

# Waste Management in Educational Institute by 3r Approach

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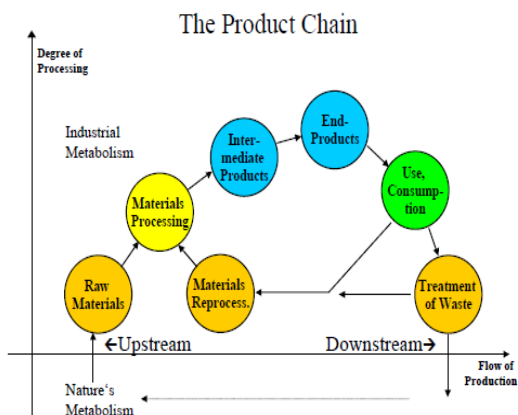
## ABSTRACT

*Environmental deterioration is going worse gradually by the indiscriminate disposal of waste materials. Whenever something is thrown out or is considered to be waste, resources are lost. With the effect of this more natural resources are extracted to replenish the society's infinite need for more consumable products. Waste management simply define as the collection, transport, processing or disposal, managing and monitoring of waste materials to minimize its adverse effect on human being and environment while many people already using 3 R approach at their home to recycle the products, we can utilise waste reduction techniques because opportunities exist anywhere we have waste. Recycling is one way to reduce waste; reusing products is another. Products that can be reused and recycled are countless, and include everything from paper to clothing to worn-out electronics. Some examples of the many items we can reuse include clothing, school supplies, and sports and electronic equipment. The items we most commonly recycle are paper, aluminium, glass, steel, cardboard, and yard waste. Most waste reduction efforts save money, energy, and natural resources, and can teach children and young adults how solid waste affects their lives and their environment. Materials that are re-used are recovered and then used again in their original form require a controlled process of recovery where contamination and damage can be minimised. Composting is an age-old practice with modern-day applications that appeals to people of all ages. Composting is the controlled biological decomposition of organic material, such as food scraps or lawn trimmings. It is also a waste reduction method.*

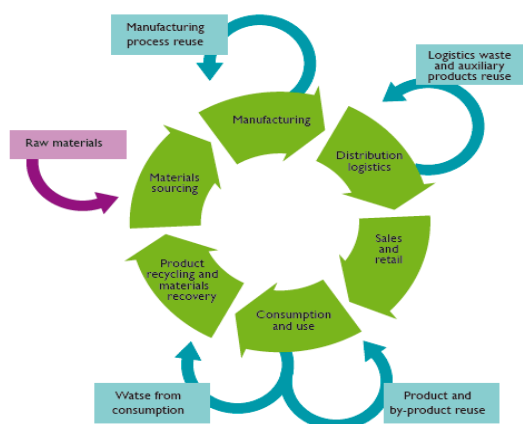
**Keywords:** Waste management, Reduce, Reuse, Recycle, Composting

## 1. INTRODUCTION

Responsible use of technology also means recognizing and leveraging the interconnectedness of different technology platforms, developing ways to design for disassembly, recyclability and upgrading. It requires a paradigm shift from wasteful linear processes to “closed loop” design and production. (fig.1 (a,b)) In nature, there is no waste. Indeed, a lot can be learned from natural ecosystems and mimicking them.



**Fig.1 (a) Product Chain**



**Fig.1 (b) Closed Loop Chain**

Waste is a wide ranging term encompassing most unwanted materials, defined by the Environmental Protection Act 1990. Waste includes any scrap material, effluent or unwanted surplus substance or article that requires disposal because it is broken, worn out, contaminated or otherwise spoiled. Wastes are 'those substances or objects which fall out of the commercial cycle or chain of utility. For example:-glass bottles that are returned or reused in their original form are not waste, whilst glass bottles banked

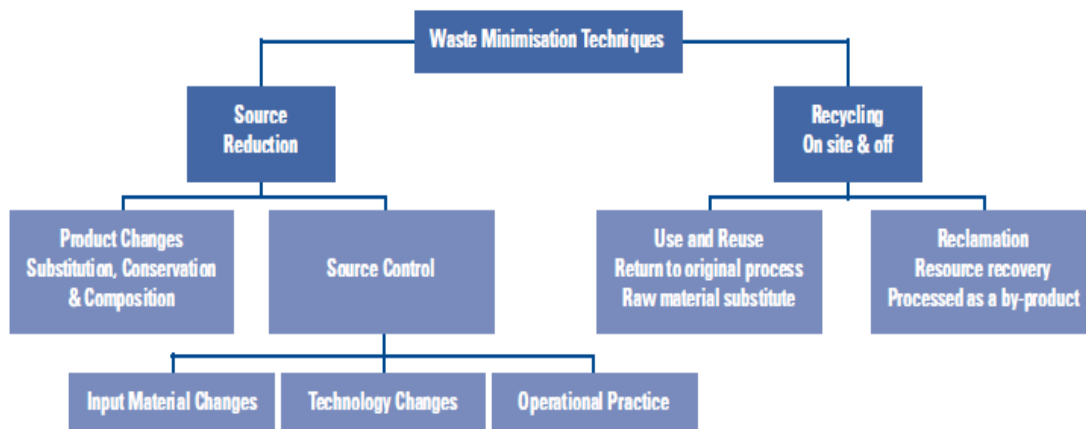
By the public and dispatched for remoulding are wastes 'until they have been recovered'

The Department of the Environment identifies four broad categories of potential waste:

- Worn but functioning substances or objects that are still useable (albeit after repair) for the purpose they were made.
- Substances or objects that can be put to immediate use otherwise than by a specialized waste recovery establishment or undertaking for example ash from a power station used as a raw material in building blocks.
- Degenerated substances or objects that can be put to use only by establishments or undertakings specialized in waste recovery. These are always wastes even if transferred for recovery for value for example contaminated solvents or scrap. Such substances only cease to be waste when they have been recovered
- Substances or objects which the holder does not want and which he has to pay to have taken away. If substances or objects are consigned to the process of waste collection then they are waste but they may not be where they are fit for use in their present form by another identified person
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**Fig.2 Waste management technique**

## 2. WASTE MANAGEMENT TECHNIQUES

Following are some general techniques of Waste Management:-

### *1. Incineration method of waste management*

Incineration as a disposal method involves burning the trash. Sometimes this is simply referred to as thermal treatment, as a general category of high temperature treatment of trash material. This method can be used to transform waste into heat, gas, steam and ash. One of the advantages of incineration is that with this method, refuse volume can be reduced by half or more and it requires little usage of land

### *2. Sanitary Landfills as waste disposal*

Landfill is probably the most practiced in more areas of the world than any other method. Landfills are often old and abandoned quarries and mining areas. Considered the most cost-effective way of waste disposal, about 75% of the cost of implementation is attributable to the collection and transportation of waste from residential and businesses to the landfills. The waste is layered in thin spreads and then compacted, with a layer of clean earth covering the waste material before more layers are added over time

### 3. Recycling

Recycling of waste material means taking the materials and transforming them into new products. This is a key concept in the modern waste minimization philosophy. It's about lessening the strain on the environment through minimizing the need to fully dispose. In our everyday living, we may already be separating out paper products, aluminium soda cans or glass bottles into different waste containers so that these could be recycled.

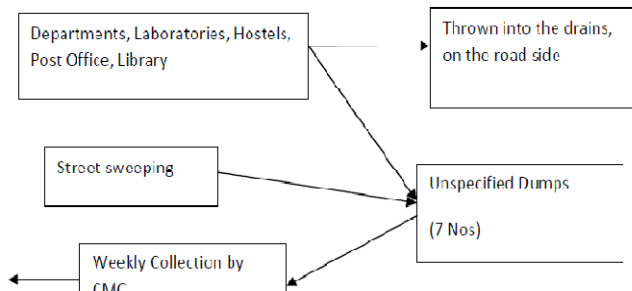
### 4. Avoidance and reduction methods

Prevention of waste material being created is also known as waste reduction. Methods of avoidance include reuse of second-hand products, repairing broken items instead of buying new, designing products to be refillable or reusable (such as cotton instead of plastic shopping bags), encouraging consumers to avoid using disposable products (such as disposable cutlery), removing any food/liquid remains from cans and packaging and designing products that use less material to achieve the same purpose (for example, light weighting of beverage cans).

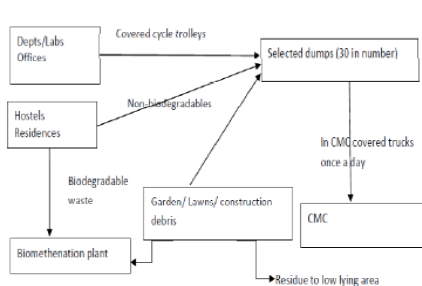


**Fig.3 Different method of Waste Management**

### Waste Management Techniques



**Fig.4(a) Present method**



**Fig.4(b) Proposed method**

**Category Wise Distribution of Waste Material**

Material/Types of Waste	Category	Description
Compostable	Leftover Food Waste, Fruit and Vegetable Waste, yard Waste	Leaves, Clipping Grass
Recyclable	Metal, Glass, Recyclable Plastic ,Recyclable Paper	Aluminum Cans, Soft Drink Cans, Nails, Broken Glass ,Tumblers ,Water Bottles, Cardboard, Printing Paper , News paper
Miscellaneous Waste	Non Recyclable Paper, Non Recyclable Plastic	Toilet Papers, Plastic Bags

**Situation of Waste Management**

Sr. No.	Requirement	Present Situation	Remarks
1.	To avoid Littering of Wastes	Littering of Waste occurs extensively throughout of campus	Poor level of awareness lack of garbage bins
2.	To ensure delivery of wastes in accordance with collection and segregation system	No segregation of waste	Lack of segregation requirements as well as on benefits of such practices
3.	Organize department to department collection	No door to door collection	No awareness about rules
4.	Separation and Disposal of Construction and Demolition waste	Horticulture waste is mixed with regular waste	Clear disposal mechanism
5.	Setting up of waste processing and disposal facility	Not implemented yet	Needs immediate attention

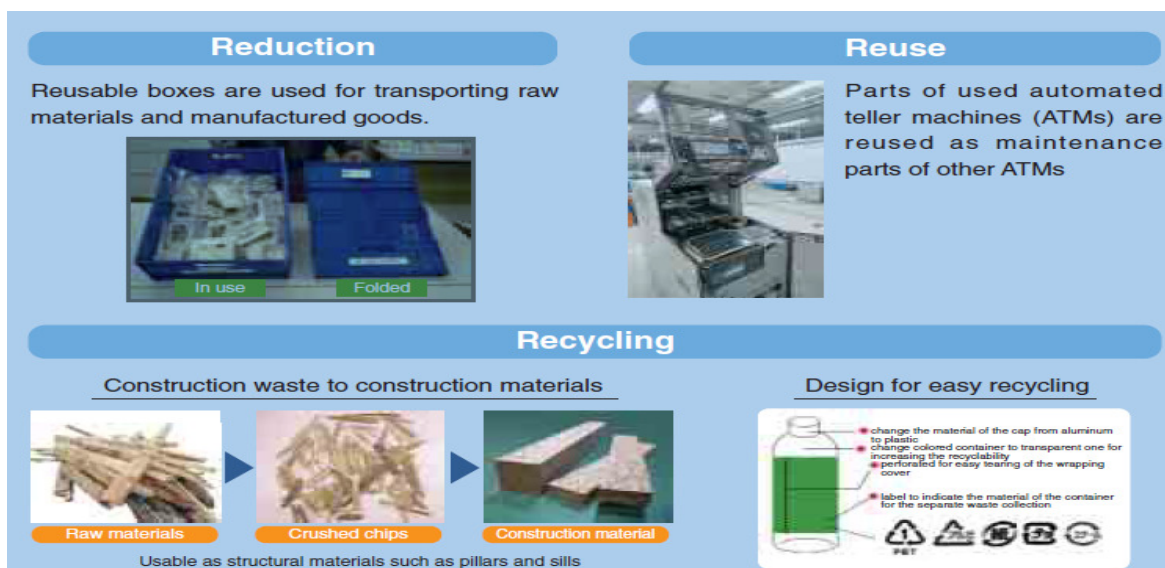
*Municipal Solid Waste (Management and Handling) Rules 2000*

### 3. INFORMATION SHARING WITH 3-R

For Promotion of 3R's, information related to 3R activities must be widely shared by all stakeholders. such type of information facilitates understanding of 3Rs among Stakeholders, enhance self awareness regarding their expected role. Following Labels play important role in facilitating information sharing among various stakeholders.



**Fig.5 Information about 3R**



**Fig. 6 Role of 3R in industries**

### 4. CONCLUSION

Though the level of awareness of waste collection services and waste management regulations were relatively high percentage of those who used other indiscriminate solid waste disposal methods like open dumping, open burning, and dumping in drainages was higher. Waste management Activities have several advantages like Prevent pollution created by manufacturing

new products or products made from virgin materials, Conserve natural resources such as timber, water, metals, and fossil fuels, Reduce the need for landfilling and incineration, which are expensive to operate and maintain. Educational institute produces a lot of 'waste' which can be managed better or avoided in first place. There are reams of paper being wasted across various departments by the staff, by students. Lot of plastic utilities like computers and other parts are disposed of every year. Educational institutions have been fore-runners in bringing such changes

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