INTRODUCTION

It is a settled law of nature that all biological organism must essentially generate wastes. It follows therefore that regardless of the social and economic status, mankind must inevitably generate wastes of various forms which include gas, liquid and solid on daily basis, no matter the geographical location they live in.

Solid waste management has to do with handling of solid refuse from their sources of generation through storage, collection, transportation, recovery and treatment processes to disposal. Gaseous and liquid wastes arise from industrial waste such as polluted water and carbon monoxide as bye product of diesel oil used in industries as alternative for generation of electricity. The poor and unmaintained sewage system, poultry and piggery wastes also contribute to environmental pollution and nuisance which are hazardous to human lives.

In order to protect human health, and the environment from the potential hazards of inappropriate waste disposal and environmental pollution a systematically supervised and controlled handling of these wastes is a must. The type of wastes which constitute environmental pollution which this work concentrates on is domestic refuse consisting of degradable food wastes, leaves, dead animals, corpse and non-degradable ones such as plastics, bottles, nylon, medical and hospital wastes, generated in households, hospitals, industries and commercial centres.

In view of the fact that the essence of waste management is to maintain acceptable environmental quality, sound public health and creation of aesthetic value, this paper is set out to look into management of environmental pollution arising from waste deposits.

Issues in Solid Waste

The issues of solid wastes dumping in Ibadan dated back to early 60s when Ibadan City council was responsible for the maintenance of Ibadan City. This leads to the review of some attempts made in the past to manage environmental pollution.

Review of Literature

Solid waste which is one of the sources and causes of environmental pollution has been defined under Resource Conservation and Recovery Act (RCRA) (2000) as any solid, semi-solid liquid or contained gaseous materials discarded from industrial, commercial, mining or agricultural operations and from community activities. Solid waste also includes garbage, construction debris, commercial refuse, sludge from water or waste treatment plants or air pollution, control facilities and other discarded materials.

The above conception of solid waste has also been corroborated by York County Solid Waste Authority when it conceived solid waste management as activities related to storage, collection, transportation, treatment, utilization, processing and final disposal of solid waste or resources recovery and facilities necessary for such activities.

In Nigeria, the state is responsible for the protection of the environment and in accordance with Sec. 20 of the Nigerian 1999 constitution “The state shall protect and improve the environment and safeguard the water, air and land, forest and wild life of Nigeria,” and the same constitution specifically assigns the responsibility of environmental sanitation to the Local Government, the third tier of government”.

Perhaps, the above constitutional provision informed the Federal Military Government to promulgate Decree No 58 of 1988 which consequently charged Federal Environmental Protection Agency with the responsibility of maintaining decent environment in Nigerian cities and towns. The decree made provisions for the post of a Chairman who has the knowledge of environmental matters, four distinguished scientists, and one representative from Federal Ministries of Health, Science and

Section 4 of the Decree charged the Agency with the responsibility for the protection and development of the environment in general and environmental research and technology. It shall be the duty of the agency to:

(a) advise the Federal Military Government on national environmental policies and priorities and on scientific and technological activities affecting the environment;
(b) prepare periodic master plans for the development of environmental sciences and technology and advise the Federal Military Government on the financial requirements for the implementation of such plans;
(c) promote co-operation in environmental science and technology with similar bodies in other countries and with international bodies connected with the protection of the environment;
(d) co-operate with Federal and State Ministries, Local Government Councils, Statutory bodies and research agencies on matters and facilities relating to environmental protection, and
(e) carry out such other activities as are necessary or expedient for the full discharge of the functions of the Agency under the Decree.

Section 5 of the decree empowers the Agency to:

(a) make grants to suitable authorities and bodies with similar functions for demonstration and for such other purposes as may be determined appropriate to further the purposes and provisions of the decree.
(b) collect and make available, through publications and other appropriate means and in co-operation with public or private organisation, basic scientific data and other information pertaining to pollution and environmental protection matters.
(c) enter into contracts with public or private organisations and individuals for the purpose of executing and fulfilling its functions and responsibilities pursuant to this Decree.
(d) establish, encourage and promote training programmes for its staff and other appropriate individuals from public or private organisation.
(e) enter into agreements with public or private organisations and individuals to develop, utilize, co-ordinate and share environmental monitoring programmes, research effects, basic data on chemical, physical and biological effects of various activities on the environment and other environmentally related activities as appropriate.
(f) establish advisory bodies composed of administrative, technical or other experts in such environmental areas as the Agency may consider useful and appropriate to assist it in carrying out the purposes and provision of this Decree.
(g) establish such environmental criteria, guidelines, specifications or standards for the protection of the nation’s air, and inter-state waters as may be necessary to protect the health and welfare of the population from environmental degradation.
(h) establish such procedures for industrial or agricultural activities in order to minimize damage to the environment from such activities.
(i) maintain a programme of the technical assistance to bodies (public or private) concerning implementation of environmental criteria, guidelines, regulations and standards and monitoring enforcement of the regulations and standard there-of and develop and promote such processes, methods, devices and materials as may be useful or incidental in carrying out the purpose and provisions of this Decree.

For effective coverage of the country, the Agency (FEPA) operates a liaison office in Lagos, zonal offices in Kanduna, Kano, Port Harcourt, Maiduguri, Owerri and Ibadan. These offices are coordinated from the Headquarters in Abuja. The Agency has since its establishment in 1988 produced a National Policy on the environment and guidelines, standards and regulations, for environmental management including pollution control, natural resources, conservation, industrial and municipal waste management.

In an attempt to supplement Federal Government effort to combat environmental hazard, the state government agencies were established. For instance Oyo state government enacted an edict establishing the Ibadan Waste Management Authority (Gazette No 8, vol. 22 of 16th May
1997), although the functions of the Local Government Councils in the Ibadan urban area are to collect, transfer and dispose of solid waste.

In other words the functions hitherto performed by the Local Councils under 1979 constitution have been delegated to the Authority through this edict.

Perhaps such hijack of functions and responsibilities of Local Councils has been attributed to the low technical capacity of local councils to provide waste management services especially in large urban centres such as Ibadan City. However, it would appear that the edict tends to breed poor inter-governmental relations between the State and the Local Governments. Obviously, this enactment constitutes a duplication of effort, waste of resources and erosion of the Local Governments’ functions. The enactment also appears to have shifted the management of Ibadan city environment waste and refuse on a single authority which admittedly, could not cope with the volume of solid and liquid wastes produced in Ibadan. This brings us to examine the management of solid waste in Ibadan, the largest city in West Africa.

Management and Operation of Wastes in Ibadan

Three governmental agencies are charged with the responsibilities of managing environment in Ibadan. They are:

(i) The Local Government Councils
(ii) The Ibadan Solid Wastes Management Authority; and
(iii) The newly established Ministry of Environment and Water Resources.

There are five Local Government Councils in Ibadan metropolitan City – They are:

(i) Ibadan South West Local Government Council;
(ii) Ibadan North Local Government Council;
(iii) Ibadan South East Local Government Council;
(iv) Ibadan North West Local Government Council, and
(v) Ibadan North East Local Government Council.

Nature and Effects of Solid and Liquid Waste in Ibadan City

Unarguably, one of the main problems facing Ibadan City and which has become an intractable nuisance is open and indiscriminate dumping of refuse, human and animal faeces. Piles of decaying garbage which are substantially domestic in nature dominate strategic locations in the heart of the city including the Ibadan-Lagos express way. (see appendix one)

Wastes in such dump sites obviously is a source of air and water pollution, land contamination, health hazards and environmental degradation. The risks that may be anticipated include bad odour, aesthetic nuisance, fire out break, water pollution, proliferation of insects, flies, cockroaches, rats and other small and dangerous insects which can endanger public health through breeding of ailments such as dysentery, cholera, diarrhoea, yellow fever, plague and filariasis. Furthermore, the fumen, and carbon monoxide from atmospheric pollution may cause and also aggravate bronchial and asthmatic disorder.

Regrettably, this condition characterises environmental culture in Ibadan. It is important to note that endangered public health situation can exert excessive pressure on the health budget, curtails productivity and worsens urban condition of health. This ugly situation persisted for the past decades (since independence) and will continue to be so in Ibadan because of the following factors:

(1) high rate of illiteracy, (ii) Ignorance, (iii) uncivil culture of indiscriminate waste littering (i.e throwing of wastes on bare ground) (iv) people inability to maintain a sanitarily clean environment and (v) reluctance of people to cooperate with the authority by disposing solid waste in illegal dumps, rather than using the means provided by the Government;

Other factors that militate against decent environment in Ibadan include

i. Uncontrolled population creating slum condition;
ii. Poor planning; and
iii. Violation of town planning regulations.

Most houses in the core of the city have no toilet facilities hence human faeces and other wastes are dumped inside streams. This assertion lends credence to Adesiyan (2000) when he noted that:

A clustered configuration inhibits mechanized refuse collection: As a result, high proportion of solid waste is dumped into drain and stream channels which often results in dogging and flooding. The resultant effect of the above are:
(i) Street littering and aesthetic value depletion of the urban landscape resulting from peoples’ bad habit of throwing solid and liquid wastes carelessly from moving automobile vehicles and while walking on the streets by hawkers.

(ii) Flooding results when people indiscriminately dump solid wastes along drainage channels and river courses especially Ogunpa river and its tributaries which cut across the city.

(iii) Air pollution is also noticeable in most part of Ibadan when solid dump sites or residential premises spontaneously catch fire.

(iv) Water pollution on the other hand, is a common feature in Ibadan most especially during the raining season when surface run offs or leachates flow into the rivers. This also occurs when the liquid resulting from decomposed solid wastes run through an open dump site, and:

(v) Environmental pollution of any form reduces property value of land close to dump site.

Operational Management of Solid Wastes in Ibadan

Presently there are three institutions charged with the responsibility of overseeing the environment of Ibadan city. They are:

(i) Ibadan Solid Waste Board.
(ii) The Local Government Councils, and
(iii) Ministry of Environment.

Ibadan Solid Waste Board

Prior to the enactment of edict No 8 of 1997 establishing, the Ibadan Waste Management Authority the management of environment of Ibadan City was the responsibility of the defunct Ibadan City Council, Mapo Hill, Ibadan and later when Ibadan Municipal Government was created, the responsibility automatically transferred to Ibadan Municipal Council. Consequently, Ibadan city and its environs were constitutionally broken into (11) eleven Local Government Councils which now shoulder the collection and disposal of solid wastes in Ibadan.

With the commencement of the edict, the functions of the Local Government councils in the Ibadan urban area under the 1979 Nigerian Constitution, and the instrument establishing them to collect, transfer and dispose solid waste were delegated to the new Authority. The functions of the Authority shall be:

(a) Collection, transfer, and disposal of solid wastes for the Ibadan urban area directly or indirectly;
(b) Collection and registration of private refuse contractors in the city. Each refuse collection firm will need to pay specified amounts to the authority annually;
(c) to hire/lease out and sell its equipment to refuse contractors at profitable rates
(d) to enforce all regulations concerning refuse collection, disposal and any other sanitation laws as obtained and as may be promulgated in the city of Ibadan;
(e) to make effective use of Sanitary Inspectors from the Local Government Service and to impose sanctions on any refuse contractor or citizen in form of fines for the contravention of any of the law in accordance with provision under Offences and Related Matters;
(f) to maintain land fill sites around Ibadan and to charge economic rates;
(g) holding meetings concerning planning and strategy to be adopted for the success of its operations;
(h) approving the budget estimates based on the planning and strategy;
(i) ensuring proper use of governmental budget allocated for solid waste collection;
(j) improving the management and operations continuously in such a way that the best service is given against the lowest possible cost;
(k) maintenance and proper use of vehicle and buildings from the State Government entrusted to the Board;
(l) Preparation of management information on sanitation and environment;

In accordance with section 7 of the law:

(i) all trenching and solid waste disposal grounds, depot, public toilet and vehicle or other equipment for collecting refuse or night soil, held by the local government in the Ibadan urban areas;
(ii) all rights and liabilities of the local governments in the Ibadan urban area in connection with its function relating to collection, transfer and disposal of refuse waste;
(iii) such properties, movable or immovable which the local governments may determine and
(iv) all such properties, rights or liabilities of the state government shall be transferred, and vested in the Authority.

The Authority consists of:

(i) a Chairman
(ii) two representatives of the eleven local governments in Ibadan area;
(iii) Four eminent businessmen in the Ibadan metropolitan area with expertise in management, physical planning, environmental science, engineering, health, business or finance;
(iv) One representative of the department of Local Government; and
(v) One representative of the environmental protection commission.

Of recent, the House of Assembly, Oyo State passed a law to establish the Ministry of Environment and water resources which commenced functioning on 1st January 2001. Its responsibility includes:

(a) formulation and enforcements of policies, statutory rules and regulations on waste collection and disposal, general environmental protection, control and regulation of the ecological system and all activities related thereto;

(b) advise the Government on the environmental policies and priorities and on scientific and technological activities affecting the environment;

(c) coordinate the activities of the Local Governments and the government agencies on environmental and ecological matters;

(d) establish and take measure to ensure effective environmental structures in the state for flood control, solid and liquid wastes collection and disposal, water and air pollution eradication, noise control and general sanitation;

(e) conduct public enlightenment campaign and disseminate vital information on environmental and ecological matters;

(f) prepare master plans for drainage, solid and liquid waste and general aesthetics for development of environmental technology and ensure the implementation of such plans;

(g) promote cooperation in environmental science and technology with bodies whose main objective is the protection of the environment;

(h) initiate appropriate policy action on the environmental implications of environmental related activities;

(i) monitor sources of toxic pollution in air, land, and water;

Sec 5 of the law empowers the Ministry to:

(a) collect and make available through publications and other appropriate means, the basic scientific data and other information pertaining to eradication of pollution and environmental protection matters;

(b) register the environmental management contractors and to impose such conditions necessary for carrying on the environmental management business;

(c) enter into contracts with other organisations or companies for the purpose of executing and fulfilling its functions and responsibilities under the law;

(d) enter into agreements with organisations and companies to develop, utilize, co-ordinate and share environmental monitoring programmes research, effects basic data on chemical, physical and biological effects of various activities on the environment and other environmentally related activities as appropriate;

(e) establish such environmental criteria, guidelines, specifications or standards for the protection of land water and air as may be necessary to protect the health and welfare of the population from environmental degradation;

(f) establish such procedure for industrial or agricultural, commercial or social activities in order to minimize damage to the environment from such activities;

(g) maintain programme of technical assistance to bodies public or private concerning implementation of environmental criteria, guidelines, regulations, standard and monitoring enforcement of the regulation and standard thereof;

(h) gives directives to government agencies, authorities and departments on matters relating to the protection or maintenance of environment, develop and promote such processes, methods, devices and materials as may be useful or incidental to the carrying out of the processes and provisions of this law.

Related to the above discussed structural institutions, of state, Local Government and Ibadan Solid wastes Board is the promulgation of another Decree No. 42, 1988
which highlighted crimes punishable in respect of harmful wastes. It stated inter alia:

(1) Notwithstanding the provisions of the Customs Excise Tariff etc. (consolidation) Decree 1988, or any other enactment, or law, all activities relating to the purchase, sale, importation, transit, transportation, deposit, storage of harmful wastes are hereby prohibited and declare unlawful.

(2) As from the commencement of this Decree, any person who without lawful authority-
   (a) Carries, deposits, dumps or causes to be carried or dumped or is in possession for the purpose of carrying, depositing or dumping any harmful wastes on any land or in any territorial waters or contiguous zone or Exclusive Economic Zone of Nigeria or its inland water ways or
   (b) transport, or causes to be transported or is in possession for the purpose of transporting any harmful waste, or
   (c) imports or causes to be imported or negotiates for the purpose of importing any harmful waste; or
   (d) sells, offers for sale, buys or otherwise deals in any harmful waste, shall be guilty of a crime under this Decree.

Furthermore, Section 3 of the law says that a person shall be deemed to deposit or dump harmful wastes under this Decree if he deposits or dumps the harmful waste, whether solid, semi-solid or liquid in such circumstances or for such period that he may be deemed-
   (a) to have abandoned it where it is deposited or dumped; or
   (b) to have brought it to the place where it is so deposited or dumped for the purpose of its being disposed of or abandoned whether by him or any other person.

It implies that an offence is committed if he does the act or makes the omission which constitutes the crime or he does or omits to do any act for the purpose of enabling or aiding another person to commit the crime or if he aids another person in committing the crime or if he counsels or procures any other person to commit the crime.

MANAGEMENT OF SOLID WASTE IN IBADAN

Operational management of wastes is capital intensive which requires heavy machineries. The operation starts off from both legal and illegal dump sites. The summary of the operation is diagrammatically shown below:

The figure above demonstrated the capital intensiveness of the operation of wastes management in Ibadan which perhaps accounts for the inability of a single institution to cope with the operational management of heavy solid and semi-solid wastes in Ibadan.

Apart from the distance to and from disposal sites (i) (Aba-Eku on Akanka Road, (ii) Lapite, on Oyo Road, (iii) Awotan on Akufo Road and (iv) Ajakanga on Odo ona Elewe Road), uncooperative customers, population density, topography, and the machines required are very expensive. (Appendix 6). Furthermore, none of them is manufactured in the country. This cost weighs heavily on the meagre resources of the Waste Disposal Board which, on most cases has to rely on fund released from the state government which rarely comes at the right time. See (Appendix 2 A B&C).

In the light of the above, all the agencies charged with management of the solid wastes in Ibadan find it difficult to meet the financial obligation required for effective management of wastes. So the largest city in West Africa continues to be described as the dirtiest city in Africa. In short, the Ibadan Solid Waste Authority can be said to be the only practical institution that shoulders the responsibility of waste disposal in Ibadan. The operation of the Authority is considered below.
Waste Collection

Six methods of waste collection are noticeable. They are:
(1) House to house
(2) Communal depots
(3) Kerbsides
(4) Block system of collection
(5) Commercial and industrial waste collection; and
(6) Bulk loading.

Kerbsides Street sweeping was innovated to safeguard public health and beautify the city’s environment. This innovation came into existence in May 1999 as an attempt to make the dirty city wear a good outlook in preparation for the World Youth Soccer Fiesta (Nigeria'99). It is however regrettable that only the major streets or Government Reservation Areas that are covered by the staff who were equipped with long broom and basket to collect the wastes which are deposited in the standby truck for disposal. In addition to the street sweepers, 49 Registered Private Refuse Collectors were employed by the Ibadan Solid Wastes Management Authority. The contractors were to collect refuse in drums in front of each house under their jurisdiction. The contractors collected the refuse and dispose same at the approved disposal site.

Another method of waste disposal in the city is termed communal depots. It is usually adopted in an unplanned area where skip bins are depo-sited for people to dispose their refuse therein. Regrettably, members of the public abused this method by turning the bins to means of disposing faeces. On most occasions these bins are set on fire thereby constituting atmospheric pollution full of carbon monoxide which is dangerous to human lives.

Furthermore, block system is adopted in the core areas of the city where refuse truck has no access. Wastes are being collected on regular basis by “Block system” (bring and dump). This system is effective in that it is not labour intensive and allows community participation in keeping the environment clean. However, the inhabitants of the place may wait for days without having access to the service of the trucks.

Commercial and Industrial Waste Collection in Ibadan

Another noticeable environmental pollution in Ibadan city arises from waste products from factories, hotels, hospital and commercial centres. Unlike in Europe and America where waste products from factories are subjects of re-cycling. This is not so wholesale in Ibadan city. Perhaps this is why Adesiyan (1998) asserted:

Substantial part of the waste generated is recovered and recycled-plastic, metal, bottle, and organic substance, which if recovered at sources can provide income as well as reduce the quantity that will pass to final disposal site

Perhaps, one may obviously assert that, at present the training of waste generators in the area of waste recovery is virtually non-existent in Nigeria. For instance, about 20 per cent of the municipal solid waste comes from plastic waste with only 2 percent being re-cycled. My enquiry at Aba Eku with the scavengers and the Senior Official of the Ministry of Environment, Ibadan confirmed that there is low market for re-cycling products. In an attempt to encourage re-cycling business in Nigeria, twenty seven (27) states of the federation gave tax incentives to re-cycling businesses and establish tasks forces to encourage and improve recycling markets. (Technical sub-Committee Reports (March 2000). See Appendix 3.

Finally, there exists a bulk loading from illegal refuse depots. This method arises from the fact that the very poor who could not afford payment fee for disposal of their refuse product reside mostly in the core area of Ibadan metropolis. As a result, these poverty striken people resorted to sporadic and indiscriminate dumping of waste in any available vacant plots of land, sidewalks, roadway, streams (especially Ogunpa river) channels and drainages. Statistically, refuse generated from these areas constitutes nothing less than 70% of the refuse being generated in the city.

This assertion lends credence to Adesiyan (2002) when he remarked:
The core area of Ibadan city thrives on sustaining economy Many homes substantially comprise aged people and young children, as the middle aged migrate far away from home for a living. The residual households who live invariably below the poverty line are virtually with no savings to contribute to solid waste management It is noteworthy that while the Ibadan Waste
Management Authority continues to address the issue of waste disposal and mount public enlightenment on proper waste management, it ensures that these heaps of refuse are cleared regularly at least within the limits of its funding and finances as well as its limited technology. This has become necessary in order to avert outbreak of epidemics and imminent flood disaster resulting from the blockage of major streams with solid waste/deposits.

It is equally noteworthy that both Federal and State Governments occasionally assist Ibadan city in the management of refuse disposal as well as channelisation of Ogunpa river. The river which runs through the length and breadth of Ibadan city, which for years had recorded series of floods leading to loss of lives and property. It was unfortunate that the funding of the channelisation of the river was highly politicized during Shagari Administration at the Federal level and late Ige Administration at the state level. The political and ideological differences between the Federal NPN based administration and unity party controlled state administration spelt doom on the channelisation effort of the Federal Government which released N6 million to the then Oyo State Government. Regrettably, the money was rejected by Ige administration on ideological ground. This leads us to consider few obstacles militating against efficient management of environmental pollution in Ibadan, the largest city in West Africa.

Problems Facing Administration of Environmental Pollution in Ibadan

The problems facing administration of environmental pollution in Ibadan are multi-faceted. For the purpose of this paper, we subsumed the factors into four main headings which are:

(i) Poor funding (ii) Culture of the people (iii) Limited technology and (iv) human resources. The factors will be examined in details.

(i) Poor Funding: Essentially, refuse collection and disposal in Ibadan city have become such complex, capital intensive and expensive project such that it is a futile effort to expect a single institution of local government or state ministry, talkless of a parastratal to finance it from its own limited source. For instance, in January 2001 the total revenue generated by the Ibadan Solid Waste Management Board stood at just N1,491,940 and the expenditure for the same month of the same year is N2,947,750 excluding capital project. (Source: (Annual Report of activities of Ibadan Waste Management Authority). In such a condition, the authority is financially incarcerated, hence we find heaps of refuse littering Ibadan city and blocking the streams therein. The statistical expenditure for the whole year rose to N62,496,799.04k, while capital expenditure was just N19,649,079.50k.

The question is, how does an authority performing a very crucial function in our environment be effective and efficient when it is grossly underfunded.? (Appendix 2).

The author’s field investigation also revealed that the eleven local governments in Ibadan Area have been receiving zero allocation from the Federal Government, Abuja for the past five years meaning that the Local Government Councils which could have assisted the Waste Management Authority in its sanitisation efforts are financially handicapped. Little wonder then why the chief environmental officers in local government councils asserted that their functions have been hijacked by Edict No 10, Oyo State (May 1997) transferring their functions to the Ibadan Wastes Management Authority.

Perhaps, the capital intensiveness of waste management informed Nwosu (1998) when he said:

service areas characteristics such as accessibility to waste storage areas, customers density, quantity and type of waste generated, distance to and from the disposal site and topographical conditions all affect the type, size and number and various types of equipment which require heavy expenditure.

Unfortunately, the state government is not fully ready to finance the Authority. The Ministry of Environment only issues policy directives that are not backed by financial assistance and the user communities are unwilling to pay for services rendered hence the Authority finds it extremely difficult and unmanageable to perform its statutory functions thereby turning the residential city into public dustbin and environmental hazard.

It is observed that, although the Nigerian Government is interested in making its cities comparable to those of advanced countries by
rolling decrees and enacting environmental law, but are not sincere to release fund to implement the laws enacted.

(ii) Culture of the People: One of the factors that poses a great challenge to the management of environmental pollution in Ibadan has to do with the culture of the people. The city is not well organized and planned. The city has for long been a commercial centre for marketers of maize, yam and other food stuff that generate heaps of refuse which are unmanageable. The illiterate culture of the people seems not to respect human dignity and decency. Many houses are without toilet facilities especially in the core of the city. People defecate indiscriminately in any available plots of land which are uncleared or along the streams. Even when toilets are built by the Local government Councils, they are carelessly used and within a short period they get spoilt. Added to this, is the poor maintenance culture of our public facilities. The provision of water to service these facilities is, to the least epileptic, if it runs at all. Finally, the socio-cultural attitude, lack of awareness and traditional syndrome of dumping refuse very close to their houses constitute a serious health hazard.

(iii) Limited Technology: My visit to the garage of the Ibadan Waste Disposal Management Authority revealed that most of its operational vehicles are grounded because of minor technical problem. Even at the dumping site at Aba Eku, the scavengers are self-employed with all the health risk. The compactors relatively new are grounded with just minor complaints and little expenditure to repair them. Again this condition affirms the underfunding of the Authority earlier mentioned. Still on technology, the land fill designed to be operated sanitarily are operated as open dump due to limited technology. Furthermore, it was observed that medical refuse are deposited at the dumping site which technically ought to have been sorted out. There is also the problem of plastic and polythene products which are not bi-degradable. Although plastic products could be recycled but it has limited market especially pure water containers. Finally the transfer loading station at Aperin which sorts out, reduces the wastes and also determines the quantity of waste generated, is moribund.

(iv) Social and Political Factor: The lack of sustainability of public facilities is a big problem in the management of waste products in Ibadan. For instance, the World Bank in the early 80s assisted the authority in management of Solid Wastes in Ibadan and as soon as the project period expired, the governments could not continue where the World Bank stopped due to lack of political will on the part of the Government of Nigeria. The poor state of sewage system and the politicization of the channelisation of Ogunpa river in the 80s constitute a clog in the management of environmental pollution in Ibadan. Ibadan and its environs can comfortably constitutes a State on its own for easy governance but the Federal Government is yet to realize this cardinal political creation. Furthermore, re-planning of Ibadan city has always been a herculean task for the successive governments because of political consideration in doing so. Finally, government policy inconsistency spells its own doom on the management of environmental pollution in Ibadan. During Buhari/Idiagbon administration, monthly sanitary activities was decreed where every member of the Public participated in the cleaning exercise of their environments and the evacuation was carried out by various Local Government Councils. This policy assisted Ibadan and other cities and towns in Nigeria in making their environment worth living. Regrettably, however, this laudable environmental programme was cancelled by the democratic Obasanjo Administration at its inception.

Solution and Recommendation

Arising from the above scenario, it has become evident that given the present financial position of (revenue and expenditure) of the Ibadan Solid Waste Management Authority, the agent cannot manage efficiently and effectively the gamut of refuse in the densely populated African City of Ibadan. It is therefore suggested that the Authority should be adequately funded not only by the State government that created it but also be given annual subvention by the Federal Government out of the Ecological Disaster Fund.

Unless there is cultural revolution where awareness is created among the illiterate inhabitants of Ibadan city to desist from dumping refuse indiscriminately and enculturate at least a modest degree of decency and neatness in their way of life, the city will continue to witness heaps of refuse around it. There is no doubt that refuse
problems and environmental pollution arising from it, is culture based. People are traditionally used to defecating in bushes around them hence most of the houses especially in the heart of the city where population density is higher have neither toilet facilities nor good drainage system. To this end, it is the opinion of this scholar that adult literacy classes where simple rules of hygiene will be taught are long over due while there is need to intensify the teaching of heath education in primary and secondary schools hoping that the children would be able to influence their illiterate parents in complying with simple environmental habits and laws.

Due to low technological know-how syndrome generally affecting development in the third world countries, it was found that many of the equipment of the Authority are already out of use due to minor technical problem whose spare parts ordinarily would have been produced in the country given the right technological development. For instance out of (3) five pay-loaders only (1) one is functioning while none of the Bulldozers is functioning and out of (33) thirty-three skipeaters, only (10) ten are functioning.

Alas! keeping the range of vehicles (skipeater, bulldozers, etc) in good working condition is a difficult task as some of the vehicles’ spare parts are not manufactured in Nigeria. Thus the vehicles spend much longer time under repairs than in actual use. (Appendix 7) This low technological condition also manifests in every stage of waste disposal management, such as in operation yard, transfer loading system, land fill site and weighing bridge, which are operated at low level technology. Furthermore, the scavengers used manual means (hands) to sort out wastes amidst obnoxious odour coming out of heaps of waste which is hazardous to their health.

In order to improve the efficiency of the operation of Waste Management Authority, the management structures on ground such as laboratory, weigh bridge, vehicles etc. need to be technologically overhauled to meet, the modern way of evacuation of wastes. The present structure is to say the least, archaic. It is therefore recommended that simple technology like compact incinerator be used if the use of high technology is constrained by paucity of fund. According to Okoisana (1978):

compact incinerator method burns not only the waste but also the smoke and dust arising from leaves, a very small quantity of ashes i.e.— about 10% of the original weight of wastes fed into it.

On a final note, the political and social conditions which the country passed through for over thirty years did not allow for policy continuity. The military intervention with its policy inconsistence and heavy defence budget did not allow other areas of economy to be paid even attention. It is therefore suggested that:

(i) the management of wastes in Ibadan, the largest West African City must be pursued with rigorous political will on the part of the governments. The governments must not only legislate on environmental pollution but such laws must be enforceable.

CONCLUSION

What the paper has attempted to do is to look at the management of wastes and environmental pollution in Ibadan, the largest and most densely populated West African City. The research effort was based on participatory observation as the researcher moved out along with officials of the agencies in charge of management of the city’s environments. (Appendix 4 & 5). (The solid waste Management Authority, the Local Government Councils, Departments of Environment and the Ministry of Environment, Ibadan). It was established that the culture of the people has impacted so much on the dirty environment of the city. While the Government has good intention to tackle the problem of environmental pollution in Ibadan city, it has a very low political will to back up its desire. This has manifested in the poor funding of the institutions charged with this responsibility. The paper concluded that the management of environment of Ibadan city is a function of the concerted efforts of the three agencies charged with the environmental sanitation. It is a capital intensive project coupled with adequate manpower and the government should regard the care of the environment as a social service, otherwise Ibadan city will continue to remain as the city of refuse in West Africa with its attendant health hazard. Also, the creation of Ibadan state which is long over due, will go along way to solve some of the environmental problems presently facing the city.

KEYWORDS
ABSTRACT This paper examined management of environmental pollution in Ibadan, the largest City in West Africa. Environmental pollution which includes gaseous, liquid and solid wastes have become a perennial problem facing various governments and administrations in Nigeria. It has almost defied solutions proffered by the Governments, (Military and Civilian). It is against this background that the paper is set to look into liquid, solid and gaseous waste deposits and collection in Ibadan, an African city with a population of over 2 million going by 1991 census. (Source: National Population Commission, Final Result of 1991 Population Census Ibadan). Both primary and secondary methods of data collection were utilized for this study. The primary data were sourced through interview of managers of waste disposal while secondary data were gathered from books, magazines, journals and official reports. The findings of this study revealed that despite the efforts of previous and present administrations, piles of decaying garbage which are substantially domestic in nature dominate strategic locations in the city and the government propaganda has little impact on the environmental pollution in the city and its suburbs thereby constituting health hazards such as infections, diarrhoea, gastroenteritis and cholera to mention a few. It is therefore suggested that a more draconian law be enacted to deal decisively with people who indiscriminately dump refuse in the streams and in illegal refuse dumping locations. The public environmental awareness and campaigns at the grassroots are needed to be intensified, most especially in the traditional core of the city. Industrial pollution should also be checked through legal recourse. Any factory that fails to comply with environmental law should be closed dawn summarily.

REFERENCES

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