Types of Wastes and associate legal framework in India

Waste management is an important challenge in India and it is identified harmful impact on the environment. We generate more than lakhs metric tonnes of waste every day. This includes not just garbage or municipal waste, but also other forms of waste like E-waste, Plastic Waste, Hazardous waste, etc. Over the last decade, the Government of India has set various kinds of rules and guidelines to manage all these different kinds of wastes. It is important to understand these if we are to seriously address the increasing challenge of waste management.

Here are the different types of waste in India.

1. **Municipal Waste**

Municipal Wastes are the wastes normally generated from commercial and household activities. They do not include wastes from construction or demolition activities. Open dumping of such wastes contaminates the water bodies. Public health is also threatened as these wastes attract vector-borne diseases. A considerable increase in municipal solid wastes can be seen due to the rising urbanization and lifestyle changes.

Urban India generates around 62 million tons of municipal solid waste every year. Note that, municipal waste generates some amount of plastic waste as well. According to the Solid Waste Management Rules, 2016 these plastic wastes are first segregated by the generators and are handed over to the authorized rag-pickers or the waste collectors. It is then processed under the guidelines of the Plastic Waste Management (Amendment) Rules, 2018.

2. **Plastic Waste**

The accumulation of plastic objects in the environment is broadly termed as Plastic Waste. Plastics come in different forms and the single-use plastics, like the plastic bags, straws, bottles etc, are the ones that are widely used. Since these plastics are non-biodegradable, they are known to disrupt the life of all the living organisms on this planet. Uncollected plastic wastes on land have resulted in the choking of drains, leading to numerous water-borne diseases.

Careless disposal of plastic waste blocks the porosity of the soil, thereby affecting soil fertility. Most of the plastic wastes that are not disposed of properly on land, finds its way to the ocean. In the marine environment, these plastic wastes interfere with the food chain of the marine organisms. Roughly around more than 100,000 marine mammals die due to plastic ingestion every year.

3. E-Waste

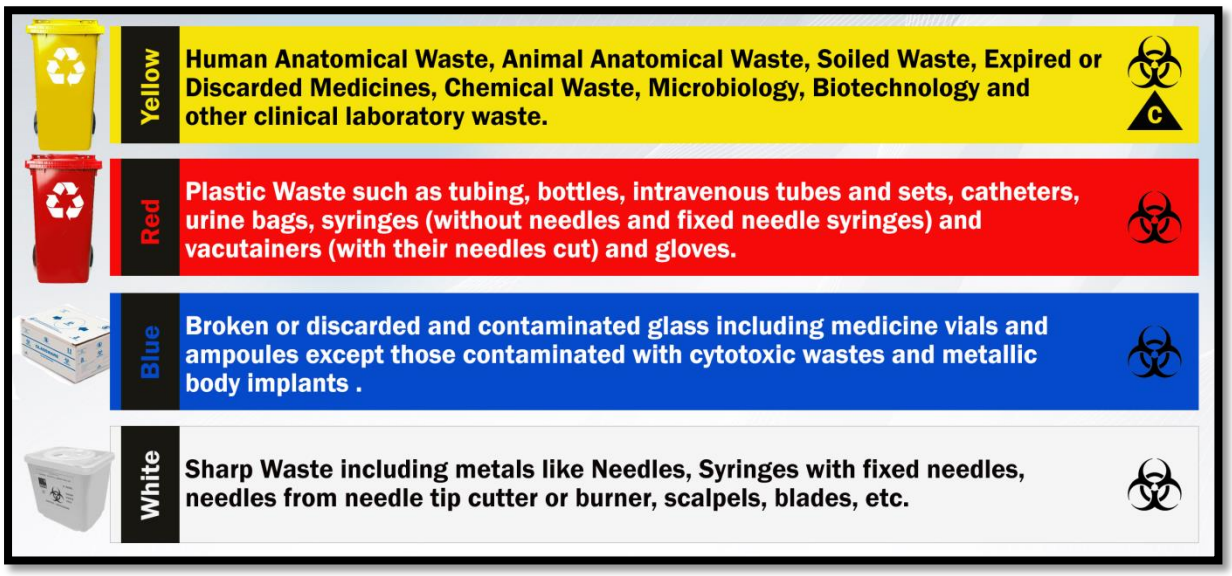
E-Waste (or Electronic Waste) is the discarded electrical and electronic products like computers and their peripherals, home appliances, audio or video devices. These products contain toxic metals like lead, cadmium, beryllium, chromium, just to name a few. E-Wastes generally become hazardous when they are recycled or disposed of by primitive methods, such as simply dumping it to the garbage bins. Once exposed to the environment, these toxic chemicals can cause severe health problems.

For instance, lead which is usually found in the circuit boards and computer monitors causes damage to the nervous systems affects the kidney and reproductive systems in humans and hinders the brain development in children. Studies have revealed that beryllium, commonly found on the motherboard, is responsible for lung cancer and skin diseases. Printer cartridges that have black and colour toners lead to respiratory irritation. India is the fifth largest generator of e-waste in the world. We generate approximately 2 million tonnes of e-waste annually.

4. Biomedical Waste

Biomedical or Hospital Wastes are the kind of waste which have been generated during the treatment or immunization of humans or animals in a medical or a research laboratory. This type of waste usually includes syringes, discarded medicines, bandages etc. The discharge of toxins from these bio-medical wastes can gravely affect the terrestrial and marine ecosystems.

These toxins, once consumed, can prove to be fatal for some organisms. Human exposure to such toxins can lead to birth defects. Many biomedical wastes can also potentially lead to the spread of infectious diseases. A study recently conducted reveals that India is likely to generate about 775.5 tonnes of medical waste by 2022.



5. Construction and Demolition (C&D) Waste

Construction and demolition waste is generated due to activities related to construction or demolition of roads, buildings, bridges, subways etc. This type of wastes particularly includes non-biodegradable materials such as concrete, plaster, metal, wood and plastics. A part of this waste combines with the municipal wastes. If such wastes are not managed properly, they can pollute the land and the air. According to an estimate by the government, these wastes generate 165-175 million tonnes annually.

6. Hazardous Waste

Hazardous Wastes are any kind of wastes which are reactive, toxic, flammable, explosive or corrosive in nature and causes a threat to the health or the environment. Such wastes are generated by industries involved in the manufacturing of petroleum, paints, pharmaceuticals etc. Unscientific disposal of these hazardous wastes leads to emission of toxic chemicals.

These chemicals are responsible for air pollution and degradation of water bodies. Workers employed in such practices suffer from neurological disorders, skin diseases and cancer. As per a

report in 2015, India generated around 7.46 million metric tonnes of total hazardous wastes annually.

7. Battery Waste

The used or depleted batteries from cars, electronic equipment and industries contribute to the battery waste. These batteries contain heavy metals like lead, nickel, lithium, copper etc. Battery waste usually gets unnoticed and archaic methods are relied on to dispose them.

Improper disposal of these used batteries results in the release of some toxic chemicals which contaminates both the soil and the water bodies. They can become hazardous to the environment, especially affecting the health of all the living organisms in the world. Every year approximately, 2.7 billion dry-cell batteries are used in India.

8. Radioactive Waste

Radioactive Wastes forms a part of the waste that contains radioactive elements. These radioactive elements mainly come from mining activities and nuclear power plants. Radiations emitted from this kind of waste are known to disrupt the environment.

Such radiations may damage the eyes, injure the skin cells causing sunburns and can have long term effects like cancers and tumours. It has been noted that embryos, foetus, bone marrow and

intestinal lining are more prone to radiations. According to a study, India generates around 4 tonnes of nuclear waste per year.

Waste Management Rules in India:

1. Solid Waste Management Rules, 2016
2. Plastic Waste Management (Amendment) Rules, 2018
3. E-Waste Management Amendment Rules, 2018
4. Bio-Medical Waste Management (Amendment) Rules, 2019
5. Construction and Demolition Waste Management Rules, 2016
6. Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2019
7. Batteries (Management and Handling) Rules, 2001
8. Atomic Energy (Safe Disposal of Radioactive Wastes) Rules, 1987

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