

Efforts To Make Kanpur Zoo Polythene Free

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Introduction

Polythene is popularly known as plastic. It is a polymer derived from the ethylene molecules. Ethylene molecule has carbon and hydrogen and the scientific formula is C_2H_2 . The two carbons are joined by a double bond and the hydrogen atoms are attached to each carbon by a single bond. The ethylene molecules are joined repeatedly to form long chains called polymers. Polythene was discovered in 1933 by Reginald Gibson and Eric Fawcett at the British industrial giant Imperial Chemical Industries (ICI). The polythene is variously classified on the basis of density and branching of the chains. They are named as Ultra High Molecular Weight Polythene (UHMWPE), High Density Polythene (HDPE), Low Density Polythene (LDPE), Medium Density Polythene (MDPE) and Very Low Density Polythene (VLDPE) etc., Various articles are made with polythene, to name a few plastic bags, bottles, containers, boxes etc.,

Advantages

The polythene has many advantages like it is light weight packaging material, helpful in food preservation, these require less energy for moulding, low cost, easy to carry, water proof, it being corrosion proof can be used in water supply systems.

Disadvantages

Polythene is not biodegradable, and clogs the drains which in turn create water stagnation and create a flood like situation. Polythene when consumed by cattle gets choked in the intestine and leads to the death of animal. If dumped in the soil causes harm to the plant life, as the toxic substances of polythene get blocked among the soil particles. Polythene threatens the life in the water bodies. The chemicals in polythene affect the survival of flora and fauna of the aquatic and marine eco systems.

In most households poly bags are used to preserve food items. It has been found out, the colourful poly bags contain lead and cadmium which are toxic and cause adverse effects to human health. When burnt in open air Hydrogen cyanide which is carcinogenic (cancer causing) is released, which causes environmental and health hazards. The pipes when used in direct sunlight get degraded due to UV light. These are not resistant to oxidizing acids, ketones and chlorinated hydrocarbons.

Various articles take various amounts



Replacing polythene bags with carry bags



Checking at the main gate

of time to decompose in normal environmental conditions. The glass bottles require one million years, the plastic bottles six hundred years, aluminium cans around one hundred fifty years, tin cans fifty years, news paper six weeks, orange or banana peel four weeks and soon. Thus the polythene is not biodegradable and the polybags of less than 40 microns are

banned in different states, due to their environmental pollution.

Polythene and other non biodegradable materials in Zoo situations

The visitors come to the zoo for recreation and educating their children regarding wild animals. The families plan for an entire day picnic at the zoo. With the increase of importance to

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Table 1. One week survey on polythene use inside the zoo by the visitors

S.No	Date	No of Visitors	No of tokens issued at main gate	No of tokens returned at main gate	Diff	No of tokens issued at Canteen	No of tokens returned at Canteen	Diff	Bottles which might have been left in zoo(6+9)
1	2	3	4	5	6	7	8	9	10
	14 th July	1258	91	89	2	11	10	1	3
	15 th July	1291	72	71	1	23	21	2	3
	16 th July	1057	70	64	6	02	02	0	6
	17 th July	2291	166	158	8	10	10	0	8
	19 th July	1131	84	82	2	22	22	0	2
	20 th July	984	67	63	4	08	06	2	6
	21 st July	861	46	46	0	11	10	1	1
	Total	8873	596	573	23	87	81	6	29

hygiene presently more and more disposable items are being used. Due to the inclination of city dwellers towards branded eatables, soft drinks, packaged drinking water bottles and fruits juices the demand for packing materials is increasing and these are being used indiscriminately. The polythene being more user friendly, cost effective, easy to mould it is the most used packaging material. Polythene in the form of packing materials for chips, popcorn, cooked gravy vegetables, food items, chocolate wrappers, biscuit packets, carry bags for the food articles, pet water bottles for drinking water, canned cool drink, drinking water glasses etc., enter the zoo premises. Apart from the polythene other materials like canned soft drink where aluminium is used, tetra packs which have an outer covering of paper and inside is lined with aluminium also enter the zoo.

After eating the food products and drinking water and other soft drinks, the bottles and other packaging wrappers are disposed off here and there inside the zoo. Though dust bins have been placed in various locations the visitors do not take pain even to approach the dust bins. Once the garbage is thrown in the open ground in the lawns and the places where they are sitting, the free ranging birds like crows raid the premises in search of the left out food materials. This gives the look of an open garbage collection centre. In Kanpur Zoological Park, free ranging spotted deer are present. Even these animals come in contact with the garbage and sometimes eat the polythene which becomes fatal as it chokes the intestine.

The visitors some time create vandalism by throwing the empty water bottles inside the enclosures. The animals innocently come for them

and consume the polythene and the pet bottles. The polythene being non biodegradable will not be digested and may choke the alimentary canal of the animals leading to their death. In Kanpur Zoological Park the incidents of vandalism are mostly seen at the enclosures of Muggar and Himalayan Black bear. The nature of mugger is to keep itself in same posture for a long duration. They keep their mouth opened and regulate the temperature of the body. If the mouth is open it keeps the mouth open for longer time, hardly blinking the eyes. The visitors feel that the animal in the enclosure is not a real one and is a statue. Thus for knowing the fact the visitor tends to throw the pet water bottle on the face of the animal thus injuring it. Himalyan black bear is also vulnerable because it comes near to the visitors and when the pet cold drink bottles are thrown it gets attracted towards them. Thus it might be detrimental to the health of the animal. Many a times the zoo administration and the supervisory

staff resort to punishing visitors for littering the zoo premises and for the acts of vandalism according to 38 J of Wildlife Protection Act, 1972. But this cannot be an ultimate solution. Because day by day the usage of polythene is on the rise creating more problems.

The situation in the zoological park was pathetic three years back. Every day many bottles were brought to the zoo. The visitors use to throw them after the visit. A study was conducted recently to know the amount of polythene being controlled. The details of one week survey has been tabulated in Table -1.

Similarly packaging materials in the form of chips wrappers, kurkure wrappers and snacks wrappers also enter the zoo premises and they are thrown after eating. A survey was conducted for one week to know the amount of polythene that enters the



Polythene garbage at the end of the day

Table 2. Survey on polythene carried inside the zoo by the visitors

S.No	Date	No of paper bags issued at the main gate	No of paper bags issued at the canteen	Total no of bags issued
1	22-07-2011	58	10	68
2	23-07-2011	82	14	96
3	24-07-2011	282	25	307
4	26-07-2011	84	11	95
5	27-07-2011	76	13	89
6	28-07-2011	72	16	88
7	29-07-2011	71	14	85
Total		725	103	828

zoo. The results have been tabulated in the Table-2

The Table-1 shows that on an average 98 pet bottles/ cool drink bottles enter the zoo each day. This is the figure of summer months and the number of visitors during winter is double than that of summer months and if the ratio of usage of the bottles is same then about two hundred bottles enter the zoo during winters. After the visit almost all bottles were thrown inside the zoo by the visitors. During the week days the sweepers will be in a position to clean the enclosures and clean the roads. It was very difficult for the sweeping staffs to clear all the pet water bottles/ Cool drink bottles and polythene bags which are to be handpicked. Most of these bottles and the polythene bags use to remain on the sides of the roads. Only on Mondays when the zoo is closed for the visitors intensive measures for clearing the zoo from polythene garbage was undertaken. But after working for the entire day it was next to impossible to clear the entire zoo premises from the pet bottles and polythene as they use to remain clinged to bushes and inside the bushes. If one or two sweepers are absent in any part of the zoo that area use to appear like a big garbage dump.

Strategy to control polythene pollution

Initially the polythene and other items that are brought in to the zoo were analysed and categorised as 1- Pet water bottles, cold drink bottles, cold drink cans, glass cold drink bottles, plastic glasses for drinking water 2- the chips wrappers, biscuit packets, chocolate wrappers, LDPE polythene bags for packing vegetables and other eatables. 3- big polythene bags for packaging food.

Visitors bring Water in big five litre kool kegs and other bottles which are separately purchased from market to keep in refrigerator. These bottles are brought by the visitors and they are taken back after the visit. The pet bottles like packaged drinking water bottles, cold drink bottles, cold drink tetra packs are purchased and thrown after drinking. These add to the garbage and pollution of zoo environment. For controlling this, token system has been introduced. For each pet water bottle, cold drink bottle, cold drink can, a deposit token is issued to the visitor. The cost of the token is kept as rupees ten. Thus a deposit of Rs. ten is collected from the visitor. The visitor after moving around the zoo gets back the empty water bottle, cold drink can or cold drink bottle and is shown at the main gate, the token is returned to the staff at the main gate, the deposit money is returned. The drinking water glasses also are made of plastic. For replacing them paper glasses are put at the main gate. These are sold at no loss no profit basis.

Similarly big polythene bags which are used for putting the packed food materials is also thrown inside the zoo premises after eating the food. For replacing the big

polythene bags carry bags were required. The local people were persuaded to gift them. Goldie Masale PVT Ltd and Ms Garima Pathak of Radio Mirchi have donated three hundred carry bags initially. These bags came very handy. Each carry bag is given to the visitor after collecting a security deposit of rupees twenty. The packed food materials were transferred in to the carry bag. The visitors after the visit has to bring back the carry bag and deposit at the main gate and collect back his deposit amount. This reduced the trouble of big polythene bags being thrown in the zoo premises.

In the third place the chips wrappers, the biscuit wrappers etc., were most difficult to control. To control paper bags, a nominal price can be put at the main gate, but collecting that small amount from each visitor was difficult. Hence Paper bags were received as gift from the donors and are distributed to visitors free of cost. The chips wrappers are opened at the gate and transferred in to the paper bags. Thus the chips wrappers do not enter the premises at all. In addition to it the vendors opposite to the zoo were persuaded to pack the eatables in eco-friendly packing only. These vendors usually give the chips and other eatables in paper bags only.

After this was introduced initially there was much resistance from the visitors to deposit security amount with the main gate. Visitors use to think that the security deposit is a fee being collected for taking the pet bottles inside. The ticket checkers had to convince the visitors that the security money is not a fee but it will be refunded once the empty bottles are brought back and shown at the main gate and the token is returned then their security amount will be returned. Gradually the visitors were convinced after seeing the cleanliness inside the zoo, after implementing the polythene ban.

A Radio Jockey from Radio Mirchi has come to the zoo on the very next day of the implementation of polythene ban and introduction of security tokens. I requested her to visit the zoo premises with me. Even I too was not sure whether the system introduced by us was successful or not. It was Monday morning and it was holiday for the zoo. In the morning hours the sweeping of the houses was going on, roads were yet to be cleaned. But when we moved inside the zoo and travelled a distance of about three kilometres inside the zoo, the radio jockey could not find even a single pet bottle on the road side. RJ has asked me to stop and send a message to their radio station to record this success. This was a pride moment for me. I realised that the step taken was successful.

Presently if we analyse the above Table if 100 bottles are entering the zoo only four or less bottles are remaining inside the zoo. Now the zoo is polythene free.