

MANAGEMENT DIRECTIVES OF PLASTIC WASTE: INDIAN CONTEXT

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ABSTRACT

Plastic with its exclusive qualities of being light yet strong and economical has invaded every aspect of our day to day life. Plastic waste increases due to plastic bags, water bottles, plastic wrappers and plastic & thermocole (Styrofoam) crockery. Due to easy handling, easy in transportation, plastic wrappers and bags are playing an increasing role in packaging and consumer products. As a result plastic waste takes up a growing percentage of municipal solid waste (MSW).

Key word: Plastic waste, thermocole, crockery

INTRODUCTION

“People who are aware and act according to the requirements of sustaining environment, are cultured in the Modern era”. India has a percentage of Plastic waste in MSW as of now is 30-40% by volume. It varies from state to state depending on the state policies and public participation. Central Pollution Control Board (CPCB) said, a survey conducted in 60 major cities found that 15,342.46 tonnes of plastic waste was generated every day amounting to 56 lakh tonnes of plastic waste annually. This was interpreted by Supreme Court as “We are sitting on the time bomb”(1). We have a habit of collecting plastic garbage from cities and dumping them in villages. For the first time, researchers have quantified the amount of plastic waste entering the ocean from the land. They estimated that India pumps 0.6 tonnes of plastic waste into ocean annually (2, 3).

In country like UK, the plastic 2020 Challenge was founded in 2009 by the plastic industry with the aim of engaging the British Public in a nationwide debate about the use, reuse and disposal of plastics and hosts a series of online debates on its website framed around the waste hierarchy(4). Brookline, MA is moving toward banning the distribution of polystyrene containers by local food and coffee business (5). Plastic waste has attracted wide spread attention in India, particularly in the last five years. Plastic waste is a major environmental and health problem in India (6). So our gentries need to have to manage it through consumer awareness, reduce, reuse and recycle of plastic items.

CONSUMER AWARENESS:-

1. Environmental challenges of excessive plastic waste:-

- I. Plastic waste poses serious environmental challenges. Plastic garbage now becomes a threat to air, water and land. On plastic production, sulfur dioxide gas is released. According to German environmentalists 17 Kg SO₂, CO₂, Nitrogen oxides, hydrogen are released into the atmosphere (7). This gas is the culprit to block sun light. So cause the problem of global cooling. This gas is also responsible for depletion of ozone layer and acid rain.
- II. In India people wrap the wet waste under polythene. Due to anaerobic conditions under the polythene, methane gas is produced. Methane gas is the contributor in global warming. It absorbs infrared rays of the sun 20 times more than Co₂ resulting heat in the environment.
- III. Burning /incineration of plastic waste include hazardous emissions like di-benzo P-dioxin gas, hydrogen chloride, cadmium, and fine particulate matter. These adversely affect biodiversity. Several birds are reported to be died. Burning of thermocole (polystyrene) crockery releases chlorofluorocarbons in the air, responsible for ozone layer depletion.
- IV. Plastic waste is a non biodegradable type of waste. It takes 100 to 1000 years to degrade when used in landfills. If it is land filled, it

blocks the porosity of the soil and causes problems for ground water recharge.

- V. Careless disposal of plastic bags made from less than 20 micron are choking the drains causing uncontrolled floods during rainy season. Plastic garbage is killing a million creatures in the sea every year.
- VI. Some additives of plastic waste provoke concern as they migrate from the plastic into the leachate. Plasticizers known as phthalates are hazardous substances and have been found in a number of leachate analysis at various concentrations.
- VII. Use of poly bags alleviates the problem of littering in the country. Littering of poly bags/wrappers causes plastic dust due to Photo degradation which decreases productivity of agriculture land.
- VIII. Plastic waste disturbs the soil microbial activity and
- IX. Once ingested, plastic waste can kills animals.

1. **Health problems due to environmental challenge of plastic waste-**

- I. Swine flu virus grows rapidly due to global cooling.
- II. Ozone layer depletion causes skin problems.
- III. Di-benzo-P-Dioxin gas, hydrogen chloride, cadmium are carcinogenic in nature when exposed to human. This may cause eye problems, respiratory problems and cancer in humans.
- IV. Wet kitchen waste wrapped under poly bags causes mosquito breeding.
- V. Chromium of colored polythene can cause allergies.
- VI. Phthalic acid leachate can come in food products containing moisture. Phthalates migrate into the air, food and into including babies in their mother's wombs. These are linked with severe adverse health outcomes such as birth defects, impaired immunity, and cancer and hormone problems in humans(8).
- VII. If plastic is burned to ash on soil, it comes in plantation.

Indian Government can debate on use of plastic items and disseminate directives like

- a. **Do't throw wet kitchen waste wrapped under polythene.**
- b. **Do't litter it here or there.**
- c. **Do't burn as to ignite the fire.**
- d. **Do't land fill.**
- e. **Participate in source segregation**

REDUCE-

1. If per capita plastic waste generation is reduced, environment can be protected for our future generations. Even Indian Government is worried about air, water and land pollution caused due to abrupt use of plastic bags, it is now started to reduce its use especially of thin plastic bags. Cloth carry bags are being promoted to take the place especially to buy moisture containing food items like vegetable and fruits. Due to Plastic bags littering, thin plastic bags has been banned by the consumer industry during retail sales of products at many places in India like Himachal Pradesh, Uttara khand, Delhi etc.
2. Everybody must aware about the harmful effects of plastic waste and participate to reduce its use. Talk to your family members and friends about why it is important to reduce plastic in our lives and the nasty impact of plastic pollution (9). If people refuse plastic as a packaging material, the industry will decrease production for that purpose, and the associated problems such as energy use, pollution, and adverse health effects will diminish.

Reuse----Reuse of plastic items, containers, packaging wrappers etc will reduce the amount to go into landfills. This will conserve non renewable fossil fuel. Plastic production uses 8% of the World's oil production, 4% as feed stock and 4% during manufacture. This will reduce emissions of carbon di oxide, nitrogen oxides and sulfur di oxides. Container reuse can lead to a substantial reduction in the demand for disposable plastic and reduced use of material and energy, with the consequent reduced environmental impacts.

Recycling:- Recycling is processing used materials (waste) into new, useful products. Recycling also uses less energy and great way of controlling air, water and

land pollution. Since plastic is not normally biodegradable, recycling will help to reduce the high rates of plastic pollution. Recycling of plastic is desirable because it avoids their accumulation in landfills. It is the best option. For recycling of plastic waste, its Segregation should be done at consumer level (at source) means residence, shops and institutions level and manage to send it separately from other waste to plastic factory. Without participation of consumers in segregation, recycling purpose can't be achieved fully. If not segregated at consumer level, it will be a labor intensive task. It is better to have a door to door plastic waste collection system.

Reports of CPCB said "Total plastic waste which is collected and recycled in the country is estimated to be 9,205 tonnes per day (approximately 60% of total plastic waste) and 6,137 tonnes remain uncollected and littered (40% plastic waste is not recycled). Compared with lucrative recycling of material, such as glass and metal, plastic polymers recycling is often more challenging because of low density, low value, wide spread use of dyes, fillers and other additives in plastics, lack of recycling symbols & accompanying number and phase separate position(10). In many communities, not all types of plastics are accepted for recycling collection programs due to the high processing costs and complexity of the equipment required to recycle certain materials. Low national plastic recycling rates have been due to the complexity of sorting and processing, unfavorable economics, and consumer confusion about which plastics can actually be recycled. An innovative approach raising consumer awareness about separation of recyclable wastes from non recyclable is recently introduces in Thailand through " Waste for eggs Campaign". Thirty Plastic pieces can be exchanged for 5 eggs(11).

Remember— what is bad for the environment, is bad for human health

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