Waste generation is as old as human existence. As long as there have been humans there has been waste. As humans have evolved, so has their waste. Over the ages, the nature of waste has changed from being biodegradable to a highly toxic mix. Here is a look at the way waste – and what causes it – have transformed since ancient times.

Prehistoric Times

Early humans lived in small groups and were nomadic in nature. The trash they generated was mostly biodegradable and would rot away or be removed by scavenging animals. The non-biodegradable trash such as stone tools, bones and weapons never built up to troublesome levels.

Ancient Civilisations

As humans took to agriculture and formed settlements, waste began to accumulate. For a long time there was no systematic way of managing waste – garbage was simply left on streets. When the stench became nauseating, clay was poured over the street.

The first town dump was established by the ancient Greeks around 500 BC. Greek law at that time required waste to be dumped one mile from the city walls. About the same time, the Athenians issued a law that banned the throwing of waste on the streets. The Egyptians, however, had a much easier way of dealing with waste – they simply dumped it into the Nile.

In ancient Troy, the accumulation of garbage and the addition of clay over it made it necessary to raise the levels of roofs and doorways!

Around the second century BC, the Chinese had organised a special work force that systematically cleaned their major cities. **The ancient Mayans had a full-**

fledged waste disposal system in place. They had dumps specially meant for organic waste and actually reused materials such as broken pottery and other household debris.

The Middle Ages refined the concept of dumping garbage to an art! People were quite liable to have garbage thrown on them as they walked the streets.

Middle Ages

In urban areas, garbage continued to be discarded onto streets. In fact, it is in these conditions that **bubonic plague** or the **Black Death** decimated large numbers of European population. Realisation then dawned and streets were paved and street cleaning was enforced in cities.

Industrial Revolution

The industrial revolution resulted in a major shift in the volume and nature of waste – industrial waste entered the waste stream. Throughout the 18th and 19th centuries, cities in Europe and America were clogged with waste. Diseases were widespread as waste from industrial sources added to the waste of the population. In America, garbage was taken in large barges and simply thrown into the sea. This was the time that incinerators were introduced to deal with garbage.

Twentieth Century

The rapid changes of the 19th and 20th centuries have led to considerable damage to the environment, in some cases permanently. The 20th century has vividly demonstrated the dangers of rapid progress that ignores larger responsibilities towards the environment. Synthetic products that are non-degradable have become a part of our lives.

Waste and the problems associated with its disposal are still urban concepts though, especially in a country like India. In rural India most of the waste that is generated is biodegradable – agricultural waste, animal litter, food scraps, etc. Rural communities manage their waste by themselves for there is no municipality taking care of it. However, with growing consumerism, disposable items like plastic bags, bottles and packaging waste have started making an appearance in many parts of rural India.

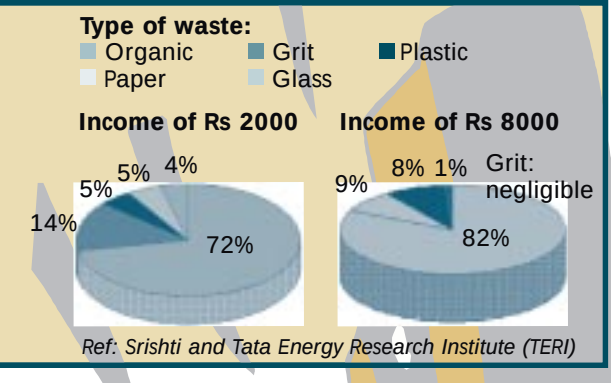
Today total waste management is a critical need generally accepted as one by policy-makers.

Know Your City's Waste

A metropolitan city like Delhi not only produces waste in colossal amounts but also of different kinds. All this waste needs to be collected, sorted into categories, and then disposed in a suitable manner – day after day, week after week.

Household Waste

Our homes generate a variety of waste such as vegetable peels, leftover food, paper, packaging, garden waste, etc. People in the high income bracket (Rs 8,000 per month and above) generate about 800 gm of waste per capita every day, while the low income bracket (Rs 2,000 or lower) generate only 200 gm of waste per day. Not only is there a variation in quantity, the nature of waste also differs, as shown in the graph below.



Ref: Srishti and Tata Energy Research Institute (TERI)

Medical Waste

Drive around any residential locality and you will come across many private nursing homes and medical clinics. Not only that, being the capital of India, Delhi boasts of many large hospitals and research establishments. All of these hospitals, nursing homes, veterinary hospitals, blood banks etc., generate a substantial amount of medical waste. This waste consists of used cotton, bandages, syringes, tubes, bottles, plastic materials, etc; pathological waste such as blood or urine samples; as well as anatomical waste such as amputated body parts and carcasses of animals.

Medical waste needs to be treated very systematically to ensure that diseases do not spread to the community. The government has made norms making it compulsory for

hospitals to segregate infectious and non-infectious waste. But these are followed more in the breach.

Of the 60 metric tonnes of medical waste generated per day in Delhi, 10-15% is highly infectious and has to be specially treated and disinfected before final disposal/recycling.

Industrial Waste

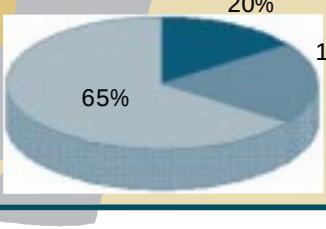
Technically, this kind of waste is not part of the municipal waste, but in a city like Delhi, where industries are distributed randomly, and sometimes very close to residential areas, it poses a major problem for the municipality and citizens. Industrial waste, which is usually rich in chemical content, is highly toxic. It poses a major threat to our health and our environment. Industrial waste has to be treated very specially to contain its harmful effects. Unfortunately there are no good estimates that can tell us how much of this waste is seeping into our city's municipal waste. According to the Central Pollution Control Board (CPCB), the figure could be 72,400 tonnes annually. Again, there are strict guidelines to be followed by industries while disposing their waste, but most industries in the city do so along with municipal waste.

Construction Waste

As Delhi grows, so does the demand for housing, office space, markets and roads. Naturally, the administration of Delhi is constantly building new structures and demolishing old ones. The result is huge mounds of *malba* that lie unclaimed for months along roadsides and inside colonies. All this rubble hinders the cleaning process of the city and blocks drains, worsening the situation of waste collection. Approximately 20 per cent of the waste in Delhi is construction waste.

Types of waste generated by Delhi:

- Organic Waste
- Construction Waste – Sand, Grit, etc
- Plastics, Metals, Rags, etc



The Truth About Plastics

Plastics are perhaps the most visible material today. We encounter plastic right from the morning when we brush our teeth to night when we switch off our lights. Let's find out more about this product that surrounds us wherever we go – in our cars, houses, appliances, and even in the containers we eat and drink from.

The term plastic comes from the Greek words plassein and plastikos which mean 'to mould or to shape a soft substance permanently or temporarily'.

Packaging accounts for about 15 per cent of our total plastic consumption. Plastic packaging is practically useless after the product has been consumed and has to be recycled. Not only this, it can contaminate our soil and water. Plastic waste constitutes about 4 per cent of our municipal waste. For a city like Delhi, that means more than 250 tonnes or 60 truck loads per year. Though we use the term plastic loosely, there are many kinds of plastic, each suitable for a particular purpose.

Types Of Plastics

Polypropylene (PP): Used in the making of combs, food containers, school bags, plastic furniture, automobile components and disposable syringes. PP is also used in films for packing soft goods, foodstuffs, domestic appliances and textiles.

Low-density Polyethylene (LDPE): A moisture-resistant plastic that is used for lining milk bags and food containers. It is also used to line ponds and canals to prevent seepage.

High-density Polyethylene (HDPE): A tough and rigid plastic that resists heat. Used in overhead water tanks,

buckets, plastic cups, bowls and plates. The blue and red soft drink crates that you see at the neighborhood store are also made of HDPE.

Engineering Thermoplastics: These light weight plastics are used in high-tech products such as CD-ROMs, cellphones and optical fibre cables.

The *panni* that we use to bring home vegetables, food and other consumables is made of LDPE and recycled plastics. Burning these bags releases deadly dioxins. Moreover, they are non-biodegradable and choke sewer lines and clog drains, disrupting water supply and sewage.

Styrofoam: The omnipresent soft white coloured cup, seen in soft drink and coffee vending machines is also a kind of plastic. Styrofoam is a deadly environmental hazard as it may never ever degrade.

PET: Perhaps the most visible of plastics. Used in mineral water and soft drink bottles.

Polyvinyl Chloride(PVC): Toys, packaging of soaps, medicines, upholstery fabrics, shoe soles, are all made from PVC. PVC is fast replacing wood for making window and door frames. It is also widely used to insulate electric wires.

It is important to recycle different kinds of plastics *separately* since they all have different processing temperatures and are often incompatible with each other. Various state governments have passed legislations to control the plastic problem. A ban has been in force at Sabarimala, Kerala, Rajkot in Rajasthan, Nepli and Kansal forest areas in Chandigarh, Srinagar in Jammu and Kashmir, Delhi, Goa and more recently Bangalore. Banning, however, is effective only to a limited extent. It also shifts the responsibility of implementation to the government whereas we, as consumers, have to play a vital role in the control of plastics.

Plastic Perfect

- ✔ **Urge shop keepers to hand out paper bags or carry your own bag**
- ✔ **Separate plastic from other waste before disposing of it**
- ✖ **Avoid flimsy and dark-coloured bags**
- ✖ **Do not burn plastics**