 2021.

Current challenges

Plastic is produced in such a manner and its properties render it non degradable i.e. they cannot be removed. They can remain intact for thousands of years. They travel enormous distances and can end up in any of the places from landfills to coast lines, to inland waters which ultimately open into seas and oceans. However, the more dangerous form is the "Micro plastic" (less than 5mm diameter), which occurs either naturally or is manmade. Some microplastics are purposefully manufactured for industrial and domestic purposes and include '**microbeads**' used in cosmetic and personal healthcare products, such as toothpaste. Secondary microplastics are created by the weathering and fragmentation of larger plastic objects.

In nature, they are acted upon by sun light, UV and smaller marine critters and broken into smaller particles called 'micro plastic'. They remain viable in the ocean; occur at any strata from the ocean surface to the sea bed. They have the property to absorb toxins and form a layer around tiny diatoms, algae, sea weeds which are basic food for fishes.. Since the original properties are retained, they get transferred to the fish which eats the algae.. Now having entered the ocean food chain gradually moves up each level and can end up on our own dining tables as sea food. There by enters into the human digestive system, causing human illness or disease. Microplastics have been found in various types of human food (e.g. in beer, honey, sugar and table salt) Adverse human health effects from micro- and nanoplastics in seafood may be caused by the plastic particles themselves, or by additives and sorbed contaminants, such as persistent, bio accumulative, and toxic substances (PBTs). So on the cumulative, the plastic debris that ends up in the ocean, is a reflection of what has happened on land.

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Human health effects from chemicals associated with plastic additives BisPhenol (BPA) and phthalates act as endocrine-disrupting compounds (EDCs)

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- Development of the brain
- Allergies
- Asthma
- Biochemical and toxico genomic mechanisms affected - genital, prostatic

- Endometria
- Ovarian and Breast related complications.
- Cardiovascular, liver, urological, genital and endocrine (hormone-related) diseases

Some of the mitigation steps taken by the scientific community

- ✓ **UNITED NATIONS ENVIRONMENT ASSEMBLY (UNEA)** to inform the development of the Sustainable Development Goals discussed by the UN General Assembly (UNGA) in September 2015
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Remedies to be taken by the common man

Plastic has become an integral part of the human society and we cannot imagine living without it. It has made its impression in all areas of human life ranging from cosmetics, sports, recreation, health, medicine, packaging, agriculture, cars, tyres, cloths etc.

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- ☞ Whenever we see a plastic littered beach, we must try picking the plastic bottles and putting them in recycle cans or bins.. It must be a voluntary action

PLASTIC - POLLUTION TO SOLUTION

Rwitabrata Mallick

Assistant Professor, Amity University Madhya Pradesh, Gwalior

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Plastics is the term commonly used to describe a wide range of synthetic or semi-synthetic materials that are used in a huge and growing range of applications. Plastic has become parts and parcel of our life. Plastic controls our daily activities and requirements right from morning till we go to sleep at night. The raw materials used to produce plastics are natural products such as cellulose, coal, natural gas, salt, crude oil. The term “plastic” is derived from the Greek word "plastikos", meaning fit for moulding. This refers to the material's malleability or plasticity during manufacture, which allows it to be cast, pressed, or extruded into a variety of shapes - such as films, fibres, plates, tubes, bottles, boxes, and much more. The relatively low density of most plastics gives plastic products the advantages of light weight. They are corrosion resistant to many substances which attack other materials, making them durable and suitable for use in harsh environments. Plastics can easily be moulded into desirable shapes with wide range of functions. In principle, plastics can be developed with virtually any combination of properties to accommodate almost any application one can think of.

As a result of these attractive properties, plastics are increasingly being used in the following applications:

1. Packaging industries
2. Building & construction industries
3. Energy industries
4. Automobile industries
5. Electronics and IT industries
6. Healthcare industries
7. Sports industries
8. Agriculture industries

Reason of Plastic Pollution

Plastic as Trash

Our life is controlled by plastic – from the pouch containing milk to health drink and from bottle of juice to water. Whenever these items are thrown away to land, water or washed down, the toxic pollutants have greater chance to get entry into the environment

and do damage. Dumping ground of plastic materials and landfills are the major area of concern as they allow the pollutants to percolate the ground and ultimately affect groundwater.

Overutilization

Being a cost effective material, plastic is one of the most widely available and over utilized item in the world today. Upon disposal, plastic does not decompose easily and pollutes the land, air and water.

Fishing Nets

Fishing commercially is a source of earning and living in many parts of the world, and umpteen numbers of people intake fish and fish items on daily basis. But on the other hand this profession has enhanced river and marine plastic pollution into several folds. Plastic nets used in billions throughout the world are a great source of plastic menace. These nets not only release toxic substances in water in submerged condition but also damage water quality and damage aquatic ecosystem.

Garbage

It is almost impossible to break down plastics. If it is burnt, the release of toxic materials into the atmosphere will further enhance the pollution level. Domestic wastes carrying plastics are thrown away as garbage into open grounds, landfills and sometimes left open without any treatment. This increases toxicity in the area. As a matter of fact, recycling doesn't cut down on plastic, as it essentially uses the existing plastic, in a new form. The process of recycling plastic can also lead to plastic irritants being released in various ways.

Effects of Plastic Pollution

Effects of plastic materials are very high on natural environment leading to long-term issues for plants, animals, and people. Some of the major long-term effects of plastic pollution are:

- Damage to Food Chain
- Pollution of Groundwater
- Pollution of Land
- Pollution of Air
- Death of Animals
- Toxicity to the environment
- It consumes high cost regarding the treatment is concerned

Solutions to Plastic Pollution

Plastic pollution can only be solved or controlled in the process of reducing the use of plastic at every level in the world. This can be achieved by doing the following-

1. Shop Friendly
2. One should carry own bag made of non plastic material whenever going for grocery, stationary items, vegetable market or to bring daily use items. This should be done on a regular basis and mindset. If one is carrying plastic bags that should be reused as much as possible that will somehow reduce the plastic menace.
3. Less use of packaged water
4. Carry own water bottle. If people stop or reduce purchasing packaged drinking water bottles that will reduce and minimize plastic pollution to a great extent. Use of single used plastic bottle of packaged drinking water and soft drinks to be banned with immediate effect.
5. Stop using plastic containers
6. Plastic food containers, lids, and utensils are all easily replaced by reusable containers, which will cut down significantly on even for a single meal's waste.
7. Educate Businesses
8. Restaurants, dhabas, roadside food stalls to be educated about various alternatives they can opt for packaging, storing, and bagging items.
9. Involvement.
10. Awareness campaigning, seminars, workshops, use of social media, interaction with lawmakers are the ways to be involved to beat plastic pollution.
11. Recycling
12. Items to be selected wisely which are recyclable.

NO MORE 'BUTTS': PUTTING AN END TO CIGARETTE LITTERING PROBLEM

Caroline Paul Kanjookaran

Kiel University, Germany

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With an estimated 4.5 trillion cigarettes butts littered each year, it is not surprising that cigarettes are the most littered item on earth, constituting one-third, almost 38% of all litter

collected. In India, this figure stands at 100 billion per year. No wonder, since India is home to 12% of the world's smokers, occupying a place in top 10 countries list for cigarette consumption in the year 2014.

The cigarette butts are scattered everywhere - on the road side, beaches, water bodies and as such, they cost a huge amount of money for clean up. Reportedly, they comprise 25 - 50% of the entire waste collected from roads and streets, which also affects the quality of urban life.

Not only that, cigarette waste poses a huge environmental hazard. This is because these butts are made of Cellulose Acetate, which, being a non-biodegradable plastic, takes around a decade to fully decompose. According to a study conducted by San Diego State University, just one smoked cigarette butt in a litre of water is enough to kill both marine and freshwater fish. They also contain carcinogenic chemicals, pesticides, and nicotine, thereby making tobacco use a major cause of preventable death worldwide. However, they are dumped by several millions of people into the global environment each year.

Given the adverse effects of cigarette butt littering, it is saddening, that not much is being done in India to combat this. While Indian Tobacco Control Law COTPA, 2003 vide Section 4 prohibits smoking in all public places such as public offices, educational institutions, public conveyances, restaurants, hotels, health institutions and all workplaces etc, cigarette butts strewn around these places is still a common sight in the country. This means tougher laws should be implemented. However, other measures, such as banning of the plastic (cellulose acetate) cigarette filter, take-back policies, such as in the European Union or a deposit-return scheme for cigarettes could also be a path forward in combating this issue.

About the author

Caroline Paul Kanjookaran is currently pursuing Masters in Sustainability from Kiel University, Germany. In 2018, she was trained by former US Vice President Al Gore at a Climate Reality Leadership Corps training in Berlin and now partakes in the global fight for climate solutions. She is also the co-founder of Foods for Global Sustainability (FoGS), a global network to meet the Sustainable Development Goals (SDGs) of the United Nations Millennium Goals 2030 by focusing on the economic, social and environmental issues in food development.

PLASTIC POLLUTION, ITS IMPLICATIONS AND CORRECTIVE MEASURES

Srinivas Ananthan

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We are living in a fragile environment, sharing our space and resources with other organisms in a closed system called the ecosystem. Organisms interact with each other and the outcome of this interaction swings towards both positive and negative terminals. One such outcome is pollution, which takes different forms and has wide ranging impacts. A classical human induced pollutant is plastic, which is a term commonly used to describe a wide range of synthetic or semi-synthetic materials that are used in a huge and growing range of applications. Derived from the Greek word "plastikos", meaning fit for moulding, it can be cast, pressed, or extruded into a variety of shapes - such as films, fibres, plates, tubes, bottles, boxes, and much more. Currently, most plastics materials are derived from fossil feed stocks such as natural gas, oil or coal. However, it is important to stress that only 4 to 6 per cent of all the oil and gas used in Europe is employed in the production of plastic materials.

Some Key Findings

- The global production of plastics in 2014 was 311 million tonnes. It has been estimated that in 2010 alone, between 4.8-12.7 million metric tons of plastic found their way into our oceans
- Plastic debris and micro plastics are transported by ocean currents across borders
- Our annual plastic production is equivalent to the weight of all the adult humans on the planet (Walpole et al. 2012)
- In 2007 it was estimated by water-filtration company 'Brita', that Americans throw away 38 billion plastic water bottles per year; it takes 1.5 billion barrels of oil to produce them (Kiley, 2007). United States alone gets through 50 billion bottles annually
- The two other major market segments for plastic products are building and construction (20.4%), and car manufacturing (7.0%) (Plastic Europe, 2009)

- The market size for plastic additives was USD 38.31 Billion in 2015 and is projected to reach USD 50.86 Billion by 2021.

Current challenges

Plastic is produced in such a manner and its properties render it non degradable ie they cannot be removed. They can remain intact for thousands of years. They travel enormous distances and can end up in any of the places from landfills to coast lines, to inland waters which ultimately open into seas and oceans.

However, the more dangerous form is the "Micro plastic" (less than 5mm diameter), which occurs either naturally or is manmade. Some microplastics are purposefully manufactured for industrial and domestic purposes and include '**microbeads**' used in cosmetic and personal healthcare products, such as toothpaste. Secondary microplastics are created by the weathering and fragmentation of larger plastic objects.

In nature, they are acted upon by sun light, UV and smaller marine critters and broken into smaller particles called 'micro plastic'. They remain viable in the ocean; occur at any strata from the ocean surface to the sea bed. They have the property to absorb toxins and form a layer around tiny diatoms, algae, sea weeds which are basic food for fishes. Since the original properties are retained, they get transferred to the fish which eats the algae. Now having entered the ocean food chain gradually moves up each level and can end up on our own dining tables as sea food. There by enters into the human digestive system, causing human illness or disease. Microplastics have been found in various types of human food (e.g. in beer, honey, sugar and table salt) Adverse human health effects from micro- and nanoplastics in seafood may be caused by the plastic particles themselves, or by additives and sorbed contaminants, such as persistent, bio accumulative, and toxic substances (PBTs). So on the cumulative, the plastic debris that ends up in the ocean, is a reflection of what has happened on land.

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Practical Approaches regarding collection and awareness of E-waste management in Visakhapatnam by M/s. Green Waves Environmental Solutions, Visakhapatnam, India.

Anil Potluri

Corresponding Email: anil@greenwavesrecyclers.in

Introduction

Electronics is the world's largest and fastest growing manufacturing industry. Development in this area has significantly assisted the human race; however, its mismanagement has led to new problems of contamination and pollution. The technical prowess society has acquired during the past century has created new challenges in terms of waste management. The Environmental Protection Agency (EPA) refers to electronic waste as "electronic products that are discarded by consumers". This definition covers almost all types of electrical and electronic equipment (EEE) that has or could enter the waste stream. The improper disposal of these items affects human and environmental health as many of these products contain toxic substances. E-waste that includes iron, aluminum, gold and other metals make up over 60% of these products, while plastics account for about 30% and hazardous pollutants comprise 2.70% (Kurian Joseph, 2007). The growing quantity of e-waste from the electronic industry is starting to reach disastrous proportions. According to the Organization for Economic Cooperation and Development (OECD), any appliance fitted with an electric power supply that has reached its end-of-life is included in the Waste Electrical and Electronic Equipment Directive (WEEE) (EU, 2002; Sushant et al., 2010). The primary materials found in electric and electronic waste are ferrous material (38%), nonferrous material (28%), plastic (19%), glass (4%) and others, including wood, rubber, ceramics, etc. (11%) (Sushant et al., 2011).

The management of electronic waste (or E-waste) is one of the most rapidly growing areas of pollution problems worldwide. New technologies are fast superseding millions of analogue appliances, leading to their disposal in prescribed landfills despite their potentially adverse impacts on the environment. The consistent advent of new designs and "smart" functions and technology during the past 20 years has led to the rapid obsolescence of many electronic items. The lifespan of many electronic goods has been substantially shortened (less than two years for computers and cell phones) due to advancements in electronics, attractive consumer designs and marketing and compatibility issues (Peeranart et al., 2013; Denga, 2006; Macauley, 2003). Consequently, the volume of WEEE grows rapidly every year and is also believed to be one of the most critical waste disposal issues of the 21st century. To be precise, the United Nations University estimates that 20 to 50 tons of e-waste is being generated per year worldwide (UNEP, 2005) and suggests the urgent need for developing an estimation technique (UNEP, 2009). Compared to conventional municipal waste, certain components of electronic products contain toxic substances that can generate threats to the environment as well as to human health (Woodell, 2008). For example, television and computer monitors generally contain hazardous materials such as lead, mercury and cadmium, while nickel, beryllium, and zinc can often be found in circuit boards. Due to the presence of these substances, recycling and the disposal of E-waste has developed into an important issue.

The physical composition of e-waste is diverse and contains over 1000 different substances that can be categorized as belonging to either organic or inorganic fractions. Heavy metals form a significant part of the inorganic fraction, accounting for 20% to 50%. E-waste consists of hazardous metallic elements like lead, cadmium, chromium, mercury, arsenic, selenium and precious metals like silver, gold, copper and platinum. An overview indicates that manufacturing of mobile phones and personal computers consumes 3% of gold and silver mined worldwide each year, as well as 13% of palladium and 15% of cobalt. Both hazardous and precious heavy metals are non-renewable and are therefore finite resources that will eventually become extremely valuable. Moreover, managing e-waste is a difficult task due to the various technical, financial and strategic challenges it presents. There is an urgent need for managing e-waste in a formal, systematic and eco-friendly manner by recycling precious metals from waste streams.

Company Profile

Green Waves Environmental Solutions is the first unit in Andhra Pradesh authorized to carry out E-waste collection and handling (given by Andhra Pradesh Pollution Control Board). Green Waves Environmental Solutions collects and dismantles the electronic waste from residential,

commercial, industrial areas of Andhra Pradesh. Our company is situated at 43/1 Mindhi Village, Gajuwaka, Visakhapatnam Andhra Pradesh-530026. Green Waves Environmental Solutions is also successfully collecting and handling e-waste in Vizag and other areas of Andhra Pradesh. Green Waves Environmental Solutions Company has been working on the e-waste and have conducted awareness programs in Vishakhapatnam in the name of E – drive. E – Drives have been conducted in the areas like Gajuwaka, GVMC, Panchavati Colony, Divis Pharma Company, Vishakhapatnam Port Trust and GITAM University. Green Waves Environmental Solutions is setting up E-bins across selected places in Vizag for safe collection of E-waste. Additionally, it has been distributed free to customers for the safe disposal of E-waste. E-bins are designed and installed for public use to ensure that e-waste doesn't get mixed up with solid waste like pencil batteries, remote control, charges, wires etc. Once the bin is filled, our company vehicle will come empty it and take it to the warehouse where recycling takes place. Around 30 bins were installed to see that e-waste does not mix with the regular dust bin.

We design upcycling objects from the E- waste; old computers, phones, chargers, and other devices sit in our cupboards and garages, neglected for a period, likely years, before we finally decide to throw them away. But, when you do they'll likely end up in landfills and incinerators, which is obviously very bad news for the environment even if it does make you feel less cluttered. The e-waste was supplied by Green Waves Environmental Solutions Company with the idea to raise public awareness through the pictures and get people to be more considerate when discarding their old electronic items. Either that or perhaps these might inspire people to utilize their old electronics for art.

Upcycling isn't just the practice of transforming old materials into useable objects; it's the process of breathing a new lease of life into well used and loved items to give them a new story and personality, while at the same time creating something that is useful, functional and beautiful. Recycling is the process of taking waste, generally consumer materials – plastic, paper, metal or glass – breaking it down and turning it into a reusable product. Upcycling involves turning an unwanted product into a better quality product. The big idea is that items made from recycled materials can be even more desirable than the original products, which can only be a good thing for sustainable production with environmental consciousness.

The Benefits of Upcycling.

The environmental benefits of upcycling are enormous. It doesn't just help curb the shocking volume of discarded materials and wastes finding its way into landfills each year; it also reduces the demand for the use of new or raw materials in production. A lower demand for these materials means a reduction in air pollution, water pollution, and greenhouse gas emissions,

helping us conserve our precious global resources. The benefits of upcycling for both the designer and the customer are equally as impressive. This innovative method of material sourcing and production has formed an entirely new and thriving industry. This shift back to handmade artisanal craftsmanship is a breath of fresh air (no pun intended) after years of mass production across all major consumer industries.

Focused on collecting all types of recyclable E-Waste, Green Waves Environmental Solutions has built an app called ReByte. The app, within mere touches ensures safe & environment-friendly disposal of recyclable wastes collected from the user's door-step. It also provides reverse-logistics.

Re: Call

This recycling program provides consumers with an environmentally friendly disposal option for their unwanted mobile phone handsets. Our aim is to raise awareness and change consumer behaviour around responsible disposal of E-waste.

Technology is changing rapidly and new devices are coming on stream constantly. The Green Waves Environmental Solutions believes it has a responsibility to help prevent unused handsets ending up in landfills and the industry-led RE: CALL scheme has been designed for this purpose. Approximately 95 percent of the phones can be given a new lease of life or have their components recycled. Green Waves Environmental Solutions collects and sorts the phones into those which can be re-used and those which are at their end-of-life. Reusable phones are sold by tender while end-of-life phones are recycled. Refurbished equipment from Green Waves Environmental Solutions is eco-friendly and budget-friendly. Rebyte gives E-waste a brand-new life.

Methodology

The E-waste is collected from Corporate, Government, SMEs, Educational Institutions, Retailers, Individuals, and other sources are segregated and sorted. For proper storage of e-waste, we arrange storage bins and storage racks at work place.

Dismantling operation can be manual, semi-manual and automatic, involving physical segregation operations for plastics, glass, steel, non-ferrous material, wires, gases, liquids and printed circuit boards. Dismantlers may perform the following operations.

1. Decontamination
2. Manual dismantling using appropriate tools
3. Hammering
4. Shredding and
5. Segregation

The major objective of hammering and shredding operations is size reduction and separation of steel, plastics, PCBs, non-ferrous metals, glass etc. Fractions such as plastic, ferrous and non-ferrous material, glass are sent to secondary recycling industry while other remaining fractions are sent to register E-Waste Recyclers for treatment and recovery. Dismantling operations are a dry process that may cover several operations.

a) The first step is to decontaminate E-waste and render it non-hazardous by separating hazardous components and materials. Hazardous electronic components such as Hg switches, Poly Chlorinated Biphenyl (PCBs) etc. can be recovered and sent to TSDFs for treatment and disposal. Shredding or cutting of printed circuit boards not below the size of 20mm which have to be handled by employing minimal manual handling. In case of dismantling refrigerators and air conditioners, only skilled manpower having adequate tools and personal protective equipments (PPEs) must be deployed to manually separate compressors. Prior to dismantling the compressors, adequate facilities should be provided for recovery of safe collection of refrigerant gases and compressor oils. Dismantled circuit boards, CRTs, capacitors, batteries, capacitors containing PCBs (Polychlorinated biphenyls) or PCTs (Polychlorinated ter phenyls) etc. will not be stored in open. The dismantling operation will not discharge any process wastewater except workers utilities and re-circulated machine cooling water. The premise for dismantling operation will have the following requirements: Weather proof roofing and Impermeable surfaces for appropriate areas with spillage collection facilities, decanters, degasser, and degreasers.

b) Appropriate storage for disassembled spare parts.

c) Appropriate containers for storage of batteries, capacitors containing PCBs (Polychlorinated biphenyls) or PCTs (Polychlorinated ter phenyls). The dismantler will provide appropriate storage for dismantled parts from E-waste. Some parts (e.g. motors and compressors) will contain oil and/or other fluids. Such parts must be appropriately segregated and stored in containers that are secured, such that oil and other fluids cannot escape from them. These containers will be stored on an area with an impermeable surface and a sealed drainage system. Other components and residues arising from the dismantling of E-waste will need to be contained following their removal for disposal or recovery. Where they contain hazardous substances, they should be stored on impermeable surfaces, appropriate containers or bays with

weatherproof covering. Containers should be clearly labeled to identify their contents and must be secure so that liquids, including rain water cannot enter them. Components should be segregated having regard to their eventual destinations and the compatibility of the component types. All batteries should be handled and stored having regard to the potential fire risk associated with them.

The non-working is further sent for dismantling process in the above selected work place. We use dismantling tools like screw driver set with motorized screw driver to remove the screws of waste electronic appliances. We use wire stripper to strip the wires in the electronic appliances. We also use the dismantling tools like Soldering Iron, Spanner Set, Electric Cutter/ grinder, LN Key Set, Hammer with Plastic Handle, Adjustable Wrench, Pipe Wrench, Plier, Nose Plier, Chisel, and Degassing Vacuum Pump. In this process, for safety purpose Hand Gloves (Rubber), Rubber Mat (Safety) Electrical, Helmet, Safety Goggles, Dust Mask and Pallet Truck are provided in the dismantling process.

Vision

We consider E-waste not as a waste but as a multiple resource. Our motto is to Reduce, Reuse, Recycle and Recover the assets through continuous implementations and innovations in recycling technology. We are the first company to provide an indigenous solution for E-waste in Andhra Pradesh. Our aim is to make this world a better place to live in and lead the industry in rethinking and recycling of E-waste as well as impart knowledge on the importance of proper E-waste disposal and its ill-effects of mismanagement to every individual.

Awards

Owing to such exquisite range of service offerings and delicate methodologies followed, GreenWaves Environmental Solutions has also won the National Awards for its excellence in E-Waste Recycling at Indian Industry Session (at 8th Regional 3R Forum in Asia and the Pacific). Yet another golden feather on its crown is the invitation it received from National Green Tribunal Conference to deliver a talk on E-Waste Management at Guwahati. On World Environmental Day 2018 we had been given Seva Puraskar award for our great contributions towards sensitizing the people on E-waste management and for effective recycling of E-waste from Andhra Pradesh Pollution Control Board.

E - Waste Mukt Bharat-----Swaachh Bharat

THE ASSAM TRIBUNE, GUWAHATI 5

Organisations draw up Environment Day programmes

STAFF REPORTER

GUWAHATI, June 4: A number of organisations will be celebrating World Environment Day tomorrow with varied programmes.

The Regional Science Centre (RSC) Guwahati is going to celebrate World Environment Day tomorrow on its Khanapara premises with a variety of participatory activities involving schoolchildren.

RSC Guwahati will organise tree plantation on its premises.

The Assam Science Technology and Environment Council will celebrate the day in the Pub Kamrup College campus, Baihata Chariali from 11 am. The events include a plantation drive and an open session. Minister for Science and Technology Keshab Mahanta will be the chief guest at the open session.

Voice of Environment will observe the day in the Basistha Temple campus with an awareness campaign in pursuance of its mission 'Clean Eco-Friendly Plastic Free Zone'.

Cleanliness drive at Basistha temple

CITY CORRESPONDENT

GUWAHATI, Sept 30: In keeping with an memorandum of understanding signed between the Basistha Devalaya (temple) authority and NGO Voice of Environment as part of its 'Clean, Eco-Friendly Plastic Free Zone' campaign, the NGO today organised a cleanliness drive in the temple premises to create awareness among devotees and visitors on the need to check pollution.

The cleanliness drive also included the Basistha Ganga river, which flows by the temple and is an important part of the Basistha Devalaya.

On the occasion, an open public discussion was held in the presence of the temple dolo, priests, devotees and visitors, and residents of the nearby areas, besides local vendors and shopkeepers.

The speakers, which included the temple dolo and invited guest Chao Hemajit Daudhai Phukan, urged all people to be sensitive to the natural environment surrounding the

temple and to keep it clean and hygienic. The issue of eco-tourism which could be fruitful only in a clean surrounding was also stressed upon.

Voice of Environment members led by Kanhaiya Poddar and Moharana Choudhury, guests, temple priests, residents, shopkeepers and others took part in the cleanliness drive from the temple premise to the front gate and the Basistha Ganga river.

The MoU was signed between the temple authorities and Voice of Environment in May this year.

With the aim of setting an example in the country and to send a positive message to all, a resolution was taken at the open meeting to carry out such cleanliness activities regularly.

"We believe there is a need of active participation and cooperation from the local community, devotees and visitors, shopkeepers and NGOs with the temple authority that can change the scenario. Together we can make a difference," said Moharana Choudhury of Voice of Environment.

কামাখ্যা সজাগতা সভা

মহানগৰ বাৰ্তা, ২১ এপ্ৰিল ৩ বিশ্ব ভূমি দিবস উপলক্ষে ভইচ অৱ এনভাৰনমেণ্ট নামৰ সংস্থাটোৰ উদ্যোগত কাইলৈ কামাখ্যা দেৱালয়ত এখন সজাগতা সভা অনুষ্ঠিত হ'ব। কামাখ্যা দেৱালয়ক প্লাষ্টিকমুক্ত অনুকূল পৰিৱেশ গঢ়ি তোলাৰ লক্ষ্যৰে আয়োজন কৰা সজাগতা সভাত স্থানীয় ৰাইজৰ সহায়-সহযোগিতা আৰু উপস্থিতি উদ্যোক্তাসকলে কামনা কৰিছে। মন্দিৰ প্ৰাংগণত অনুষ্ঠিত হ'বলগা এই সজাগতা সভাতে সুস্থ পৰিৱেশ গঢ়ি তোলাৰ প্ৰয়োজনীয়তা সন্দৰ্ভত মত বিনিময় আৰু অন্তৰংগ আলাপ অনুষ্ঠান অনুষ্ঠিত হ'ব।

THE ASSAM TRIBUNE, GUWAHATI 5

Organisations draw up Environment Day programmes

STAFF REPORTER

GUWAHATI, June 4: A number of organisations will be celebrating World Environment Day tomorrow with varied programmes.

The Regional Science Centre (RSC) Guwahati is going to celebrate World Environment Day tomorrow on its Khanapara premises with a variety of participatory activities involving schoolchildren.

RSC Guwahati will organise tree plantation on its premises, besides painting competition, nature game and live demonstration about butterfly and common insects, open house science competition, and science film show on the occasion.

A popular science talk will be delivered by Dr Parag Jyoti Deka, Project Director of Fygm Hog Conservation Programme.

WWF-India will observe the

The Assam Science Technology and Environment Council will celebrate the day in the Pub Kamrup College campus, Baihata Chariali from 11 am. The events include a plantation drive and an open session. Minister for Science and Technology Keshab Mahanta will be the chief guest at the open session.

Voice of Environment will observe the day in the Basistha Temple campus with an awareness campaign in pursuance of its mission 'Clean Eco-friendly Plastic-free Zone' from 10 am.

"As this year's World Environment Day theme is 'Beat Plastic Pollution', we believe this would be a perfect stage to conduct awareness programmes to realise the goal of making the historic site of Basistha Devalaya a plastic-free zone," said Voice of Environment in a statement.

The Chiriakhana Suraksha

বিশিষ্ট মন্দিৰক প্লাষ্টিকমুক্ত কৰাৰ প্ৰয়াস

মহানগৰ বাৰ্তা, ৫ জুন : বিশিষ্টাশ্ৰম দেৱালয়ত ভয়ছ অৱ এনভাইৰনমেণ্ট আৰু দেৱালয় কৰ্তৃপক্ষৰ উদ্যোগত পৰিৱেশ দিৱসৰ লগত সংগতি ৰাখি আজি এখন সজাগতা সভা অনুষ্ঠিত হয়। বিশ্ব পৰিৱেশ দিৱসৰ মূল বিষয় প্লাষ্টিকমুক্ত অনুকূল পৰিৱেশ গঢ়ি তোলাৰ উদ্দেশ্যে অনুষ্ঠিত কৰা এই সজাগতা সভাত ড° ধ্ৰুৱজ্যোতি হাজৰিকাৰ লগতে ভয়ছ অৱ এনভাইৰনমেণ্টৰ সদস্য, দেৱালয় সমিতিৰ লগতে স্থানীয় ৰাইজ উপস্থিত থাকে।

Cleanliness awareness among Ambubachi devotees

STAFF REPORTER

GUWAHATI, June 23: As per its campaign for a clean, eco-friendly and plastic-free Kamakhya temple campus, NGO Voice of Environment (VoE) today organised a programme in the old jail campus at Fancy Bazar

where a large number of devotees for the ongoing Ambubachi Mela are camping.

"We conducted awareness activities among the devotees, visitors and sadhus for a clean and hygienic environment during the festivities. We are organising a mass sensitisation awareness

programme supported by the Kamakhya temple authorities on the temple premises and at the camps for the devotees," an NGO spokesperson said.

The awareness campaign was conducted in the presence of devotees, police officers, village defence

personnel, SDRF, DDMA and Kamrup Metro district administration officials. A collaborative roadmap for a clean, eco-friendly and plastic-free zone within the temple premises and the mela camp areas was drawn up for the purpose.

The team interacted with

the devotees and visitors during the programme to understand the views of the people from different parts of country regarding the initiative.

The NGO will organise a similar event in the Kamakhya temple campus tomorrow.

'Make Basistha Temple plastic-free zone'

GUWAHATI, JUNE 7: In keeping with the MoU signed between Basistha Devalaya (Temple) Authority and Voice of Environment (VoE) on May 27 this year, VoE organised 'Clean, Eco-Friendly Plastic Free Zone' awareness drive on World Environ-

saplings to the guests and temple authority for adopting it and planting it at temple premises. After that an open public meeting was held in presence of devotees and visitors, temple pandits, vendors and shopkeepers.

Special guest Dr

He stressed on the immediate need to take measures for Basistha Ganga River as it is facing serious environmental issues.

Environmentalist Moharana Choudhury highlighted the importance of waste management and its disposal aspects in the



ment Day here recently, stated a press release.

On Tuesday the programme started from 10 AM onwards to build awareness among devotees/visitors to make Basistha Temple a 'Clean, Eco-Friendly Plastic Free Zone.' As the theme of this year's Environment Day is "Beat Plastic Pollution", Voice of Environment started the day with plantation programme. VoE member and environmentalist Moharana Choudhury and Minakshi Dutta handed over plant

Dhrubajyoti Hazarika, president, Temple Authority, and Bor Doloi Grindramohan Sarma were felicitated. Social worker and medical officer at Basistha Health Centre Dr Sulekha Chakaraborty and Basistha Temple police station outpost in-charge were present on the occasion.

They spoke on plastic and cleanliness of the temple area. The Doloi supported this initiative as can set an example in the country and send a positive sustainable message.

surrounding of temple premises as it is directly related with water quality and sustainability of Basistha Ganga River which is flowing through the city as Bharalu.

Majority of the visitors supported the cause to end the use of plastic. An interaction-cum-interview was held with visitors, devotees at temple premises with videography to know their views by the VoE members led by Mcdonald Choudhury, Minakshi Dutta, Kanhaiya Poddar respectively.



Above: Cleanliness program at Basistha Temple

Cleanliness programme near Kamakhya Temple

STAFF REPORTER

GUWAHATI, June 24: Voice of Environment (VoE) today conducted a programme on the Kamakhya Temple premises to create awareness among devotees, visitors and sadhus on cleanliness and proper waste disposal during the ongoing Ambubachi Mela.

The Ambubachi Mela has witnessed footfalls in the range of 20-25 lakh during the three days of festivities.

The VoE team led by environmentalist Moharana Choudhury and Minakshi Dutta also had an interactive session with video bites targeting visitors and devotees, including the sadhus. They had another special interview-cum-interaction with the Kamakhya temple authorities

sent a collaborative road-map for a clean, eco-friendly and plastic-free zone within the temple premises.

The temple authorities pledged full cooperation for the cause to make the Kamakhya area a plastic-free zone, and to focus on proper waste disposal.

Meanwhile, the Kamakhya temple continued to witness huge rush of pilgrims on the third day today.

In view of the huge rush, the International Human Rights & Crime Control Organisation, Guwahati Chapter, distributed food items such as muri, chira, biscuits, and water and juices at Maligaon Railway Station to about 2,000 devotees. It also volunteered services at Sri Sri Pandunath Dewalaya, distributing rice, dal, puri-sabji, halwa,





Initiative towards clean-green-sustainable environment



Exemplary Achievements:

Bharat Leadership Award 2018

Moharana Choudhury one of active member VoE is awarded with Bharat Leadership Award 2018. He has been honoured for his community focused work in the field of Environment at northeastern states of India and the country by motivating youths for environmental conservation activity for nation building works.

The young researcher cum environmentalist has worked on several initiatives to integrate sustainable projects in various heritage iconic places of Assam especially for cleanliness missions, **Beat Plastic Pollution** by focusing Environment education both for school, colleges and community levels. He is working for achieving sustainable goal mission emphasized by **Environment Education** in the country both for academic and community levels.

He is also working for various Environmental research, environmental management, social mass awareness, research study and conservation activities for the state of Assam and the country for a long time and has also published several national, international scientific research papers in reputed journals so far. He is known for his works on implementation of Environment Education and its value, recognition of **Environmental Degree holders of India**.

Bharat Leadership Award 2018 is an honorary award given in the honor of Leaders of India who showed the path of prosperity and is designed to recognize leaders of tomorrow across India who have inspired and have done remarkable work in the field of Social Development, Education, Environment, Science & Technology, Entrepreneurship & Institution, Culture, Sports, Media, Literature, Documentation, Youth Politics and Agriculture. The awardees were felicitated in Patna on 9th September 2018.

Great Leaders Award (IGLA) 2018

Moharana Choudhary, member of Voice of Environment has been also awarded “**India’s Great Leaders Award 2018**”. He has been honoured for his community focused work in the field of Environment in the Northeastern States of India and the country by motivating youths for Environmental Conservation activity for nation building works.

Moharana Choudhury, the young researcher and environmentalist is working on several initiatives to integrate sustainable approaches in various heritage iconic places in state of Assam and has been driving initiatives focused around: Cleanliness Mission, Beat Plastic Pollution, and Environmental Conservation programs. The VOE is promoting Environment Education both for school and community levels. He is working for achieving Global Sustainable Goal Mission and Climate Change related challenges emphasized by proper Environment Education. The awardees were felicitated at **Press Club of India**, Raisina Road New Delhi on 21st October 2018,



New Year Message:

As the year 2018 ends and we prepare to welcome the New Year 2019, we would like to thank each and everyone, who contributed to the success of Voice of Environment.

The past year was fruitful, as we were able to carry out several innovative activities, such as 'Mission Clean, Green Assam', under the vision of Swachh Bharat. The aim is to make the Badarpur town clean and pollution-free by creating awareness among residents with visual spot fixing on boundary walls. A total of near about a length of 35 meters wall has been painted and decorated to create awareness among the masses. On the occasion of Earth Day on April 22nd, a program was organized at temple premise to build awareness among devotees/visitors to make Kamakhya Temple an 'Eco -Friendly Plastic Free Zone.' Voice of Environment took initiative to organize the event at Kamakhya Temple with supported by Earth Day Network India. In line with a MoU signed between the Basistha Devalaya (Temple) Authority and Voice of Environment, we started a mission, 'Clean, Eco-Friendly Plastic-free Zone' and started it on World Environment Day (5 June). We believe there is a need for active participation and cooperation from local community, devotees/visitors, local shopkeepers, NGOs etc and we hope to bring about lasting changes. These are just a few of our highlights and we are really looking forward to an even more productive 2019.

Wish you a great start to New Year 2019!

----- Team Voice of Environment

Interesting Facts on Swachh Bharat Abhiyan:

- Govt. of India has allocated Rs.62, 009 crores of budgets for this mission.
- Around 1.04 crores of households will be covered under this mission and will be provided toilets.
- Govt. will fit 2.5 lakh community toilet seats, 2.6 lakh seats of public toilets, and also make effort for solid waste management.
- Only 22% of Indian rural family had toilet facility (as per the data of 2011).
- Govt. of India offers Rs.10000-12000 for building toilets to households.
- Under which state has 30% of money to contribute, while rest of the money are offered by central govt.
- By 2016 (within 2 year), 3 Indian states are declared open defection free.
- Many local people in many states also voluntarily participated in this mission.
- Sikkim was the first state in India which was declared open defection free. Himachal Pradesh and Kerala were on 2nd and 3rd place respectively.
- Under Swachh Bharat mission, Indian railways also installed 37,000 bio-toilets and by 2018, all train-coaches to have bio toilets.
- Clean anganwadis, playgrounds, food, self-cleaning are also part of this mission.
- Every Member of Parliament is asked to adopt one village of their constituency and empower them and clean it.

Source: Internet

Call for Next Issue

It is for information of all readers that the Next issue **Vol II Issue 1** would be published in **March 2019**. The central theme of next issue is '**Save Our Wildlife**'. All articles, monographs, research papers, communications, cartoons would revolve round this theme. We also welcome new and ingenious ideas for development of VOE Newsletter. Diversity and Inclusion forms the core backbone of any professional ethos. Here, in **Voice of Environment** we believe in similar principles. We believe in sustainable conservation of biodiversity with holistic participation from different strata of the society. Relevant ideas are invited from scientists, academicians, researchers, students as well as people involved in wildlife administration. We invite '**Case Study**' and '**Success Stories- Voices from the Field**' from next issue. However, these sections would remain away from the central theme. We are also starting a new section called 'On a lighter note' where cartoons, meme related to people and wildlife would be portrayed. Interested students are encouraged to send articles, cartoons and meme in relation to wildlife and its' management. Word limit for articles should not go beyond 2000 words.

Last Date for Submission is: Feb 05, 2019 until midnight.

All entries must carry author's name, designation, current position, contact details etc. and can be directly send to voiceofenvironmentngo@gmail.com and cc to voeditor@gmail.com.

Important Note:

VOE Editorial Team takes no responsibilities of the articles and comments by authors. The articles and figures published in the Newsletter cannot be republished, copied or reproduced elsewhere. The source of information, however, can be used only for academic purposes and citations. This is to notify that VOE Editorial Team reserves all rights for the articles and other information published in this Newsletter. The author would be responsible in case of conflicts of interest and plagiarism issues. The editor won't be taking any responsibilities in such cases.



Voice of Environment

(Organization for Clean, Green & Sustainable Environment)

Registered Under, Society Act. XXI of 1860

Website: www.voiceofenvironment.org

Email Id - voiceofenvironmentngo@gmail.com

Membership Application Form

Membership Eligibility Criteria:

People who do care for the Environment and our mother Earth.

Full Membership benefits include:

Latest updates regarding jobs/opportunities/internships in Environment and related fields

Participate in various programs organized by VoE

Opportunities to travel for fieldwork

Mentoring on research and publishing in Newsletter

Opportunities to connect with fellow students/professionals/academicians/Social leaders

Opportunities for professional development, leadership roles, and community services

Access to multi-faceted global resources on local, national, and international levels

Invitation to annual social events

Members-only networking events with regional Universities and Organizations

Your membership announcement in VoE's newsletter

Review and discussions on various environment-related issues

Invitation to local, regional, and national conferences/programs

Membership Responsibilities

As a member, your responsibilities are:

To actively participate in meetings and events regularly

To provide clear and timely communication in response to meeting and/or event

To volunteer, when available, at community service events

To maintain professional conduct by treating fellow members and our guests with respect and courtesy.

To help maintain a positive, friendly environment necessary for all members to learn and grow

To pay membership dues on time (full and life membership only)

To organize various environments related awareness programs and reports the Executive Council body and Coordinators on regular basis.

To recruit new members for the organization.

Abide by all rules and regulations of the organization.

I shall abide by all the responsibilities, rules and regulations of Voice of Environment membership during my membership period.

Signature of the applicant



Voice of Environment

Website: www.voiceofenvironment.org

Email Id - voiceofenvironmentngo@gmail.com

<https://www.facebook.com/Voiceofenvironment>

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Recent Photo

How to Join

Need to complete our Membership Application Form:

Name:

Current Address:

Zip Code:

Email:

Phone/Mobile:

Facebook name (optional):

Please tell us a little about yourself:

Who are you?	<input type="checkbox"/> Student <input type="checkbox"/> Faculty/Professional <input type="checkbox"/> Community partner <input type="checkbox"/> Social worker <input type="checkbox"/> Others
Which university/organization are you associated with? (Details)	
How do you enrich VoE?	
If a student, which program are you in?	<input type="checkbox"/> Undergraduate <input type="checkbox"/> Master's <input type="checkbox"/> Doctorate <input type="checkbox"/> Post-doctorate <input type="checkbox"/> Other

If you are interested in participating in one of the committees, please tick appropriate box:

- Host events Multicultural Gala Domestic Trips International Trips
 Fundraising activities

MEMBERSHIP TYPE

- Volunteer (* conditions apply) Student Member (INR 100/year) Organizational/Institutional Member(250/Year) General Executive Member(500/year) Staff Member/Founding/Core Member (INR 2000/year) Life member (INR 5000 one time for 10 years)

DOCUMENT FOR VERIFICATION (anyone of the following)

PAN / AADHAAR / Driving License / Passport / Govt. issued id card / [College/University id card (Faculty/Student)]

Please complete this form, scan it & return to:

Mail us: voiceofenvironmentngo@gmail.com

Mobile No: +918114465539 & +919653773562

Signature of the applicant