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Environmental Pollution in the Winneba Municipality of the Central Region, Ghana

Y. Ameyaw*[1], T. Y. Tachie[1] and K. Raheem[2]

[1]Science Education Department, , P. O. Box 25, University of Education, Winneba, Central Region, Ghana.
[2]Centre for School and Community and Science Technology Studies Science Faculty, P. O. Box 25, University of Education, Winneba, Central Region, Ghana.

ABSTRACT

The investigation was conducted in ten (10) town sectors in the Winneba Metropolis of the Central Region, Ghana. Questionnaires, interviews and observations were used to solicit information from the inhabitants on environmental issues pertaining in their communities. The major forms of pollution were identified as water, land, noise and air. Domestic, agricultural, industrial and construction were the sources of waste generated in the municipality. Indiscriminate damping of household and market waste in and around the town is a major problem. Some recommendations have been given to help solve environmental problems confronting the metropolis, which can again be used as a yardstick for other communities in the country.

Keywords: Winneba, Central Region, Aboakyer, Pollution Waste and Environment.

Corresponding author
Email: y61ameyaw@yahoo.com

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INTRODUCTION

Winneba is about 56km from the national capital, Accra. It is the municipal capital of the Effutu Municipality, which was carved out of the then Awutu-Effutu-Senya District. The municipality is inhabited mainly by the Effutus who are among the Guan speaking group of the country. The Ewes and Gomoas are the minority group in the municipality. The origin of Winneba, the municipality has been presented by historians and other writers in diverse forms. As claimed by Owusu-Ansah and Mc Farland [5], the original founder of Winneba was Simpun while Opoku [4] also claimed that the Effutus (the inhabitants of Winneba) first settled in their present location more than 300 years ago under the leadership of Otumpan.

Plate 1:A section of southern Ghana showing Winneba

The vegetation is that of the coastal savannah grassland. The soils are largely clayey with high salinity. The annual rainfall ranges from 400mm – 500mm with a mean temperature range of 22^0C - 28^0C. The municipality consists of protruding granite rocks and isolated hills surrounding the metropolis.

The main industries of Winneba are fishing and pottery. It is also known for the Aboakyer (deer-hunting) festival (Plate 2) of the Effutu people and its New Year fancy dress carnival (Plate 3). Aboakyer literally means, “Catching a live deer”. Two Asafo companies using only sticks and clubs move to their respective hunting grounds in the morning of the first Saturday in May and present it at the ceremonial grounds, thus, climaxing the festival.

Plate 2: A captured deer being presented at the ceremony.

Plate 3: Masqueraders with their fancy dresses

The town also has a rich musical tradition and currently boasts of one of the leading musical groups (Winneba Youth Choir) in the country. The town hosts the University of Education, which was established in 2004 with the aim of training teachers for pre-tertiary education. It is a multi-campus, and a multi-site university. It has three main campuses, one at Winneba in the Central Region of Ghana, and the other two at Kumasi and Mampong all in the Ashanti Region. The establishment of the university has created a lot of employment opportunities for many throughout the country. The population of Winneba and its environs has increased tremendously over the years as a result of emigration of government workers, students and other associated activities.

This increasing population has again compounded environmental nuisance for the municipal authorities. It is now common to find litter, domestic waste, agricultural and industrial waste, polythene and plastic discarded indiscriminately in and around the municipality.

Research has shown that, people living in polluted areas are more prone to sicknesses, diseases, low standard of living and poor healthcare. Environmental pollution issues have been one of the major headaches of both past and present government of every country, and have also of late been the main news in both print and electronic media. The level of publicity indicates the seriousness of environmental pollution, which has before now unfortunately received less attention. However, the degree of pollution increases by the tick of time partly because of the on abating increase of improper disposal of waste. Thus, environmental pollution has been the concern of many people from all walks of life over the years. The effects it causes to humans and other organisms are enormous.

Cunningham and Saigo [2] recognised that human misuse of nature is not unique to modern times. This implies that humans' misuse of nature is not a current affair to the human race and thus it has been there for years.

This all important issue was rightly captured in the words of Mostafa Kamal Tolba [6], the Executive Director of the United Nations Environmental Programme when he said "The problems that overwhelm us today are precisely those we failed to solve decades ago" (18th March, 1985).

Studies also show that pollution increases with population growth, industrial development and urbanization. It is the undesirable change in the physical, chemical or biological characteristics of the natural environment brought about by man's destructive activities. The effects of these activities of man can be harmful to both man, animals, plants and aquatic lives.

Environment and Pollution

Cunningham and Saigo [2], states that environment is the circumstances or conditions that surround an organism or group of organisms as well as the complex social or cultural

conditions that affects an individual or community. From this definition, it means that both the living and non-living thing around one's environment have either direct or indirect effect which is likely to be harmful to life. Alloway and Ayres [1], also confirm that pollution is the most serious of all environmental problems and poses a major threat to the health and well-being of millions of people and global ecosystem.

Pollution is the addition to air, water, soil or food that threatens the health, survival and developmental activities of human and other organisms. These substances that threaten the lives of both animal and plants' survival can be in a form of solid, liquid, gas, particles and unwanted energy emission or radiations.

Pollution types can either be water, land, air, noise, radio spectrum emissions or radiations etc. As stated by Cunningham and Saigo [2], any physical, chemical or biological change in water quality that adversely affects living organisms or makes water unsuitable for desired uses can be considered as water pollution.

Often however, a change that adversely affects one organism may either be advantageous or disadvantageous to another. For example, nutrients that stimulate the oxygen consumption of bacteria and other decomposers in a water body for instance, may be lethal or beneficial to certain plant and animal species in the aquatic medium, irrespective of the current water quality level or index, but may be largely determined by the observer's perspective or rational for that particular study.

Land pollution is the degradation of the earth land surface often caused by human activities and their misuse of land resources. This occurs when:

- Waste is not disposed off properly
- Soil is misused by improper exploration of minerals and inadequate agricultural practices.
- There is rapid urbanisation. For example, the beginning of industrial revolution set a series of events into motion, which destroyed natural habitats and polluted the environment causing diseases in both human and other species of plants and animals.
- There is increase in mechanisation, excessive usage of herbicides, massive construction and mining activities.
- There is a rapid increase of dump sites and landfills making it impossible for efficient utilisation of lands that might have been useful for reproductive purposes.
- Chemicals released from toxic wastes through human activities.

Air pollution is the introduction of chemicals, particulate matter or biological materials that can cause harm or discomfort to humans or living organisms or damage the natural living organisms in the environment and atmosphere. Air pollution can occur naturally, through volcanoes, that release toxic gases, such as acid mists, hydrogen sulphide into atmosphere.

Other sources of major air pollution include the use of pesticides, insecticides and decaying vegetation that releases relatively sulphur compounds into the atmosphere. Bush fires also

create clouds of smoke that contains terpenes and isoprene can blanket a whole continent, creating for example, blue hare. Pollen, spores, dust and emissions from vehicles are also common sources of air pollution.

Noise pollution is unwanted sound that disrupts the environment. According to Dara [3], the acute effect caused by noise depends upon the pressure and the frequency. At the level 120-150 dB sound could have negative effects on the respiratory system, causes dizziness disorientation, and loss of physical control.

Noise of about 150dB can have the following effects: The mechanism for chronic exposure to noise leading in the inner ear which gives rise to irreversible hearing loss. High noise level can contribute to cardio vascular effect on exposure to moderate high sound above 70 dBA during a single 8 hour period causes statistical rise in blood. Noise pollution can cause annoyance and destruction in modern artificial environment. It can also be harmful to animals thus making animals migrate from noise source to quiet environment.

The overarching cause of most noise worldwide is generated by transportation system, principally motor vehicle noise and aircraft noise. Poor urban planning may also give rise to noise pollution since juxtaposition of industrial to residential land uses for example often results in adverse consequences for the residential acoustic environment. Beside noise generated transportation system, other prominent sources such as heavy duty factory machinery, construct equipment, power tools, lightening are all common sources of noise pollution. Audio entertainment system for example digital audio player can also be another source of noise pollution.

There are other forms of pollution which include invasive species such as a swarm of horn grasshopper, light pollution, radio spectrum pollution, etc. All these forms of pollution mentioned above pose threats to the survival human or other living organisms.

This research focuses on the ten town sectors of the Winneba Municipality.

The objectives are therefore to:

- Identify and assess the sources of environmental pollution in Winneba which is the capital of the municipality.
- Suggest means of reducing environmental pollution in the municipality.

METHOD

The study was conducted in ten out fourteen of the Town Sectors in the Winneba Municipality in the Central Region of Ghana (Fig. 1). The municipality is located on latitudes $5^0$20′N and longitudes $0^0$32′E of the eastern part of the Central Region, and covers a total area of 95 square kilometres.

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The estimated population is over 46,494 according to the 2000 population and housing census, including males and females with different educational background and different ages. The youth forms majority of the population.

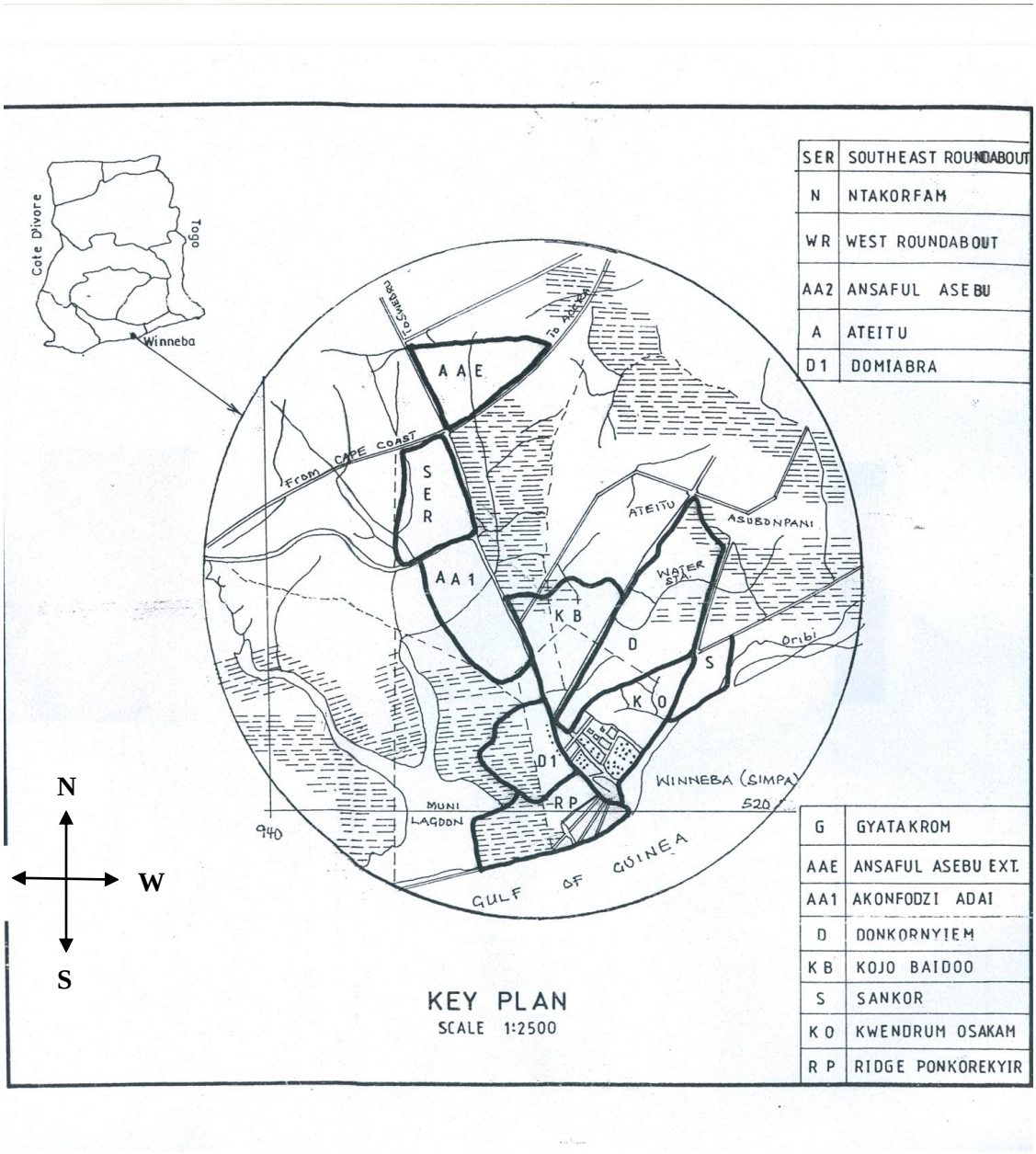

Fig. 1: A map showing fourteen town sectors in the Winneba metropolis.
Source: Town and Country Planning, Winneba

The target population was made up 1000 inhabitants consisting of 100 from each of the Town Sectors. The targeted population were lecturers, students, traders, fishermen, fish mongers, prison officers, prisoners, teachers, pupils, police officers, Sanitation Company and public toilet users who were selected at random. Most of the people sampled have various

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degree of knowledge about environmental issues. The main instrument used to gather the data consisted of questionnaire, interview schedule and observation schedule.

Data collection procedure

- The questionnaires were given to the target group to fill, and those who could not were assisted. The observation aspect of the research was mainly based on directly observing people interacting with their environment and the various polluted areas. The interview aspect consisted of short items.
- The researchers made personal introduction and sort permission from the municipal authority before carrying out the research.

Data analysis

The data collected and calculated in percentages were drawn into pie charts.

RESULTS AND DISCUSSIONS

The research initially assessed the various sources of pollution in the municipality. It was found that the inhabitants dump all kinds of pollutants, such as faeces, polythene bags, metal scraps, empty cans, and all sources of contaminated liquid and solid materials into the sea as well as other water bodies around. Hence, 34% indicated that water was the most polluted in their environment (Chart 1). It was also observed that heaps of refuse were dotted around the seashore and other water bodies (Plate 4). Land is another source of livelihood for the people of Winneba. From Chart 1, it is suggested that 29% of the respondents indicated that improper disposal of plastic bags, metal and empty battery containers, and E-Waste materials are the major sources of land pollution. As shown in Plate 5, this hampers farming activities.

Plate 4: A heap of refuse dump at the sea shore

Plate 5: A scene of a polluted land

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Chart 1: Forms of pollution in the Municipality

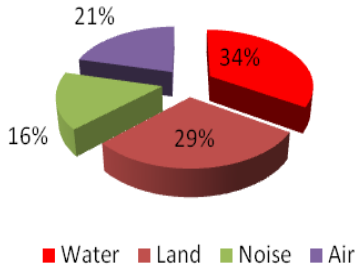
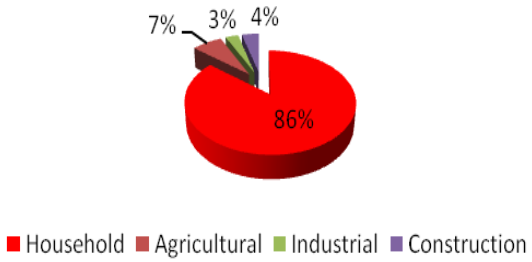


Chart 2: Sources of waste generation in the municipality



As indicated in Chart 1, it is evidenced that air pollution is also a public concern in Winneba. The Chart shows that 21% of the respondents indicated air to be a form of substantial pollution. Some of the sources mentioned include - burning of tyres, plastic waste, odour from choked gutters (Plate 6) and open septic tanks (Plate 7), dust and emissions from the exhausts of vehicles.

Plate 6: A choked gutter

Plate 7: Open septic tanks

In the case of noise pollution, 16% (Chart 1) indicated that the following are some of the sources of pollution: automobile engines, tooting of vehicle horns, and loud music from vendors.

Chart 2 shows the main sources of waste generation in the municipality. Eighty-six per cent (86%) of the respondents indicated that household waste, such as faecal matter, polythene bags, soapy water, emptied coconut shells (Plate 8), etc. are highly generated in the various town sectors. Other waste generated such as agricultural (7%), construction waste (4%) and industrial (3%) can be said to be minimal levels.

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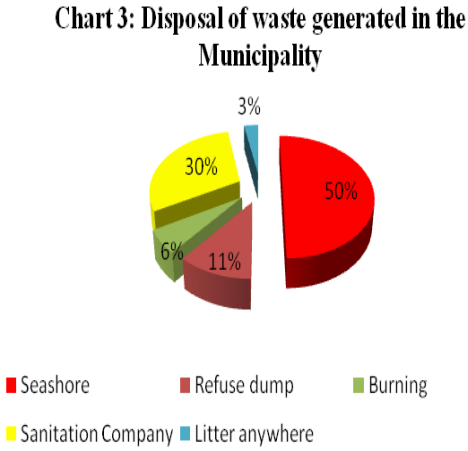
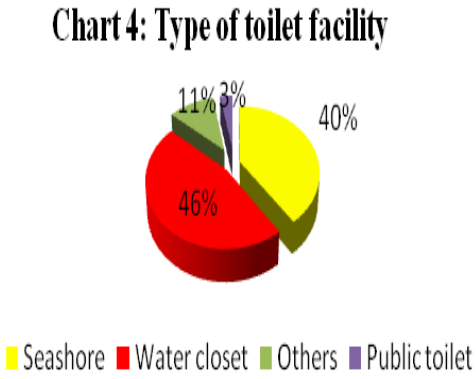
Plate 8: A heap of emptied coconut shells

The mode of disposal of waste by the town folks was also investigated. It came to light in Chart 3 that 50% usually dump their generated waste into the sea. The Chart again shows that 30% indicated that their refuses generated are always collected by Waste Management Company, while 6% usually burn the waste they generate.





As shown in Chart 4, 46% answered that they use water closet, while (40%) defecate at the seashore, and 3% use the public toilets. Apart from the above, 11% of the respondents indicated other alternative sources of defecation.

Pollution can affect people in diverse ways. Causes of many preventable diseases have been related to unhygienic surroundings. Some of the diseases are prevalent in the municipality. Chart 5 shows that 72% indicated malaria as the most common disease in the municipality. The next prevalent disease is Typhoid Fever which makes up 22% of the sampled population. Other types of diseases indicated by 6% of the respondents are acute respiratory infection, acute eye infection, skin disease, cholera and diarrhoea.

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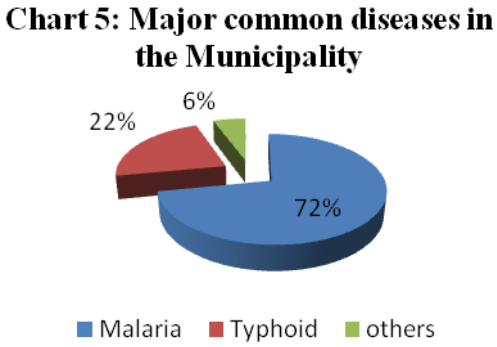

CONCLUSION

It is important to note that environmental pollution is rapidly increasing these days. It was due to such environmental problems that prompted the study in the ten town sectors within the municipality. The study was to find out if people in Winneba were aware of the various environmental problems confronting them, and to recommend ways to address them. From the information gathered, it was found out that larger number of the people sampled had knowledge on environmental problems, their causes and effects. However, such knowledge did not reflect in the outcome of our investigations.

This indicates that, although the people knew a lot about environmental pollution, they had not been able to cultivate environmental values which could assist them in controlling the increasing rate of environmental pollution in various town sectors within the municipality.

RECOMMENDATION

The main form of environmental pollution was household waste comprising chiefly of plastics, polythene, faeces and other recyclable materials.

To solve the problem above, there is the need for curriculum developers and policy makers to include issues of environmental education in the curriculum right from the basic level of education.

There should also be public education at regular intervals at various public places like markets, durbar grounds, community centres and religious places.

The government through legislature should make laws prohibiting people from dumping and defecating in unauthorised places, such as the beaches. These laws should be sternly enforced through the local assemblies.

There should also be the provision of bins at vantage points and people educated on how to use them. For example, there could be 3 or more different coloured bins for different purposes. Blue bins could be for the collection of plastic and polythene bags so that they could

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be recycled. Brown bins for the collection of organic waste, and yellow for the collection of glasses.

In addition to the above, government and district assemblies should provide places of convenience at public places.

To reduce the problems of waste engulfing our towns and cities, they should be put into other uses, for example, people should be encouraged to use cane basket in place of polythene bags (Plate 9).

Plate 9: A set of cane baskets that are suitable for shopping.

Students all over the country should be encouraged to use bags made from waste materials, such as, empty flour sacks that are biodegradable or environmentally friendly as shown in Plates 10a, b and c.

Plate 10a: Bags made from empty floor sacks

Plate 10b: A student with a bag in front

Plate 10c: A student with a bag at the back

It is important that every Ghanaian is provided with the needed education on environmental pollution. The environmental education equips an individual with requisite knowledge in the various types of pollution of the environment. Through this, individuals are likely to be informed about some dangers posed by pollution in the environment.

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