

# An Investigation into Waste Management Practices in Nigeria (A Case Study of Lagos Environmental protection Board and Abuja Environmental protection Board)

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## Abstract

*The growth of our population in the urban centres is rapid and the increase in industrial activities present an important challenges as well as timely opportunity for the application of environment and conserved management in Nigeria. This is true because as the urban centres are increasing in population, it is accomplished by an increase in the production of different categories of city, town and local wastes. The waste management problem in Nigeria is relatively enormous, and many attempts made at getting rid of it from human settlement have been very successful. In developed countries like Europe, there are effective systems for the removal of waste from different settlements, although ultimate and final disposal usually pose problem in the environment due to lack **Basic facilities:-** This paper investigate the waste management problems and the various methods and technical practices used to tackle these problems by federal environmental protection board in Lagos and Abuja which includes the provision of dustbin public toilets adequate provision of wash hand basins, provision of health education for the residents*

**Key words:** Investigation, waste management practices environmental protection board.

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## Introduction

According to Gilpin (1996), waste management is a systematic plan for effectively controlling the production, storage, collection, transportation, processing and disposal or utilization of wastes in a sanitary aesthetical acceptable and economical manner. It also includes all administrative, financial, legal and planning activities as well as the physical aspect of waste handling waste management can involve solid liquid and or gases waste, and the management methods are certainly different. Traditionally managing domestic industrial wastes consists of collection and disposal.

Depending upon the type of waste and area, a level of processing may follow collection. According to Thobangious George et al (1977) the processing may be to reduce the hazard of the waste recover material to recycling and to produced energy from the waste or reduce it in volume for more efficient disposal. The collection methods may also vary widely in different countries and regions and it would be impossible to describe them at once. The disposal methods are also numerous especially in different parts of Nigeria where inadequate facilities are the major problem.

## Materials and method

The materials for this study were generated from primary and secondary sources with greater emphasis on the later. The primary data were collected from interviewers conducted with key persons in the federal environmental protection board in Lagos and Abuja, from journals and text books, periodicals, Annual reports of federal environmental protection board in the two cities, articles and previous

works of other researchers oral interviews were also conduct on a face to face bases within offices and questionnaires were also administered to provide immediate need responses

## Areas of study

The area of study for this paper covered two notable city centres of Nigeria under federal environmental protection board (FEPB) in Lagos state, and Abuja environmental protection board [AEPB]

## Date Presentation and Analysis

**Table 1:1 Population of the FEPA Staff**

| FEPA               | No. of Senior staff | No. of Junior staff | Total staff |
|--------------------|---------------------|---------------------|-------------|
| Abuja (AEPA) FCT   | 21                  | 21                  | 42          |
| Lagos state (LEPB) | 20                  | 20                  | 40          |
| Total              | 41                  | 41                  | 82          |

The population of the study centres is 82. statistics available in the two cities shows

that the FEPB have 41 senior staff and 41 junior staff

**TABLE 1:2 Questionnaire Distributions**

| FEPB               | Number Distribution | Number completed and returned | Responses rate (%) |
|--------------------|---------------------|-------------------------------|--------------------|
| ABUJA FCT (FEPB)   | 21                  | 19                            | 42.8               |
| LAGOS State (LEPB) | 20                  | 17                            | 47.2               |
| TOTAL              | 41                  | 41                            | 100                |

Form the data above, it can be seen that the number of respondents were mostly from the Abuja FCT FEPB.

**TABLE 1.3 Age Distribution**

| Age          | Respondents | Percentage (%) |
|--------------|-------------|----------------|
| 20-35        | 25          | 61.0           |
| 36 and above | 16          | 39.0           |
| Total        | 41          | 100            |

Source: From Questionnaire

The age bracket of the respondents was dominated by 20- 35

**TABLE 1.4 Academic Qualification.**

| Qualification | Respondents | Percentage (%) |
|---------------|-------------|----------------|
| OND, NCE      | 6           | 14.6           |
| HND, B. Sc    | 7           | 17.1           |
| MA, M. Sc     | 13          | 31.7           |
| PHD           | 15          | 36.6           |
| TOTAL         | 41          | 100            |

Source: From Questionnaire

From the above it is observed that majority of the respondents have post graduate degree qualification and therefore is qualified to give accurate answers to the question asked

**Analysis Of Research Questions**

What methods are adopted in waste management in Nigerian City Centres.

In order to obtain answer to these questions responses were asked to provide answer to item 5 – 10 in the Questionnaire

**Adequate provision of public toilets**

**Table 1.5 Provision of Public Toilets**

| Response  | Frequency | Percentage (%) |
|-----------|-----------|----------------|
| YES       | 36        | 100            |
| NO        | -         | -              |
| UNDECIDED | -         | -              |
| TOTAL     | 36        | 100            |

Source: From Questionnaire

From the table above, 36 respondents representing 100% accepted the opinion that FEPB should provide public toilets as a method of Basic Hygiene to Waste Management System in Nigeria City centre

**Table 1.5. Provision of Dust Bin**

| Response  | Frequency | Percentage (%) |
|-----------|-----------|----------------|
| YES       | 31        | 86.1           |
| NO        | 2         | 5.6            |
| UNDECIDED | 3         | 8.3            |
| TOTAL     | 36        | 100            |

Source: From Questionnaire

From the above table respondent representing 86.1% were of the view that adequate provision of dust bin can be used to attract public, while 2 respondents representing 5.6% rejected the view and 3 representing 8.3% were indifferent to the view.

**Regular Bathing by FEPB Staff**

**Table 1.6 Regular Bathing**

| Response  | Frequency | Percentage (%) |
|-----------|-----------|----------------|
| YES       | 34        | 94.4           |
| NO        | -         | -              |
| UNDECIDED | 2         | 5.6            |

|       |    |     |
|-------|----|-----|
| TOTAL | 36 | 100 |
|-------|----|-----|

Source: From Questionnaire

The table shows that 34 respondents representing 94.4% were of the view that their FEPB staff adopts the methods of regular bathing and cute as a hygienic practice, while 2 respondents representing 5.6% were indifferent to the view.

### Provision of Wash Hand Basin

**Table 1.7. Provision of Wash Hand Basins**

| Response  | Frequency | Percentage (%) |
|-----------|-----------|----------------|
| YES       | 30        | 83.4           |
| NO        | 3         | 8.3            |
| UNDECIDED | 3         | 8.3            |
| TOTAL     | 36        | 100            |

Source: From Questionnaire

From the above table 30 respondents representing 83.4% were of the view that the provision of Wash Hand basins by the FEPB is a method of public awareness of

its services, while 3 respondents representing 8.3% were not of the view and 3 respondents also representing 8.3% were undecided to the view

### Given Health Education on Basic hygiene to Waste Management

**Table 1.8. Given Health Talk**

| Response  | Frequency | Percentage (%) |
|-----------|-----------|----------------|
| YES       | 36        | 100            |
| NO        | -         | -              |
| UNDECIDED | -         | -              |
| TOTAL     | 36        | 100            |

Source: From Questionnaire

The table above shows 36 respondents representing 100% of the view that timely

services provision to waste management is a method of promoting health care

### Engaging in social responsibility activities.

**Table 1.9. FEPA Social Activities**

| Response  | Frequency | Percentage (%) |
|-----------|-----------|----------------|
| YES       | 35        | 97.2           |
| NO        | -         | -              |
| UNDECIDED | 1         | 2.8            |
| TOTAL     | 36        | 100            |

Source: From Questionnaire

Table above show that 36 respondents representing 97.2% are of the view that

engaging in social responsibilities by FEPB is a method of promoting its

services while 1 respondent representing 2.8% are undecided to the view. There were no rejections of the view.

From the above analysis and in the bid to find answers to research question one, the researcher was able to conclude that the method adopted by FEPB inadequate

provision of public toilets, provision of dustbin, regular bathing by FEPB staff, provision of wash hand basin and given health education of basic hygiene practice on waste management

Does poor Basic hygiene to Waste Management of FEPB affect the Public Negatively?

**Table 1:10. Poor Management by FEPA**

| Response  | Frequency | Percentage (%) |
|-----------|-----------|----------------|
| YES       | 36        | 100            |
| NO        | -         | -              |
| UNDECIDED | -         | -              |
| TOTAL     | 36        | 100            |

Source: From Questionnaire

From the above table, 36 respondents representing 100% were of the view that

poor management by FEPA affects waste management negatively.

Does lack of knowledge by the public affects FEPB services negatively?

**Table 1:11. Lack of Public Knowledge**

| Response  | Frequency | Percentage (%) |
|-----------|-----------|----------------|
| YES       | 34        | 94.4           |
| NO        | 2         | 5.6            |
| UNDECIDED | -         | -              |
| TOTAL     | 36        | 100            |

Source: From Questionnaire

From the table above, 34 respondents representing 94.4% were of the view that lack of public knowledge affects the services of FEPB negatively, while 2

respondents representing 5.6% were of the view that lack of public knowledge does not affect FEPB Negative

Does the lack of public toilets and dust bin led to poor service delivery by FEPB?

**Table 1.12 Lack of Public Toilets and Dust Bin.**

| Response  | Frequency | Percentage (%) |
|-----------|-----------|----------------|
| YES       | 29        | 80.6           |
| NO        | 1         | 2.8            |
| UNDECIDED | 6         | 16.6           |
| TOTAL     | 36        | 100            |

Source: From Questionnaire

From the table 1.12 above, 29 respondents representing 80.6% were of the view that lack of public toilets and dust bin to poor service delivery by FEPA while 1

respondent representing 2.8% did not agree to the view and 6 respondent representing 16.6% were undecided on the view

**Table result obtained from all the Questions**

| Serial | Questions | Response | Yes | No | Undecided | Percentage % |
|--------|-----------|----------|-----|----|-----------|--------------|
| 01     | Item 5    | 36       | 36  | -  | -         | 100          |
| 02     | Item 5    | 36       | 31  | 2  | 3         | 100          |
| 03     | Item 7    | 36       | 34  | -  | 2         | 100          |
| 04     | Item 8    | 36       | 30  | 3  | 3         | 100          |
| 05     | Item 9    | 36       | 36  | -  | -         | 100          |
| 06     | Item 10   | 36       | 35  | -  | -         | 100          |
| 07     | Item 11   | 36       | 36  | -  | -         | 100          |
| 08     | Item 12   | 36       | 34  | 2  | -         | 100          |
| 09     | Item 13   | 36       | 29  | 1  | 6         | 100          |
|        |           | 324      | 241 | 8  | 14        | 100          |

From the table Result obtained from all the Questions which we have about 324 responses, 241 respondents were of the view of yes while 8 respondents are the view of No and 14 respondents were undecided on the view

Given that the level of significance is 0.05, that is 5%

**Hypothesis Testing**

In order to test the formulated hypothesis the chi-square ( $X^2$ ) statistical analysis method would be adopted. The formula for

Chi-square ( $X^2$ ) is as thus

$$X^2 = \sum \frac{(O_i - E)^2}{E_i}$$

To determine the degree of freedom, this formula is used:  $DF = k-1$  where k number of categories.

**Hypothesis 1**

H0; Lack of basic hygiene does not lead to proper waste management in City Centres.

H1: Hygienic practice leads to proper Waste Management in City Centres.

From the data gathered, the research wants to find out if the services strategies used by FEPA will attract public interest and improvement in the waste management and basic hygiene practice in Nigeria City Centres

**Table 1:13 Observed and Expected Frequency**

| Response  | O <sub>i</sub> | E  | O <sub>i</sub> -E | (O <sub>i</sub> - E) | (O <sub>i</sub> -E) <sup>2</sup><br>E <sub>i</sub> |
|-----------|----------------|----|-------------------|----------------------|--|
| Yes       | 36             | 12 | 24                | 576                  | 48   |
| No        | -              | -  | -                 | -                    | -  |
| Undecided | -              | -  | -                 | -                    | -  |
|           |                |    |                   |                      | 48   |

Source: Data gathered from

Test technique =  $\chi^2 = \sum \frac{(O_i - E)^2}{E_i}$   
 Degree of freedom (DF) = k - 1

Level of significance = 5% or 0.05  
 Critical value = 5.99  
 The calculated value = 48

**Decision Rule**

Source the calculated value (48) is greater than the critical value (5.99), we accept the alternative hypothesis (H1) and rejected the null hypothesis (H0). Therefore, the difference between the observed frequency (O<sub>i</sub>) and the expected frequency (E<sub>0</sub>) is statistically significant. In effect, we accept H<sub>i</sub> which states that services strategies used in FEPB attracts public and promote good health through Basic Hygiene to proper Waste Management in Nigerian Cities Centres.

**Discussion**

**Waste Management**

According to Gil Pin (1975) waste management is a systematic plan for effectively controlling the production, storage, collection, transportation, and utilization of wastes in a sanitary, qesthematic, acceptable and economic manner. It also includes all administrative, financial, legal and planning activities as well as the physical aspect of waste handing.

**Composition of Waste**

Waste can exist as a solid, liquid or gas. When waste is released as liquid or gas, it is referred to as emission. The composition of domestic and industrial waste falls into four main categories namely as: - solid wastes, semi solid wastes or liquid waste, gaseous waste and hazardous waste.

**Waste**

According to WHO (1971) waste can be defined as a substance or material that are already used, over used or under used, the presence of which may be inimical to health if not sanitary disposed. Today most of the so called waste substance or material are recycled to yield useful material or substances. For instance, sewage can be processed in such a way that the content can be made portable (whole some) and the sludge can be used as manure. e.g, the methane gas generated can be used for cooking purpose

(1) **Solid Waste:** - solid waste can be defined as materials that are no longer value for human use. It is generated by domestic commercial, industrial, health care, agricultural and mineral extraction activities and it can accumulate on street and in public places. The words ‘‘ garbage’’ and ‘‘ rubbish ‘‘ are used to refer to some form of solid waste. Generally, solid waste is classified into ‘‘garbage’’ and rubbish ‘‘.

Garbage are degradable that can be broken down by purifying bacterial. Such includes waste from food, such as meat, fish, fruits, vegetable, and e.t.c.

Rubbish is a non- degradable waste that is combustible or non- combustible, such as paper, cartons, word, clothes, polythene bags, iron, glasses, e.t.c. the table below explained more on the solid waste constituent.

**Table1:16 Major Constituent of Solid Waste as a function of population activities.**

| Population                    | Major constituent of solid waste   | Class of solid waste |
|-------------------------------|--|----------------------|
| Rural domestic                | Food, wood, ruminants, sewage  | Composting           |
| Urban domestic and commercial | Food packaging, textile, paper materials, wood materials, leather, mental canes, glass, rubbers, and plastics. | Non-composting       |
| Agriculture                   | Crops, wood residue, logging food waste, saw dust  | Composting           |
| Chemical petrochemical        | Packaging, paper, wood materials textile   | composting           |
| Allied industries             | Plastic, metals, rubber, glasses.  | Non-composting       |

## (B) General Classification of Solid Waste

The incineration institute of America classified solid waste into six (6) groups. The table 2 below shows these classifications with their moisture contents and heat values.

**Table 1:17 classification of solid waste**

| Type | Group              | Contents                                      | Moisture | Heat value |
|------|--------------------|---|----------|------------|
| 0    | Tash               | Waste paper cardboard and wood                | 10       | 8,500      |
| 1    | Rubbish            | Paper, wood scraps, floor sorcepts and folige | 25       | 6,500      |
| 2    | Refuse             | An even mixture of rubbish and garbage        | 50       | 4,300      |
| 3    | Garbage            | Animal and vegetable                          | 85       | 2,500      |
| 4    | Pathological waste | Animal and human remains                      | 85       | 1,000      |
| 5    | Special waste      | Industrial gaseous and semi liquid            | 90       | 9,500      |

### Liquid or Effluent Waste

The are waste that are generated from industrial sites and household domestic activities, which are liquid or semi-liquid in nature. Most of these effluent waste are hazardous to human health especially those of industrial sites. Adequate care must be taken in handing them.

### Gaseous Waste

These are waste which are gaseous in nature that is they are gases. Such waste can be generated from household domestic activities, but most of them are from industrial sites. Gaseous wastes include the following:-

Sulphides (S)

Carbon dioxide (CO<sub>2</sub>)

Carbon monoxide (CO) e.t.c

**Hazardous Waste:** Is a waste with properties that make it potentially dangerous or harmful to human health or the environment. Hazardous waste can be liquids, solids, or gasses. They can be the by-products of manufacturing processes, discarded used materials, or discarded unused commercial products such as cleaning fluid (Solvents) or pesticides, Hazardous waste can be classified into:-

- i. Radioactive substance
- ii. Chemicals
- iii. Biological inflammable and
- iv. Explosive

### Radioactive Substances

Substances that radiate or emit ions or rays are defined as being radioactive. Such substance are hazardous because long time exposure to radiation often damage living organisms. Disposal sites, which are used for long-term storage of radioactive waste, cannot be used for the disposal of radioactive waste, cannot be used for the disposal of any other waste. This is because the disposal of radioactive waste is a specialized activity which requires the attention of the federal environment protection Agency (FEPA) for effective disposal or management

### Chemical

The principle or main sources of hazardous and can be classified into four group synthetic organic metals, salts and bases, flammable and explosive.

### Biological Waste

The principle or main sources of hazardous biological waste are hospital and biological research industries. These groups of waste are malignant tissues taken during surgical procedures and contaminated materials such as hypodermic needles. Bandages and outdated drugs. Hazardous biological waste

can also be generated as by products of industrial biological conversion process.

Sources and type of solid waste in Nigeria City Centres.

The observation made shows that there are different sources and types of wastes. The main sources could be grouped as follows:

- i. Residential
- ii. Commercial
- iii. Construction and demolition
- iv. Municipal

The types of solid waste produced in the residential areas consist of mainly organic, while commercial solid waste are predominantly inorganic, which consist of materials such as food waste (garbage) paper of all types, cardboard, plastics of all types, textile rubber, wood and yard wastes. Inorganic fraction consists of items such as glass, crockery, metals of different types and dirt. Institutional sources of solid waste which includes offices, educational institutions, others produce similar types of waste, to commercial and residential sources. Waste is also produced during construction, repairing and remodeling of commercial buildings, individual, residences and other structures. The composition of these includes dirt, stone, concrete, plaster, lumber (Timber) e.t.c demolished wastes building broken out street sidewalks bridges and other structures that are similar to construction waste most of the construction and demolished waste are recycling by selling it to users in which it is used as a sub-grade or final cover for access road to residences and commercial centers.

Other community waste resulting from the operation and maintenance of municipal facilities and the provision of other municipal service include there organic solid waste such as bones, horn, dung, tail and intestine, street sweeping, roadside litters and wastes form municipal litter containers, landscape and tree

trimming, dead animals and a banded vehicles.

Figure 1. Various ways of waste generation rate in Nigeria City Centers.

**Some Damages Cause by Solid waste in Nigeria City Centers.**

- i. The effects of irregular collection of waste normally cause offensive odor in some of the street especially at the collection centre.
- ii. Improper collection of waste also brings vectors and brides around houses.
- iii. Regular burning of waste at the collection centre also cause environment air pollution, which may lead transmission some common air borne diseases.
- iv. Ashes and dust in the collection centre are sources of atmospheric pollution too, and when inhaled into the lungs may cause all sorts of respiratory problems e.g pneumonia, persistent cough, asbestosis resulting to inhaling of asbestos dust.
- v. Sharp objects like nail from construction demolition broken bottles usually cause accident which will later lead to tetanus toxoid infection e.t.c
- vi. Poor waste management in Nigeria City also result to breeding and infestation of rodents (rat) vectors and other dangerous reptile's e.g. snake and rats which cause Lassa fever. For more details the table 3 below shows the causative agents and diseases due to poor waste management in Nigeria cities.

**Figure 1:18 some diseases associated with poor disposal in Nigeria City.**

| S/NO | CAUSATIVE AGENT             | DISEASES  |
|------|-----------------------------|---|
| 1    | Fly transmitted diseases    | Typhoid, fever, cholera, diarrhea, dysentery          |
| 2    | Rodent transmitted diseases | Lassa fever, plague, relapsing fever, Maurine typhus. |
| 3    | Mosiquitos borne diseases   | Malarial, dengue, yellow fever, filorriasis           |

|   |                     |  |
|---|---------------------|--|
| 4 | Helmith infestation | Ascariasis, trichoriasis, schistogomiasia              |
| 5 | Diseases from smoke | Emphysemas and other bronchial diseases like pneumonia |

### Management of solid waste in Nigeria City Centres.

In order to minimize the problem created as a result of indiscriminate disposal of waste the following points that should be consider are:-

- i. Generation
- ii. Storage
- iii. Collection
- iv. Final disposal sites

Generated refuse (Waste) in Nigeria City centre are store in receptacles (dustbin) the size of which depends on the amount and the household. The dustbin is expected to be acting a convenient place to facilitate collection by the scavengers.

#### (a) Advantage Of Dustbin

- i. Government can make money from sales of dustbin
- ii. It is cheap to afford
- iii. It is simple and easy to remove
- iv. It is helps keep the house tidy
- v. If property used, it minimize unsightliness

#### (b) Disadvantage Of Dustbin

- i. if not property used it will rise to be smell nuisance and flies / Vermines can be in it
- ii. The constants removal, calls for extra labour.
- iii. Refuse (waste) is retained within the home

#### (c) Qualities Of a Dustbin

- i. There should be fight fitting cover
- ii. There should be handle
- iii. It should not be very heavy
- iv. It must be durable
- v. Should not rust in time.

TABLE 1:19 Type of waste with respect to its length of storage days.

| Waste Type          | Length of Storage days | Complication                |
|---------------------|------------------------|-----------------------------|
| Garbage             | 4                      | Fly breeding                |
| Residential rubbish | 7                      | Flies, land pollution       |
| Mixed refuse        | 4                      | Flies                       |
| Street sweeping     | 7                      | Unsightliness               |
| Dead animals        | 1                      | Flies, animals diseases     |
| Special waste       | 1                      | Human diseases              |
| Ashes               | 14                     | Air pollution unsightliness |
| Fences              | 1                      | Flies human diseases        |

### Factors to be consider while choosing a final disposal site.

- i. Population
- ii. Land availability
- iii. Facilities at ones disposal
- iv. Locality to the covered whether city or village

(a) Various methods of waste disposal Hudson et al (1996) opined the various methods of waste disposal to include the following.

#### (i) Phyllis

This is the method of refuse where by refuse is heated in the absence of air produces gas oil and coal like residue. This is a new method of refuse disposal, which is being tasted to see if it can be practice on a large scale.

#### Advantage

- Reduces quantity into gas and coal like material

#### Disadvantages

- Very costly method
- Requires stalled labour

- It is mostly practiced in advanced countries
- The resulting residue needs further disposal.

### (ii) Recycling

This is the process whereby refuse is converted for economical purpose. This method has become a profitable venture in developing countries. Things that can be recycled includes: waste papers, scraps, of Iron, garbage, plastic Rubber, shoes e.t.c

#### Advantages

- The method is very costly
- It require skill labour
- The possibility of nuisances arriving cannot be completely eliminated

### (iii) Pulverization

This is the method of refuse disposal that is mostly practiced in advanced countries and it involves reducing the quantity of refuse into dust or fire powder. This is done by the use of special mechanical plants.

#### Advantages

- The refuse is reduced in quantity into dust
- This method does not give rise to any nuisance

#### Disadvantages

- The method is costly
- It required skilled labour
- It is mostly practiced in advanced countries.

### (iv) Crude Tipping or open Dumping

This is done by dumping refuse in open land or throwing the refuse into a scripting pit or open space in a disorderly manner. Dumping of this kind requires no or little planning and maintenances and unskilled personnel.

#### Advantages

- Requires no train personnel for the planning or maintenances of the dumping pit.

- It is cheap

#### Disadvantages

- Give rise to offensive odor
- Harbours insect, rodent and reptile
- Refuse may catch fire and cause smoke nuisance and fire outbreak.
- Cause unsightness
- Litters an area
- Occupy space
- Can also pollute underground water
- There may be cuts by sharp object.

### (v) Barging or dumping Into sea

Barging or dumping into the sea is mostly practice commonly by communities living around the coastal areas. It is a process whereby refuse is carried in large barges to a considerable distance out into sea and dumped.

#### Advantages

- Easy to operate
- It does not cost much
- Reduces odour

#### Disadvantages

- Dangerous to aquatic life as a result of water pollution
- Dangerous to sailors
- It only serves people that are near the sea.

### (vi)

### (vii) Hog Feeding

This is the process whereby animals are fed with garbage this method is a quick way of disposing garbage from hostel, coal, restaurants, and have dangerous thing like razor blade, however, if the waste materials are highly contaminated with pathogenic organism it may have an adverse effect on the health of the animal.

#### Advantages

- It is very economical
- The nutritional state of the community will be raise as a result of feeding on the animals.
- Does not call for skill Labour

### **Disadvantages**

- Animal can be affected with pathogenic organism.
- Bread flies and other vectors

### **(Vi) Sanitary land fill controlled, tipping and reclamation.**

WAHEB (1991), agreed that this is best and reliable method of solid Waste disposal, it is a method of spreading refuses in layer Compacting them into the smallest practiced volume of covering Manner that will minimize environmental pollution. It is the only method refuse disposal that provide for complete Disposal of solid waste with out living any residue controlled tipping is The systematic deposition of refuse in compacted layer with provision Of daily covering of the refuse with soil or any inert materials and Special treatment is made before disposal.

### **Advantages**

- Very hygienic and reliable
- Fly breeding and odor nuisance are absent
- The useless land can be useful
- The method offers job opportunity
- It prevent erosion
- Accept all sort of waste
- No unsightness
- Does litter an area as in open dumping

### **Disadvantages**

- The method does not provide for manure
- Calls for skill labour and it is expensive

### **(viii) Incineration**

This method of refers disposal: operations where refuse is required for us as manure or for tipping. It is not itself a final disposal Method since the ashes are removed and either, buried or used in composition. The refuse to be incinerated is first of all sorted out and dried on

concrete platforms tins, irons broken bottle, are removed and buried. The system operates by loading the dried refused into the incinerator and five is set to burn down the refuse.

**Types of incinerator:-** Barless, Open bar, Banker and beehive incinerators.

### **Advantages**

- It is easy to manage and construct especially (Barless)
- It eliminates offensive odor, fly breeding and rat breeding
- Chances of spread of infectious disease are reduced
- There littering of refuse
- Unsightness is reduced

### **Disadvantages**

- Smoke nuisance is inevitable
- Calls for proper management and supervision
- It does not provide for manure
- It calls for labour in it construction.

### **(x) Composting**

This is a method which involves mixing of house hold refuse and might soil (excrete) with the object of providing manure solid waste (dry refuse) are mixed up with excreta and then loaded in chambers which are rectangular in shape. Measuring 120cm deep, 180cm wide and 600cm long. The process involves turning and the mixed mass on three occasion, first turning and third turning is 15 days after second turning. The whole process takes about 30 days at the end of which the mixed mass becomes a dark brown material Resembling soil which is an offensive and unattractive to flies.

### **Advantages**

- It requires a small hole
- It is cheaper to maintain, compared to incinerator
- Revenue acquires from the scale of manure

- If properly carried out odour nuisance and fly breeding presented.
- The manure applied to crops increases the farm yield.

#### **Disadvantages**

- If not properly carried, it can give rise to small, nuisance and fly breeding.
- Spread of excremental diseases is inevitable
- Surface soil contamination is apartment
- Calls for proper supervision of the initial stage.

#### **(b) Excretal Disposal in Hygienic Way.**

According to Oluwande (1998), excreta is said to be the natural discharge of the excretory system, which and an important cause of environment pollution human face are dangerous to health because it may contain the following :-

- (i) The eggs of intestinal helminthes e.g Hookworm.
- (ii) It may contain pathogenic protozoa and their. Cryst e.g Endameoba histolytica E, coli e.t.c
- (iii) It may also contain pathogenic bacteria which can give rise to bacillary dysentery e.g typhoid, cholera e.t.c.

#### **(c) Sanitary Requirement of Excretal Disposal**

- (i) There should be on handling of fresh face.
- (ii) There should be on contamination of surface or underground water.
- (iii) Excreta should be made inaccessible to flies or animals.
- (iv) There should be on unpleasant odour or unsightly condition.
- (v) It should be simple and in construction, operation and maintenance which should be in accordance with the resources of the community
- (vi) There should be no contamination of surface soil.

- (vii) It should be culturally acceptable to the community.

#### **Waste Management Problem in Nigeria**

Industrial/domestic waste management problem in Nigeria all present similar difficulties but of varying degrees. Most problem of waste management waste management arise from the increased urbanization of cities like building of factor etc.

These cities when urbanized increase the population and this increase in population cannot be satisfied by the services, which are provided by the city, this is regarded as the most efficient agent of production. Usually, the public sector are the main manager of waste in Nigeria although the private sector has for many years now been attached to different department. Omuta (1986) declared that waste management units were sometimes established at the local council or government level as a section of the public health superintendents, which as been operation. Though the capacity and ability to efficiency manage the waste has become inadequate. These inadequacies often lead to the intervention of the state government. This intervention often and rarely produces good result.

Waste management on its own is both capital and economic intensive, which means huge capital outlay is required. Where there is availability of funds. This issue of waste management has to be given priority. Apart from Apart from funding, there is another important problems attitude. These include: indiscriminate waste disposal, littering, poor hygienic and responsible institution arrangements. In Nigeria presently, the availability and the capacity of waste managers is lacking. Another pertinent problem has to do with equipment. Even peculiarity of Nigerians is another potent factor.

In the past, waste management setting. The government used to manage waste. Now, there is a gradual shift from government Funding with management

being transferred into the private hands. This is principally the reason why waste management problems in Nigeria have persisted. The issue of blockage of drainage leading to flooding has become a perennial problem in Nigeria have persisted. The issue of blockage of drainage leading to flooding has become perennial problem in Nigeria especially in Lagos. The major contributing factor to this issue is the indiscriminate dumping of waste into the gutters. These constitute obstacles to leading in flooding.

Possible solutions are presently being embarked on by various organizations in different parts of the country today and even outside the country.

Three years back, clean up Nigeria, in conjunction with UNESCO, and the Nigeria of oceanography and Marine Research conducted studies on the causes of flood in Lagos. It was followed by public enlightenments on how to prevents flooding in Lagos state. These present days, the Lagos state government has joined these two organizations in a project intended to prevent modern clean drainage environment in city centers areas in Lagos. The essence of these project is to involve the city to evolve a wise practice agreement on how they can keep the gutters free of sediments, thereby ensuring free flow of water, hence preventing flooding.

Presently, an organization known as clean up Nigeria embarked on a massive integrated programmes starting with public enlightenment programmes in August 2003 In Lagos they recruited 1000 and trained 70% of these sanitation corps. These sanitary corps are Nigerians from all works of life who will monitor, co-ordinate and correct the unsanitary habits of the people.

### **Summary of Findings**

In this study the followings findings were obtained?

- i. The various methods used by FEPB services in the Nigerian city centre

were determined which include provision of dust bin, providing public toilets, Adequate provision of wash hand basins, given health education about proper waste disposal, and health talk on personnel e.g. Regular bathing.

- ii. Service strategies adopted by FEPA are effective and efficient because they are accessible to existing change which results into standard basic Hygiene to Waste Management in Nigerian City Centre.

- iii. Problems such as poor management of FEPB lack of knowledge by the public about basic hygiene to waste management, lack of dust bin, lack of adequate public toilets, lack of wash hand basins and lack of bathing etc affects the services of FEPB.

### **Recommendations.**

In order to ensure an effective waste management and basic hygiene in Nigeria City Centre area, a separate department to be called "Environmental Safety Department" (E.S.D) needs to be created. Their responsibility is to educate both the public and the health or sanitary inspection Department on how to dump waste and the appropriate method in disposing them. This Department at Local and state Levels should always organize lectures for the sanitary (hygienic) workers on how ensure adequate safety while on duty.

This department can be assisted by Non- Governmental Organizations (NGO). In addition to this, the three tiers of government should launch weekly or monthly magazines should be entitled "you and your waste", and these magazines should be interpreted in different ethnic languages in Nigerian. This will go along way in guiding the public and even hygienic workers on how to dump and collect or dispose waste respectively.

More so, the period for refuse collection must be changed. Instead of the usual morning, afternoon and evening night period is recommended. This will

also go away as to prevent traffic Jam caused by the refuse collection vehicles in Nigerian cities.

### **Conclusion**

In order to maintain good and health environment in Nigeria Cities the Federal, State and Local Government should ensure that the hygienic (Sanitary), workers properly dispose the refuse generated. Also the above recommendation, when strictly adhered to will ensure a better waste management and the standards of hygiene will be meet.

It should be noted that Nigeria stands to loose both financially and in manpower

resources if it maintains an unhealthy working environment. Therefore all hands must be on deck to see that the efforts being made to revitalize the importance of basic Hygiene to Waste Management in Nigerian City Centres are not wasted. However the Federal Government should enforce the establishment and provision of public toilets, wash hand basins and Dust bin to all city centre. The Government should organize workshop /seminars to create awareness of bad effects of basic hygiene to waste management and heavy penalties should be enforced on culprits.

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