

**HEALTH HAZARD ASSOCIATED
WITH IMPROPER SEWAGE DISPOSAL.**

**CASE STUDY OF MINNA LOCAL GOVERNMENT
AREA OF NIGER STATE,**

BY

**HAJARA JUMAI ADAMU
PGD/GEO/SSSE/2003/2004/281**

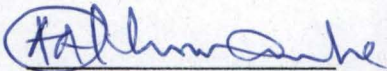
**A THESIS SUBMITTED IN PARTIAL
FULFILLMENT OF THE REQUIREMENT FOR THE
AWARD OF THE POSTGRADUATE DIPLOMA IN
ENVIRONMENTAL MANAGEMENT.**

**DEPARTMENT
OF GEOGRAPHY, FEDERAL UNIVERSITY OF
TECHNOLOGY MINNA**

DECEMBER, 2004.

CERTIFICATION.

This thesis has been read and approved as meeting the requirements for the award of a postgraduate diploma in Environmental management, federal University of Technology Minna.


Dr A.A. OKHIMAMHE
SUPERVISOR

7/08/05
Date

DR.M.T.USMAN
HEAD OF DEPARTMENT

Date

DEAN PG SCHOOL

Date

EXTERNAL EXAMINER

Date.

DEDICATION

I dedicate this project to Allah the almighty that save my live to this particular moment.

The dedication also goes to my parents my guidance that contributed to the success of my Education, may their gentle souls rest in perfect peace Amin suma Amin.

ACKNOWLEDGEMENT

I wish to express my profound gratitude to all members of staff of Geography department they are: Professor Baba, Professor Adefolalu, Dr. Akinyeye, Dr. Sadauki, Professor Nsofor, Dr. Salihu etc of Federal University of Technology Minna in general and the Head of Department Dr M.T Usman in particular.

My special thanks goes to my able supervisor DR Okhimmhe for sacrificing her time and energy in order to make sure that this work became a success. All her efforts and contribution can definitely not go unappreciated.

Also my special thanks goes to Dr Halihu my Chief adviser, may Allah bless you all Amin suma Amin.

I wish to express my thanks to members of my immediate family especially my husband Alhaji Ahmed marafa and children for their encouragement and for creating a Conduasive environment for me at house. This has greatly helped in successfully carrying out this study.

My sincere gratitude goes to all members of Adamu G. Lapai's family for their support throughout my course of training. ADAMU.G.Lapai.(R.I.P.P.).

I very much thank God for the life of Alhaji Idiris Abubakar Loguma for spring his time to ensure the good success of this project. My appreciation also goes to all staffs of Government. Health office Minna (Dubagari's) for their support during my project writing. I finally wish to express my sincere gratitude to the almighty Allah who gave me life and wisdom, and has seen me through my trying period in writing this research and up to the time of compelling this project.

To God be the glory, for great things he has done. (Amin).

ABSTRACT

In spite of advance in technology inedibility and especially in developing countries of the world. Many factors is said to be responsible for this. This range from unhygienic environment to inadequate health care facilities. Improper sewage disposal constitutes a major public health problem in Minna metropolis from available records; it is responsible for high morbidity and mortality rate in the town.

In order to get to the root of this problem, this study examines the type of sanitary and drainage facilities which are available in the town, the present conditions of such facilities and the relationship between the present management system and public health. These has enable the other of this study to arrive at a logical conclusion which will help to reduce the attendance of public health problems associated with improper sewage disposal.

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Table of Contents

	Page
Project title	i
Certification	ii
Dedication	iii
Acknowledgement	iv
Table of contents	v
Chapter one	
1.1 Background	1
1.2 statement of the problem	2
1.3 aims and objective	3
1.4 justification of study	4
1.5 description of study area	5
1.6 scope of study	5
1.7 definition of terms	6
Chapter two	
2.1 Review of related literature	8
2.2 Concept of environmental sanitation	9
2.2.2 Water pollution	9
2.2.3 Food poisoning	9
2.2.4 food preservation	10
2.2.5 Sanitary habits and attitudes	10
2.2.6 Sewage disposal	10
2.2.7 Drainage system	11
2.8 Population density and unplanned structural premises	11
2.9 Summary of related literature review	11

Chapter three

3.1 methodology and procedure	23
3.1.1 research subject	23
3.1.2 types of research	23
3.1.3 research site	23
3.1.4 techniques	23
3.1.5 research study	26
3.2 questionnaires	26

CHAPTER FOUR

4.1 Data collection	26
4.2 Data Analysis issue and respondent collected	28
4.3 Data Analysis	29
4.4 Hypothesis	30

CHAPTER FIVE

5.1 Summary	33
5.2 Conclusion	39
5.3 Recommendation	40
Reference	41

CHAPTER ONE

1.1 BACKGROUND

Faeces and sewage disposal is the process by which liquid waste are been eliminated or discarded off in such a way it does not constitute health hazard to people. Sewage hygiene is equally a must if man should survive or have continuous existence. Sewage constitute a nuisance in our environment causing discomfort and public health problem and man's greatest undoing however is the improper disposal of these human sewage.

This is attributed to socio--economic and cultural factors, that hazard, associated with improper disposal of sewage had a substantial number of people afflicted with diarrhea and vomiting.

Those attacked seldom escape death and those who did could be seen with very thin dehydrated body and eyeballs deeply sunken into the socket, the cause may not be far from an environmental pollution either of the air or the water we use for drinking. In view of this situation this study attempts to critically examine the situation in order to contribute within its scope of reaction and suggest measures in combating and averting the situation arising from inefficient sewage disposed.

The collection and disposal of sewage waste has become a major public health issue for our time and needs some urgent attention if our environment is to be protected, the quantity of sewage vis a vis disposal will depend largely on the population rise and migration from rural to urban settings, the situation of sewage disposal and its implication on public health is better imagine than experienced.

Each year more than 20 to 150 million persons especially

children are affected with various diseases arising from indiscriminate and improper sewage disposal in the developing countries, about two million of those affected persons die, some of these related diseases include cholera, Gastroenteritis, typhoid fever etc.

In Nigeria, these diseases are heavily ranked among the common cause of death. Statistically there is an increase, in the report of typhoid fever and gastroenteritis in Niger State, precisely Minna the state capital. For this reason a study of these trend in sewage disposal and its attending hazards to the populace is been undertaken.

Indiscriminate sewage disposal is a source of pollution which has a great adverse effect on both human and animal health the united Nations Environment Programme (UNEP) has played and important role in finding some solution to our behavioural pattern and sewage disposal by putting policies for various governments to actualize for the management of this environmental hazard and to improve human health.

1.2 STATEMENT OF THE PROBLEM

Proper sewage disposal in Minna local government area has been an issue of concern which cannot be over-emphasized, the inefficient way this is managed by the local government and the habit of the populace further aggravate issues.

Nevertheless, there can be certain tough logistic and planning aspects of the factor that bring about the inefficient management of sewage collection and disposal such as increase population, and corresponding habit or attitude of the people.

1.3 AIM AND OBJECTIVE

The aim of this work titled health hazard associated with improper sewage disposal in Minna Local Government Area is to carry out research into the present state of sewage hazard, collection and disposal methods. Within this broad aim, the specific objectives are:

1. Assessing the improper sewage disposal level as it affects the general environmental sanitation of Minna local government area.
2. Assessing the hazard trends arising from the inefficient way of sewage disposal, such as rate of transmission of diseases which thus include typhoid fever, gastro-enteritis, cholera and Bilharziasis.
3. To review the input of the agencies involved in the management and disposal of sewage (Niger State Urban Development) in Minna local government area.
4. To recommend means of improving the current inefficient sewage disposal in Minna local government area.

1.4 JUSTIFICATION OF STUDY

The relationship between hazards associated with sewage disposal and public health is given prominence all over the world, outbreak of diseases as a result of improper disposal of human and house hold sewage has a high mortality rate in Minna local government area, it is confirmed from the statistical office of the general hospital that in the year 2001 deaths recorded from gastro-enteritis resulting from improper sewage disposal was put at 72 persons while the corresponding year 2002 their was a sharp increase i.e. 76 persons died.

In 2003 the records shows 68 person were afflicted but 43 died and for 2004, there was an outbreak of Gastro - enteritis involving five wards these include Kwangila, Maitumbi and Limawa which within the scope of my research area, so far as at November 4th 2004 80 cases were reported and 61 deaths were recorded, this makes the need to provide a workable solution to be inimitable.













Therefore this study is highly justified as it will help to provide lasting solutions to problem of sewage disposal. Consequently its negative tendencies to public health in Minna local government area could be reduce as a result of the implementation of recommendation made here in.

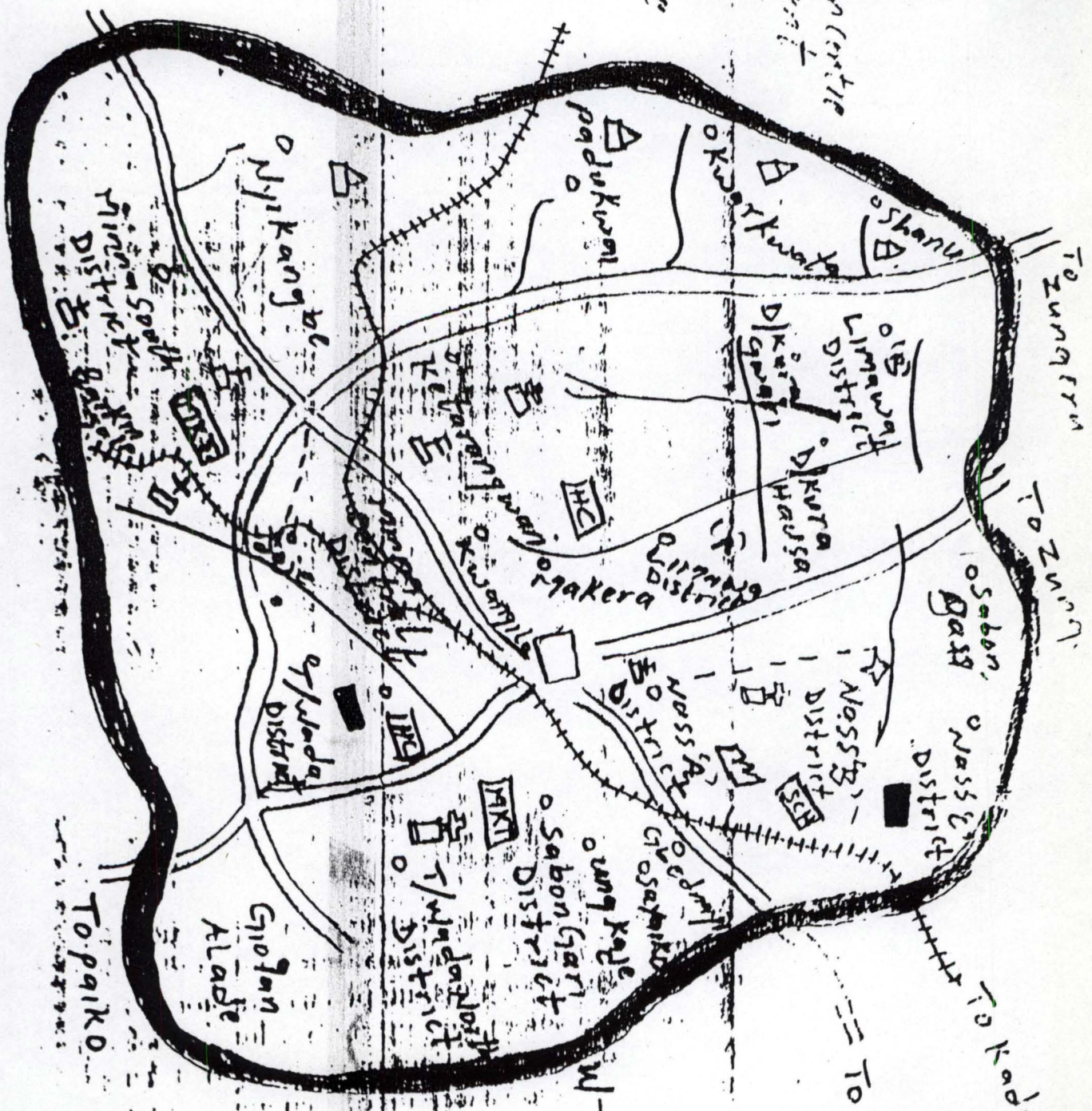
1.5 DESCRIPTION OF STUDY AREA

Minna the capital seat of Niger state government is fed by river Chanchaga, located at the western exit to Suleja, river Chanchaga takes its flow of water from river Kaduna, the river provide the area with irrigation endowment which make possible the agrarian nature of the people, who produce crops like maize millet, guinea cone, vegetables of all kinds, sugar cane that make up the agricultural potentials of the people.

On the world map, Minna lies between latitude 6°20" and 7°15" North of the equator and latitude 5°40" and ~033'~ east of the Greenwich Meridian. This geographically placed by the west Bosso L.G.A. to the North while Gawu Babangida is to the east and Shiroro local government area to the south west the estimated population of the various ,ethnic groups in Minna account to about 1.4 million people, the major tribes are Nupe, Hausa, Gwari, Ibo, Yoruba and other smeller communities of languages.

NEWBORN LOCAL ADMINISTRATION

	Community
	Main road
	Health center
	Market
	School
	Major road
	Boundary
	Minor road
	Foot path
	Mosque
	Place
	Church



1.6 SCOPE OF STUDY

This study covers the present state of improper sewage disposal in Minna local government, focusing on two wards, thus Kwangila ward and Keteren Gwari wards. For a thorough study, data collected on the socio – economic status of the people, their educational status and cultural beliefs, the relationship between development of sanitary facilities and disease occurrence and distribution, all these were carried only within and therefore limited to these two wards in Minna local government area of Niger State.

1.7 DEFINITION OF TERMS

BREED: Having young ones reproduced

DEGRADATION: Slum condition

DUMP: Place where rubbish may be unloaded and left

ECOSYSTEM: A function interaction of living and non living things.

ENVIRONMENT: Aggregate of all external condition and an influence affective life and development of an organism.

ENVIRONMENT

HAZARD: Any dangerous material capable of causing injury to environment

ENVIRONMENTAL SANITATION: Measures that promote cleanliness of our immediate surroundings.

MANAGEMENT: A form of control or decision making process

MUNICIPAL: A town or city having self organization

NGO: Non Governmental organization

POPULATION: Number of persons living in a place.

WASTE: Any material that is thrown away because It has no further use by owner.

REFUSE DISPOSAL: Throwing away of solid waste by dumping.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Concept of Environmental Sanitation

The healthy living of an individual depends solely on aesthetic and healthy nature of the environment the individual lives in because of the influence it has on the individual physical, social and emotional health. A good sanitary environment ensures emotional well being, beautiful scenery, clean and orderly society.

The term environmental sanitation consist of two distinct words, environment: referring to the external influences that affect the individual's physical needs for good health such as fresh air, water, shelter, food, sleep, rest and protection against disease attacks, on the other hand sanitation refers to the tendency to reacts towards the promotion and maintenance of health.

From the above assertions and views it was deduced that, the problems of the environment are multi-dimensional. In both the rural and urban areas today solid wastes are produced by individuals and institutions. These solid waste are generated as an object becomes obsolesces or un-usable and these include municipal wastes (combination of residential wastes and commercial wastes). They are discards of homes, offices, motor parks, markets, streets, stores etc. our attitude of throw-away worsens the situations which now crane for an urgent action to avert the impending catastrophe. Udoh (1978) opined that "the physical environment are' known to have very far reaching consequences for health. This clearly draws our attention to the fact, that rapidly growing quantities of wastes both solid and liquid gradually degrade the aesthetic nature of our environment which now pose threats to human health and the environment itself. Such arisen situation such as improper sewage disposal in Minna

calls for urgent alertness to incidences of gastro- intestinal disorder illness among the people.

2.2 WATER POLLUTION

Some impurities in tap water are inevitable; these are derived both from the different sources of water and from the treatment processes, water quality is of prime importance. The traditional water source in towns and cities are more liable to faecal pollution. Domestic water is extracted from ground water, reservoirs or from streams and rivers depending on settlement area of the people. Ground water in agricultural areas is at increased risk of contamination as nitrate base fertilizer and pesticides applied on crops can reach into water supply.

Minna local government area main source of water supply are at risk. The Chanchaga water works managed by the State Water Board and from where water is pumped to the treatment plant, could be seen taken its source of water from where agricultural crops are intensively grown. It was also observed that water pumped through pipe net works for public consumption around (May - June 1999) was contaminated, arising from the corrosions of pipes laid inside gutters thereby allowing waste water spillage to various homes for use. Water borne transmission occurs when thy pathogens in water which is drunk by a person or animal which may then become infected. Potentially water borne disease include the classical infections, notably, cholera, and typhoid but also include a wide range of other diseases such as hepatitis, diarrhea, dysentery, all spread through faecal- oral routes.

One cannot quantify the faecal diseases but improvement in water quality will reduce their incidence. Freeman (1975) stated that,

water is a compound of two parts of hydrogen to one of oxygen. Boils at 100°C (212°F) and freezes at 0°C (32°F). That organic products in water may be harmful if they contain pathogenic (disease producing) bacteria. The bacteria include those of typhoid and paratyphoid, dysentery and cholera.

2.3 FOOD POISONING

There are dangers of bacteria food poisoning, which occurs when cooked or uncooked foodstuffs are heavily contaminated by certain kinds of spore forming bacteria, carried on or within the human or animal body. From literatures two types of bacteria are identified to contaminated food. These are disease producing bacteria which use the food as a vehicle in which to enter the body. They can be transmitted by way of excreta of a patients, unwashed hands handling food and other unhygienic manners. The second type is the food poisoning bacteria that produce their toxins in the food which may alter its taste and appearance. Gilbert and Roberts (1977) reported that, food poisoning produces an acute gastro enteritis which is usually short and self limiting. That between 3000 and 12000 cases are un-reported. It was reported that there are between 20 and 50 deaths each year resulting from severe dehydration and loss of electrolytes, these deaths occur amongst both young and adult people.

Trustwell (1979) stated that some types of food poisoning bacteria are identified to be causing poisoning in food, these are salmonella - extremely the large group of the organisms from rats, mice and duck eggs to the food. Their infection can cause acute gastro enteritis, that is serious vomiting and diarrhea just as we are experiencing in Minna. Ingestion of a contaminated food may be

followed very quickly, by vomiting and diarrhea which may be severe and accompanied by collapsing due to dehydration. Others include clostridium batulium and clostridium welchi both organisms are spread by air borne spores.

2.4 FOOD PRESERVATION

There are five notable method of keeping food in a condition fit to be eaten at anytime it is required, these include cooling, heating, use of preservatives substances, drying and air conditioning. Daniel F. (1974) health Science and Physiology for tropical schools.

Cooling - Here food may be dulled, that is kept at a temperature just above 0°C or frozen below 0°C . Food kept in house hold refrigerator given very deep freezing while fresh are noticed to retain their vitamin, nourishment and flavour value to the full.

Heating - Boiling is not always a guarantee of sterility at ordinary temperature except boiling oil or sugar are used in frying or boiling fruit, which reaches a much higher temperature. Bacteria are killed above 160°F in most cases.

Preservative substance - curing or smoking, though age long methods of preserving food still stand a challenge of the modern period. The meat or fish is held over wood smoke for, a few days where the creosote fumes kill the bacteria and give a woody taste to the food~ Salting is another method, which involves leaving some fish in brine with other flavouring until ready to be used.

Drying - though old, but also stands challenges of the time, this simply involves the removal of food moisture needed for bacteria growth. Vegetables and some other foodstuffs, are preserved and stored over indefinite period of times through the use of this method.

Air conditioning, the air, that is the humidity temperatures, oxygen and carbondioxide - is carefully controlled so that even meat can now be taken to a long distant area, arrives fresh with its flavour unaltered. Danile P. (1974) Health Science and Physiology for tropical Schools.

2.6 SANITARY HABITS AND ATTITUDES

Egunjobi (1985) stated that "we must not under - estimate the role of habits and attitudes of the people in keeping a sanitary environment". Even if we provide all necessary facilities, we will only realize a minimum achievement if we do not change the attitude of the people. First of all we have to study the attitude of people in areas of refuse dumping indiscriminately so that effective strategy for health education will consequently evoke a change in attitude. Habit once formed and imbibed are hard to change unless with gradual positive attitudinal process that will outweigh the earlier one.

It is a long age practice, seeing young children, even adults defecating in open spaces, sometimes closer homes instead of using the latrines, urine maturation is also passed out indiscriminately around houses. It could also be noticed that waste solids as well as liquid waste from gutters and sewages are disposed of very close to residential houses, the landfills sited a little far away from communities are ignored for selfish reasons.

2.6 SEWAGE DISPOSAL

Sewage is wet waste, possibly infectious and hard to get rid of, it is a triumph of skill and engineering to rid, a large town of its sewage. To purify it unobtrusively and without polluting the towns water supply. Some houses use water closet while others have the: squat -pan where faeces together with all waste water from washing and cooking flow through drain pipes called sewers to sewage disposal work plants.

All latrines need good maintenance and will become fouled and offensive without it. If this is allowed to happen the latrine will either not be used or will become a major health hazard in itself.

2.7 DRAINAGE SYSTEM

This entails the collection and disposal of waste water through water carriage system. The drainage system in Minna which is built by the multinational company Julius Berger Nigeria Limited, -it cut across the length and breath of the town, each house hold has its sub-connection to those bigger drains, other areas with badly structural planned areas and building, provisions were made for dug soak-away pit to temporarily store waste water and which is periodically evacuated.

Due to lack of proper treatment, in the aspect of germicidal and insecticidal application to those soak-away pits, it thus causes fouling water, unpleasant odour and Subsequently becomes a breeding place for flies and mosquitoes. Ogunsaki (1990) in a paper titled (The role of health education in the achievement of health for all by year 2000 and beyond) was of the view that "Nigeria as a whole has multitude of health problems. These problems include, poor personal

and environmental! health, infectious diseases, malnutrition, polluted water and environment, superstitions beliefs, taboos, ignorance and illiteracy" Hall (1975), had asserted that "the advent of industrial revolution in Europe toward the end of the 19th century, cities (as centres of innovations and indeed as centres where the impact of industrial revolutions were initially felt) began to show signs of environmental decay due to limited water supplies, untreated sewage, inadequate arrangement for waste disposal, dense concentration of people closely surrounded by filthy matters of all kinds".

As a matter of concern to Nigeria community, the Federal Government of Nigeria established the Federal Environmental Protection Agency (FEPA) through decree 58 of 1988, as an autonomous body charged with the overall responsibility of protecting the Nigerian environment marked the delightful turning point in the chequered history and mode of environmental protection in this country. Roderick (1975) pointed out that for most environmental problems, four interested parties must understand themselves and cooperate, these according to him are "the public, the labour unions, industry and government".

Thus, the overall approach should be participatory whereby the activities of any given group complement those of others in the context of achieving goals and objectives that bring about a sustainable environment.

2.8 POPULATION DENSITY AND UNPLANNED STRUCTURAL PREMISES

The Federal Task Force on research planning in environmental health science had a great role in mans health,... rapid technological change, increase population in urban centres are compounding

problems of maintaining the environment at a healthy level".

Okpara (1990) added that "housing policy which over looks the housing needs of the poor, leaving in existing slums while others create slums in other urban neighbourhoods" will actually perpetuate our problem of congestion and non better infrastructure as far as housing is concerned.

Along side with the above, Ologbolo (1994) drew attention to the fact that "slums in Nigeria cities are associated with some parasitic intestinal worms, which ravage the health of the residents of such slums. In another assertion as contained in British Medical Journal No 6964 Vol. 309 of Saturday, 12th November, 1994" the cost of housing are often said by the Government to be enormous, but the cost of doing [nothing are unthinkable".... We have to improve housing now, and no amount of jogging and low fat youghurt hurt will compensate". It could be noted at this point that such squalour slums exists in Minna. In areas like Kpakungu, Keteren Gwari and Sauka Kahuta, people can be seen to be sleeping in over crowded rooms aiding the swift spread of communicable disease.

Therefore modern provisions of good planning must come to play during constructions.

2.9 SUMMARY OF RELATED LITERATURE REVIEW:

In reviewing related literat4re on the health hazards associated with sewage disposal amongst inhabitants of Minna local government area of Niger State, the research highlighted the following variables, air pollution, water pollution, food poisoning, food preservation, sanitation, sanitary habits and attitudes of an individual, refuse disposal, sewage disposal, drainage system, population density and unplanned structural designs.

Effects of environment has been found to be multifarious and multidimensional. Both solid and liquid wastes being generated in our communities tend to pose problems to our health as far as their management is concerned. Transportation have been identified as the chief source of air pollution for smokes from vehicles and fumes from industry pollute the atmosphere.

Water supply and its pollution continue to be a major problem in- our societies. Variability in both supply and demand escalates distribution problems. When demand exceed supply, then distribution to areas of need becomes a problem too. Coupled with adoption of appropriate strategies to cope with the rising volume of demands. Therefore, its supply, sources, users and the need for clean and pure water for human consumption should be the top goal of every citizen.

Cases of incidences of food poisoning can be traced not only to our insanitary environment but also due to our unhygienic habits and attitudes in handling these food items and stuffs food poisoning had been reported to be responsible for the incidence of diarrhea and vomiting in England and Wales as reported by Gilbert and Roberts in 1977.

Refuse disposal has been identified as one important aspect of environmental sanitation in Nigeria! Refuse occur as garbage human discharges, sewage wastes, commercial wastes etc from all indications, it is crystal clear that the sanitary facilities are grossly inadequate or totally absent. As for the sewage, various provisions of latrines in our houses should be made fit, clean and easily assessable for our use at all times. Our drainages be given prominence in construction while clearance of sludge and other objects of obstruction be made at intervals.

Good housing with adequate planning has also been identified

to contribute immensely towards promoting good health. As such people should be discourage from slums for good planned structures that has provisions or healthy living and appealing to life conclusiveness.

CHAPTER THREE

3.1 METHODOLOGY AND PROCEDURE.

3.1.1 **RESEARCH SUBJECT:** - Health hazard associated with improper sewage disposal a case study of Minna local government area of Niger state.

3.1.2 **TYPES OF RESEARCH:** - This is an assessment research desired and arranged to find the health hazard as a result of indiscriminate sewage disposal in Minna local government area of Niger state.

3.1.3 **RESEARCH SITE:** - The researcher carried the research programmes at the community and public health office in Minna local government area Niger state.

3.1.4 **TECHNIQUES:** - The techniques used in my research are observation and questionnaires. The questionnaire I distributed to house hold in the area and does observation on the methods of their sewage disposal has aid me to get all necessary information needed to write this project and all finding and data collocated has been analysed in the next chapter (chapter IV).

3.1.5 **RESEARCH STUDY:** - The study of improper sewage disposal has shown that it has wide and adverse negative effect the inhabitants of Minna local government area of Niger state.

CHAPTER FOUR

4.1 DATA COLLECTION

Out of fifty(50) questionnaire issued to various people in different wards of Minna local government 98% respondents gave their answers with different opinion. Thus forty nine (49) responded to the questionnaire.

4.2 DATA ANALYSIS OF MINNA LOCAL GOVERNMENT WARDS QUESTIONNAIRES ISSUED AND RESPONDENT COLLECTED

S/No	Wards	Area Taken
1	Nasarawa A	
2	Nasarawa B	
3	Nasarawa C	
4	Limawa A	
5	Limawa B	
6	Minna South	
7	Minna Central	Keteren Gwari Kwangila
8	Tudun-wada North	
9	Tudun-wada South	
10	Sabon gari	
11	Makara	
	TOTAL	

4.3 DATA ANALYSIS

Table 4.4: Types of Available Toilets

Types of Toilets	Pit Latrine	Bucket Latrine	Vip latrine	Water system	No toilet
Percentage	35	1	9	24	31

SOURCE QUESTIONNAIRE

Types of Available Toilets

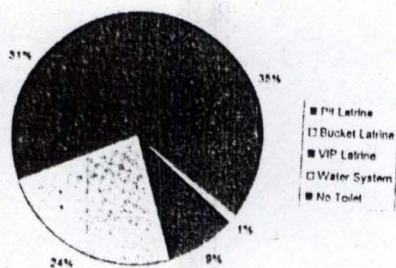


Table 4.4 which shows the type of available toilets was randomly collated during the physical inspection of some buildings. 35 percent of the houses were led with pit latrine while only 1 percent is having bucket latrine. 9 percent of the houses have ventilated improved pit latrine (Vip latrine), 24 percent with water 11 and 31 percent of the houses without any means of excreta disposal. (2.1 next sheet)

About three types of toilets used to be very common in Minna and environs. This ranges from pit latrine, which has been adjudged to be most common and economical to VIP latrine (ventilated improved pit latrine) and water system. The that determine the type of toilet to be used by each household includes economic, socio cultural and technical factors. The most important factor however is economic factor. As a result of its lower cost,

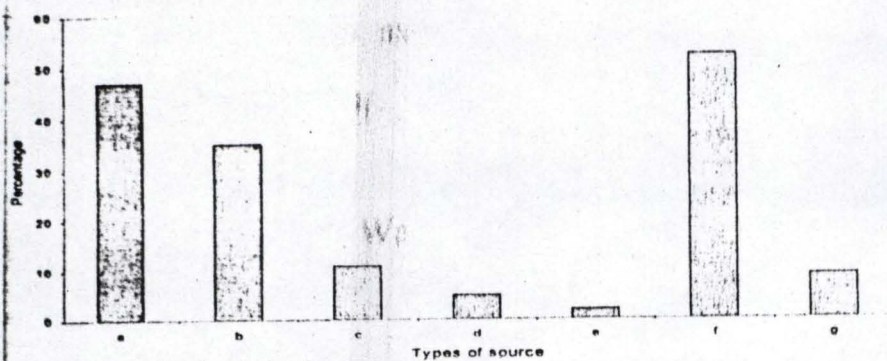
pit latrine is very popular among the average people. The difference between pit latrine and VIP latrine is the vent pipe. This is a pipe that is connected to the pit and provided with trap meant for the destruction of flies. This is what actually makes VIP latrine to be more sanitary when compared with pit latrine.

However, water system latrine is most sanitary if properly maintained but not economical as pit latrine while bucket latrine has become increasingly unpopular.

Table 4.5: Sources of Water Supply

Types of Source	Percentage
Tap water	47
Well water	35
Bore hole	11
River	5
Spring	2
Combination of more than one source	52
No source of water supply	9

Source of Water Supply



SOURCE: QUESTIONNAIRE

NB

S: Sources of Water Supply

B: Well water

C: Bore hole

D: River

E: Spring

F: Combination of more than one source

G: No sources of water supply

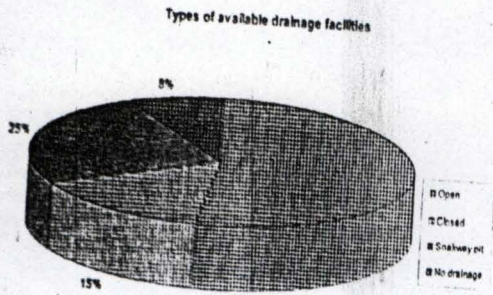
Table 4.5 shows the various sources of water supply that is available to each building. This was derived from the response of the people to the questionnaire. 47 percent of the respondents confirmed that they have access to tap water while 35 percent have wells. Borehole accounts for 11 percent while rivers and springs accounts for 5 and 2 percent respectively. A number of 52 percent of the buildings have provision for more than one source of water supply while 9 percent does not *have* any source of water. (2.2 next sheet)

Adequate water supply is very important for the proper running and maintenance of toilets and drainages. This is the reason why the sources of water supply to each household and the regularity of such supply is very important. Most of the houses in Minna are supplied with Tap and well water unfortunately, majority of the taps hardly run while most of the wells are seasonal. This does not encourage the proper running and maintenance of drains. The available major rivers i.e River Chanchaga also becomes dry especially during the dry season. Moreover, these rivers are being polluted as a result of man's activities. All these have actually reduced the quality and quantity of water available for the management of excreta and wastewater.

Table 4.6: Types of Available Drainage Facilities

Types	Open	Closed	Soakaway	No drainage
Percentage	52	15	25	8

Types of Available Drainage Facilities



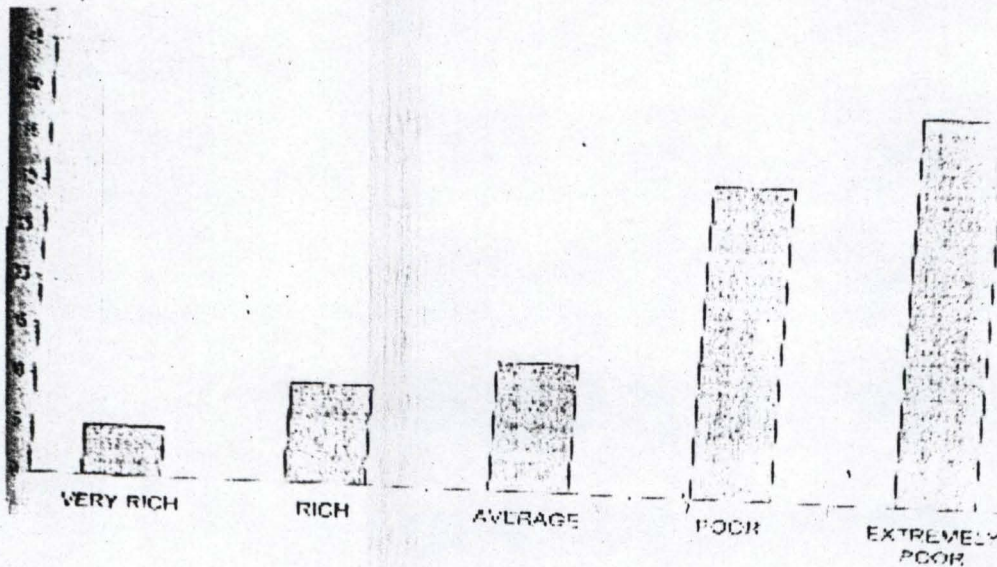
SOURCE: QUESTIONNAIRE

Table 4.6 shows the types of available drainage facilities open drains account for about 52 percent while soakaway pits and closed drainage represents 25 percent and 15 percent respectively. An average of about 8 percent of buildings doesn't have provision for drainage system.

Different types of drainage facilities are available in Minna and environs. Open rains which account for fifty-two percent is most common. Economic factor also play significant role here. Because of its lower cost, many houses are provided with open drain, which usually leads to accommodation of wastewater and breeding

Table 4.7: General Economic Status of the People

Economic status	Very Rich	Rich	Average	Poor	Extremely poor
Percentage	5	10	13	32	40



SOURCE: QUESTIONNAIRE

The table on general economic status of the people i.e tables 5.4 show a progressive trend from the very rich to extremely poor. While only five percent of the people could be classified as very rich, then 10 percent are classified as rich and 13 percent are within the average bracket. A total of 72 percent, which represent a clear majority, are either poor or extremely poor.

The economic status of the people in the study area has been found to have contributed in no small measure to the present level of excreta and waste water management in Minna and its attendant negative effects on public health. In a situation where an average of fifteen percent of the people can be said to be above average, nothing encouraging could be expected. According to my investigation, the cost of constructing the most

simple toilet (127 latrine) is about fifteen thousand Naira while average monthly income of about sixty percent of the people in the study area is about three thousand Naira. If this is considered against the background of other competing demands like accommodation, feeding, clothing etc, the issue of provision of toilets and good drainage may not be a priority. this is the reason why the proper management of excreta and waste water have not been achieved.

CHAPTER FIVE

5.1 SUMMARY, CONCLUSION & RECOMMENDATION SUMMARY AND FINDINGS

The facts about this project are to know the types of hazards associated with improper sewage disposal in Minna local government area of Niger State.

From my observation, I discovered that inhabitant of Minna local government area are lack of adequate toilet facilities at defaecation in an open land which contaminated their environment at the same time cause diseases which affect their health standard.

They also lack proper drainage which will aid them to drain domestic sewage away from their house. The stagnant sewage which are not drainage serves as a breeding grand for pathogenic organism and vector causing severe health hazard to the people, living in this area.

To the people in this area these are the major resolution to the problems confronting them.

The local government in conjunction) with the State Government should, therefore serve this area from the danger of these health hazards, by rehabilitational construction of the broken drainages and provide adequate public toilet facilities to the people.

CONCLUSION

It is a great advantage at benefit to Minna local government area been used as a case study, because it helped me to know the health problems confronting them and how to find solution to the identified health problems. The health hazard associated' with improper sewage in this area, has been discovered to been as a result of mostly government negligence to the provision of facilities to disposal sewage properly and inadequate provision of sanitary inspectors for

the inspection of various homes in the area.

Therefore, I am appealing to the government to ponder, and take immediate actions by provision of facilities listed above. This will help to alleviate the sufferings and enhance their good and healthy living. I highly appreciate the opportunity, courage and support given to me at the school at Area (Minna) to successfully carry out my research.

RECOMMENDATION

I am hereby recommending both individual local government and state government as a whole towards the prevention, control and eradication of health hazards in Minna local government area, Niger state.

These would be achieved if the following measures are to be taken:

- (1) Health Education - from hypothesis I discovered that ignorance is one of the causes of improper sewage disposal which eventually leads to health hazards of the people. So if government provides health educators to enlighten the area on the effects of indiscriminate sewage disposal, the health of the community would be improved.
- (2) Environmental sanitation day should be fixed weekly or monthly by Federal and State Government to eliminate environmental pollution.
- (3) Medical and Health Personnel should be properly trained to aid of the government in order to give sound education to the people of the area and get them involved in health related matters.

- (4) The Government need to support the people by providing chemicals. such as Izal, Detto, Septol etc *for* the treatment of sewage, cleaning *of* toilet and their entire environment.
- (5) The Government should also ensured the adequate an safe water supply is provided *for* proper sewage disposal in Minna area.
- (6) The government to provide adequate facilities such as good drainages toilet facilities, sewage tanks less pools etc for proper disposal *of* sewages.
- (7) Adequate finance or funds should be provided by the government to rehabilitate the broken facilities such as public toilets, drainages and sewage tanks.
- (8) The state ministry *of* Health should support the environmental health officers by identification *of* training needs to properly carryout inspection in various have within the area.
- (9) The people *of* the area themselves should actively participate in carry out instructions and steps in proper sewage disposal given by health educators.
- (10) The members *of* the community should contribute and raise fund in support *of* the government to provide the essential facilities for sewage disposal.

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APPENDIX I

Health Hazard Associated with Improper Sewage Disposal Case Study of Minna Local Government.

3.2 QUESTIONNAIRE

INSTRUCTION: Read each of the statement below use of the guide below to tick in any one column that appeal to your opinion to be completed by people in Minna local government.

1. Name _____
2. Sex, Male, Female _____
3. Educational Background _____
4. Profession _____
5. Address _____
6. Marital Status. Married/Single _____
7. Employment. Civil Servant Business Man/
Woman Artisans Trader Others
(Please specify) unemployed
8. Economic class very rich Rich Not so rich
Poor Extremely poor
9. Size of family. Very large large
medium small
10. Which type of building do you own/rent Bungalow
Three bedroom flat four bedroom flat
Duplex Mansion
11. Are you aware of any relationship between faeces, waste water
management and public health Yes No
12. Does your building have an approved building plan? Yes
No

13. Was it built strictly according to the approved building plan?
 Yes No
14. Did you erect your building on a well drained land
 Swampy area rocky area sloppy area
15. Is your building provided with all necessary sanitary facilities
 Yes No
16. Type of toilet Pit latrine VIP
 Bucket latrine water system latrine
17. How accessible is your building? Easily accessible
 Accessible Not accessible
18. Type of source of water supply available Tap water
 well water borehole river spring
19. How often do you or any member of your family suffer from
 malaria fever, diarrhea, typhoid, bacillary dysentery, warm
 infection, food poisoning, others (please specify) very often
 periodically rarely never
20. Generally, do you have access to toilet facilities?
 Yes No
21. How often do you evacuate your toilet? Every year
 Every five years whenever it get filled up
22. Any cultural barrier that inhibits you from using toilet facilities?
 Yes No
23. If yes please specify

(b) What discourage you from providing toilets and drainage facilities

24. Is there any toilet in your house?

(a) Yes

(b) No

25. If no where do you pass your stool?

26. What type of toilet facility do you have in your house?

(a) Water carriage system

(b) Pit latrine

(c) Bucket latrine

27. How often do you clear your toilet?

(a) Daily

(b) Weekly

(c) Monthly

28. Is there any constructed drainage sewage from your house?

(a) Yes

(b) No

29. If "yes" which type? _____

(b) Did sanitary inspector visit your house?

(a) Yes

(b) No

30. If "yes" how often _____

(b) Do you have public latrine in your area?

(a) Yes

(b) No

31. If "yes" which type of latrine? _____

32. What types of chemical do you used in cleaning your toilet?

- (a) Septol
- (b) Dettol
- (c) Izal

If "No" why?

33. Where does your drainage leads to? Soak away

Other drainage system Public drains