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# **Report: Waste & Waste Management in the University Town Peshawar.**

## **Complaint by the residents of the university town Peshawar.**

The residence of university town have complaint that they have facing a problem with waste and there is a lot of smell in the town due to waste. The health of residents is also affected because there is no proper management of waste. Due to the speedy increase in population, the solid waste management issues are becoming a challenge for the developing countries. Unhealthy collection, improper transportation and open dumping of the Municipal Solid Waste (MSW) is causing a serious threat to the environment and the people residing in the surroundings. Safe and human friendly environment is one of the most important issues in world today. This paper has addressed one of such important issue, the treatment of environmental hazard in form of solid waste in university town Peshawar. The aim of the report is that to finding out the safe and proper solution for waste management.

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### **Introduction:**

Waste is the main problem of the all world which destroyed the natural environment. Waste are generate from different sources. Some are harmful and some are useful (means that some can affect the human health and environment but some cane be reuse/ recycle).

I personally visit the area and inspect the area and collect data about the waste generated in these area. Which is the following. This are contain small chemical manufacturing units at its periphery along with some restaurants and a dispensary and it is a residential area. Contain many school, university and hospital. They all generate the waste.

There are two major type of waste generated in the town (Solid Waste & Liquid Waste).

### **Sources of waste generation:**

The area include many type of units which perform different types of activity and generate different type of waste. Which is classified as follow.

According to data collection the sources of waste generation is in the form of Refuse waste, Hazardous waste, Municipal, Domestic, Commercial, Industrial, and Agricultural.

1. Municipal waste
  - i. Biodegradable waste
  - ii. Recyclable material
  - iii. Inert waste
  - iv. Composite wastes
  - v. Domestic hazardous waste
2. Domestic waste
3. Commercial waste
4. Industrial waste
5. Agricultural waste

**Classification of waste:**

- Solid waste
- E-waste
- Liquid waste
- Plastic waste

Collection of waste is the main problem in the area. The residents of the town cannot collect the waste in the bin they trough it in the way and the garbage's is dispersed in the town everywhere. There is no proper collection process of waste. Shortage of bin is also a problem. Awareness about cleaning should be produce in people. Warn the chemical manufacturing units and restaurant as well as pharmacy to manage their waste properly and collect each waste type separately in the bin which is provided by the municipal committee. Allow the worker to strictly follow the rule who can collect the waste from the town.

For the collection of waste color coded bin system will be follow and provide the precaution about this system to the people to aware about this.

This system is follow as.

**Disposal bin system**

- Have Bio Hazard Label on red, yellow, blue and white bins, Cytotoxic Label on black bin.
- Collect the domestic waste (eatables, wrappers, fruit peels, papers etc.) in green bin
- Yellow bins needles syringes
- Dispose body parts which has been segregated in yellow bin / bag by handing over to Common Biomedical Waste Treatment Facility if available or otherwise incinerate it.
- Don't dispose infectious waste into black and green bin.
- Waste sharps– white container

**Treatment method of waste:**

**there are too many treatment method:**

- Waste Prevention and Minimisation
- Re-use
- Recycle

- Composting
- Land filling

After knowing the waste generation sources and classification we understand that what should be done.

Now I suggest some waste treatment method with their pros and cons. After this discussion we will be able to select one or two method of waste treatment.

- Apply 3-R Principle
- Use waste as source of power generation
- 3-R Principle
- REDUCE
  - The amount of waste generated can be reduce through our small efforts
  - Things that last longer, things that can be used more than once
- REUSE
  - We can reuse many things before we through them. Polythene bags, clothing, shoes, containers etc.
- RECYCLE
  - Many items such paper, cans and plastics bottle can be recycled to use again.

#### **Reduce waste:**

- Reduce office paper waste by implementing a formal policy to duplex all draft reports and by making training manuals and personnel information available electronically.
- Improve product design to use less materials.
- Redesign packaging to eliminate excess material while maintaining strength.
- Work with customers to design and implement a packaging return program.
- Switch to reusable transport containers.
- Purchase products in bulk.

#### **Reuse:**

- Reuse corrugated moving boxes internally.
- Reuse office furniture and supplies, such as interoffice envelopes, file folders, and paper.
- Use durable towels, tablecloths, napkins, dishes, cups, and glasses.
- Use incoming packaging materials for outgoing shipments.
- Encourage employees to reuse office materials rather than purchase new ones.

#### **Advantages of reuse:**

- Energy and raw materials savings as replacing many single use products with one reusable one reduces the number that need to be manufactured.
- Reduced disposal needs and costs.
- Refurbishment can bring sophisticated, sustainable, well paid jobs to underdeveloped economies.

- Cost savings for business and consumers as a reusable product is often cheaper than the many single use products it replaces.
- Some older items were better handcrafted and appreciate in value.

**Disadvantages of reuse:**

- Reuse often requires cleaning or transport, which have environmental costs.
- Some items, such as Freon appliances or infant auto seats, could be hazardous or less energy efficient as they continue to be used.
- Sorting and preparing items for reuse takes time, which is inconvenient

**Municipal solid waste disposal method:**

- Composting
- Sanitary landfill
- Incineration and pyrolysis
- Reuse, recovery and recycle

**Land Fill:**

- Features, Careful and scientific site selection, Controlled dumping, Compaction of waste. Provision for collecting leachates, Organic wastes are degraded by soil microorganisms, Microbes utilize the oxygen present inside the landfill, Followed by anaerobic decomposition, Water soluble organic compounds generated in this process percolates through the landfill soils. Land occupied by the land fill becomes unproductive.
- Insects, rodents, scavenger birds, bad odor are some of the aesthetic problems associated with sanitary landfill
- Emission of methane and CO<sub>2</sub> and leachate contamination of ground water and soil are the environmental issues connected with sanitary landfill.

**Conclusion:**

First we have done survey the town. Collect data about waste and waste generation sources in the town. We study that the waste destroy the environment also disturbed all type of live in the town.

Liquid waste from chemical manufacturing unit can harm the aquatic life it can stop the reproduction of fishes and other sea animals. It can also affect the ground water and create many harmful diseases (like Cancer, kidney disease, brain diseases etc.). It can also harm human health because it's in the periphery of restaurant. Solid waste also destroy the aquatic and human life.

After this we classify the waste (like which is harmful, which is useful).

Which material can be reuse, which cannot be reuse, which waste is generated from hospital and which waste is come from residential area etc. after this we discuss the waste treatment methods with their advantages and disadvantages. Then we came onto the point that both of the treatment method (Reuse, Landfill) should be adopted in the town. Because some waste can be reuse for different purposes and the other waste which cannot be reuse can be dumped in the safe area out from the urban area and away from populated area for better health and safe environment. And issue a warning notification to chemical manufacturing units to properly manage their waste and cannot throw their chemical liquid waste directly in the sea. Otherwise they will be punished.

**Q2:**

The population of the area is approximately 8000 each generating 0.12kg/day of solid waste. Moreover, there are 500 houses each generating 50kg/day. The volume of waste generated from the dispensary is estimated to be 2tons/month. Find the waste (assume) generated from the restaurants. Keeping these parameters in consideration, suggest the area required by for dumping the waste with allowable waste depth not exceeding more than 0.5m.

- **Given Data:**

Population of area = 8000

Solid waste generated by each is = 0.12 kg/day

Available houses in the area are = 500

Waste generated by each is = 50 kg/day

Waste generated from dispensary = 2 tons/month

$$2 \times 1000 / 30 = 66.66 \text{ kg/day}$$

Height (H) of the area where waste will be dumped cannot exceed then 0.5m

- **Required Data:**

Assume the waste generated from the restaurants =?

Assume the density = D =?

Total mass = m =?

Volume = V =?

Calculate the area = A =?

- **Solution:**

Assume waste generated from restaurant is = 150 kg/day

Assume density = D = 110 kg/m<sup>3</sup>

Total mass = m = (8000\*0.12) + (500\*50) + (66.66) + (150)

Mass = m = 26176.66 kg/day

Volume = V = Mass/Density = 26176.66/110

Volume = V = 237.9696 m<sup>3</sup>/day

**Area for Dumping:**

Area = A = volume/Height

A = 237.9696/0.5

A = 475.93 m<sup>2</sup>

**Ans**

**Thank You**