American Journal of Life Sciences
2017; 5(3-1): 43-51
http://www.sciencepublishinggroup.com/j/ajls
doi: 10.11648/j.ajls.s.2017050301.17
ISSN: 2328-5702 (Print); ISSN: 2328-5737 (Online)

Health Hazards, Safety Risks and Security Threats Posed by Olusosun Dumpsite on Olusosun Community at Ojota, Lagos, Nigeria

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To cite this article:

Alani Rose, Abdulfatai Mustapha, Ogbe Rachael, Akinade Bayo. Health Hazards, Safety Risks and Security Threats Posed by Olusosun Dumpsite on Olusosun Community at Ojota, Lagos, Nigeria. *American Journal of Life Sciences*. Special Issue: Environmental Toxicology. Vol. 5, No. 3-1, 2017, pp. 43-51. doi: 10.11648/j.ajls.s.2017050301.17

Received: January 6, 2017; **Accepted**: February 10, 2017; **Published**: April 11, 2017

Abstract: The intensity of man's activities through rapid urbanization and industrialization contributes largely to increasing discharge of wastes into the environment. Such is the case with the 42 hectare dumpsite situated at Ojota in the heart of Lagos. Olusosun dumpsite is the biggest repository of waste in the most populous city in sub-Saharan Africa, receiving more than 50% of the 9,000 metric tones of solid waste generated daily in the state. The activities at Olusosun dumpsite raise a lot of questions concerning the security and the safety of that community. The spot has attracted criminal activities which security personnel need to look into. On the other hand, there is a high tendency of safety and health impacts on Olusosun community as a result of contamination and environmental pollution at Olusosun dumpsite. With the use of Atomic Absorption spectrophotometer (AAS), leachate and underground water samples around the dumpsite were analysed for heavy metals such as manganese (Mn), nickel (Ni), chromium (Cr), zinc (Zn), copper (Cu), lead (Pb) and iron (Fe). Heavy metal concentrations in all the leachate samples were much higher than what was obtained in the underground water samples. In the underground water, the concentrations ranged from 0.050 to 0.485mg/L for Fe, 0.057 to 0.126mg/L for Pb, 0.009 to 0.024 mg/L for Cu, 0.004 to 0.010mg/L for Cr, 0.009 to 0.016mg/L for Ni, 0.074 to 0.128mg/L for Mn, and 0.996 to 2.493mg/L for Zn. Pb and Fe were found to exceed the Nigerian Standard for Drinking Water Quality, approved by the standard organization of Nigeria (SON). The state of security and safety of Olusosun community is hereby presented.

Keywords: Olusosun Dumpsite, Heavy Metals, Underground Water, Leachates, Safety, Security

1. Introduction

Nigeria is highly blessed with vast physical and human resources spread over various ecosystem. Recently these resources (land, water, soil, air, and forest) have experienced pressures due to rapid urbanization and industrialization as well as agricultural practices. These contribute largely to increasing capacity of industrial waste, medical waste (as a result of need for medical care) chemical waste and other municipal solid waste. Unguided and uncontrolled social-economic activities can subject the environment to widespread disintegration, deterioration and greater risk of abuse [1].

The study site, Olusosun landfill, a 42 hectare dumpsite situated at Ojota in the heart of Lagos, is the biggest repository of waste in the most populous city in sub-Saharan Africa, receiving more than 50% of the 9,000 metric tones of solid waste generated daily in the state. (Wikipedia, News Feature 2012). This dumpsite constantly produces a peculiar stench around the neighbourhood. At close proximity to the dumpsite are residential areas and many commercial businesses. The Olusosun area is a very busy area with high rates of human and other commercial activities. The security of the area can be threatened by strange individuals around such communities. Today, among the major factors of discomfort in urban residential houses in Nigeria is the fear of burglary attack, rape, murder, kidnapping and other similar criminal assaults (Microsoft library, 2007). With urbanization, agglomeration of larger numbers of households and human populations with diverse tribal and socio-cultural backgrounds resulting in one single, dense and extensive urban settlement, ensuring security of a household has become intricate and complicated. First, strangers could no longer be easily identified as in previous, relatively smaller homogenous settlements. Next neighbour households in cities are now strangers, as households now change often, in an urban setting characterized by changing tenants and immigrants (Atolagbe, 2012). Mass movements of strangers into Olusosun dumpsite constitute security threats to Olusosun community. In addition to security, safety is very crucial. Many of the impacts of landfill system include infrastructure disruption (e.g. damage to access road by heavy trucks), pollution of local environment (such as contamination of groundwater or aquifers by leakage or sinkholes (Tampa, 2011) and residual soil contamination during landfill usage as well as after landfill closure, Generation of methane gas during the decaying of organic waste on the landfill, harboring of disease causing vectors (e.g. rodents, flies, especially in an improper operated landfills commonly found in developing countries). Other problems include dust and heavy smoke emanating from the site, odour, among others. Pollution occurs in different forms; air, water, soil, radioactive, noise, thermal & light. This study is focused on the leachates and underground water. Leachate from a land fill varies widely in composition depending on the age of the landfill & the type of waste that it contains (Henry and Heinke, 1996 and DoE, 1992). Once in contact with decomposing solid waste, the percolating water becomes contaminated and if it then flows out of the waste material it is termed leachate (Washington State Department of ecology, 2009). Leachate thus produced maybe characterized as a water based solution containing four groups of contaminants which are; dissolved organic matter (e.g. alcohol, acids, aldehyde, short chain sugar etc.), inorganic macro components (e.g. common cation and anions including sulfate, chloride, iron, aluminum, Zinc and ammonia), heavy metals (e.g. Pb, Ni, Cu, Hg) and xenobiotic organic compounds like PCB, Dioxins (basically halogenated organic compounds) (Kjeldsen et al., 2002). These hazardous materials are unleashed into the environment, thus posing serious threat to the quality of the environment. The degree of these threats depends on the composition and quantity of leachate and the distance of a landfill from water sources (Rowe et al., 2008). As consequences of environmental pollution, poor environmental management, poor implementation and enforcement of environmental regulations, strange health conditions are now common in our society. Examples are malaria, typhoid, cancer, kidney failure, liver failure, cholera, dysentery, to mention but a few.

Pollutants released to the groundwater can work their way down into the groundwater and can create a contaminant plume within an aquifer. Water table conditions are of great importance for drinking water supplies, agricultural irrigation, waste disposal (including nuclear waste), wildlife habitat and other ecological issues. Love canal was one of the most widely known examples of groundwater pollution. In 1978, residents of the love canal neighbors in upstate New York noticed high rate of cancer and an alarming number of birth defects. This was eventually traced to organic solvents and dioxins from an industrial landfill that the neighbor had been built over and around which had then infiltrated into the water supply and evaporated in basements to further contaminate the air. Adrian Belcham (2014) traced this epidemic to organic solvents and dioxins released from an industrial landfill built by a neighbor which had infiltrated into the water supply and evaporated in basements to further cause air pollution. At Olusosun dumpsite, the comingled wastes at this site unleash hazardous substances including heavy metals, amongst other toxic chemicals into the environment. An investigation was therefore carried out to establish the extent of heavy metal contamination of leachate and underground water around the dumpsite. One of the objectives of this study therefore is to assess the impact of Olusosun dumpsite on the landfill leachates and the quality of groundwater at close proximity. The second objective is to assess the security of the Olusosun community as the dumpsite attracts very strange individuals.

2. Materials and Methods

Fig. 1. *Satellite view of the sample site showing sample points.*

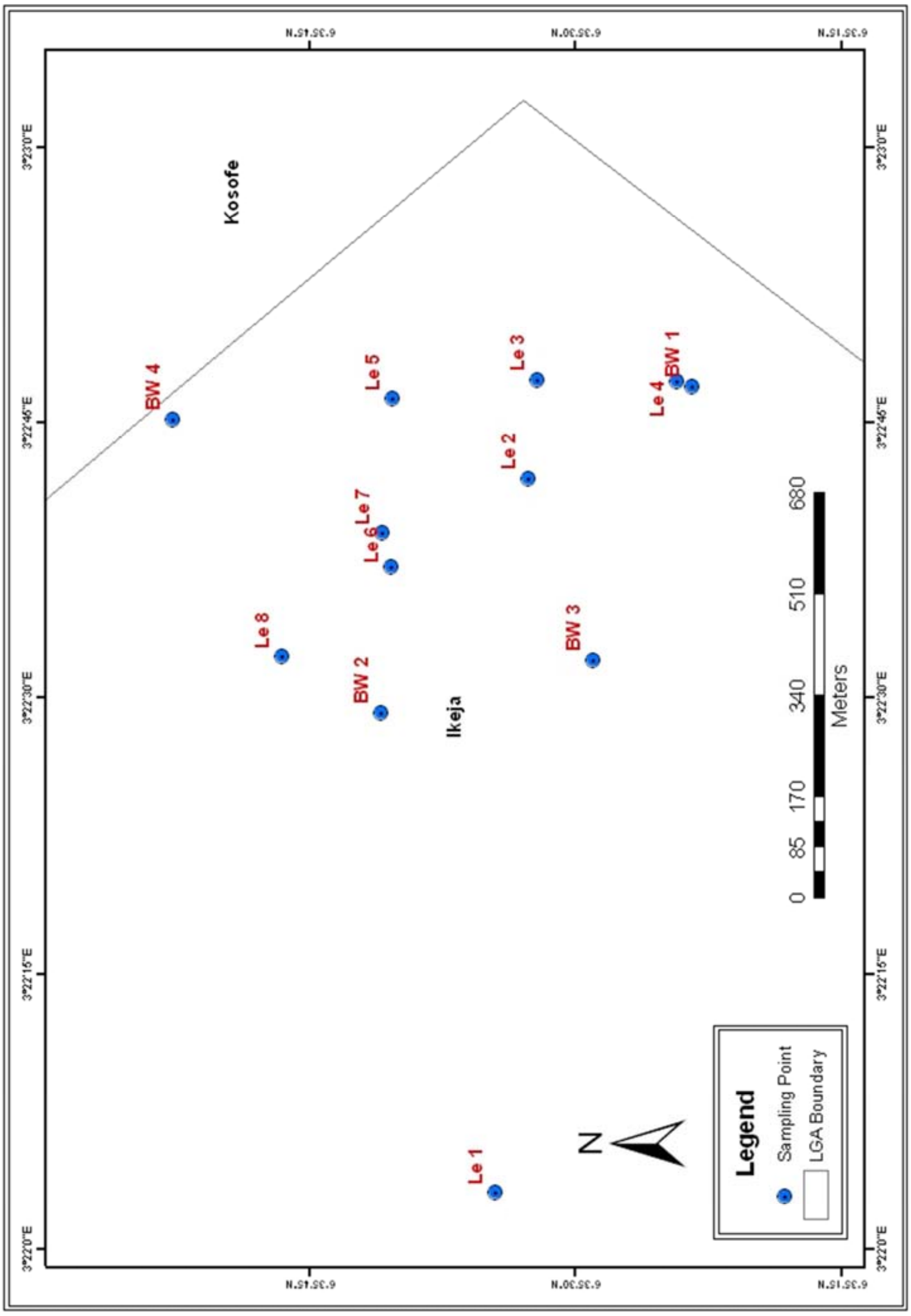

Fig. 2. *Sample points.*

Table 1. *Sample Location and Characteristics.*

SAMPLE CODE	TEMP.(° C)	PH	CORDINATE
Le1	29	7.80	N063°35.575’E003°22.652’
Le2	33	7.68	N063°35.545’E003°22.700’
Le3	34	6.95	N063°35.536’E003°22.789’
Le4	31	8.24	N063°35.405’E003°22.788’
Le5	36	7.13	N063°35.672’E003°22.772’
Le6	42	7.36	N063°35.674’E003°22.620’
Le7	35	7.18	N063°35.782’E003°22.650’
Le8	35	7.76	N063°35.776’E003°22.538’
BW1	31	6.29	N063°35.390’E003°22.783’
BW2	34	6.43	N063°35.683’E003°22.487’
BW3	33	5.62	N063°35.484’E003°22.535’
BW4	32	5.95	N063°35.879’E003°22.753’
BW5(control)	26		Unilag venture’s bottle water

Fig. 3. *A view of Olusosun dumpsite.*

Fig. 4. *Heaps of comingled waste on Olusosun.*

Fig. 5. *Olusosun community members passing the percolated leachate barefooted.*

Fig. 6. *Food seller and other businesses in the midst of comingled wastes at Olusosun dumpsite.*

Fig. 7. *A scavenger carrying a load of separated plastic waste sold for 100naira a pack.*

2.1. Sample Collection

Bore hole water samples were collected from water taps while leachate water samples were collected directly at the surface using plastic containers.

2.2. Physicho-chemical Parameter Determination

The physico-chemical analysis of the leachate and water samples was carried out in accordance with standard analytical methods as prescribed by APHA (1998). The parameters include pH, conductivity, acidity, alkalinity, and total dissolved solids. pH and conductivity were determined using pH meter and conductivity meters respectively. Acidity and alkalinity were determined using titrimetric methods. Total dissolved solids determination was carried out gravimetrically.

2.3. Sample Preparation and Heavy Metal Analysis

100ml of thoroughly mixed sample was transferred into a beaker and 5ml concentrated nitric acid was added. The beaker was then cooled and another 5ml of concentrated nitric acid was added and heated until a clear solution was obtained. The sample was then filtered to remove the particles, and the volume was adjusted to 50ml. Each sample was transferred into 120ml plastic bottle and labelled for determination of Manganese, Nickel, Chromium, Zinc, Copper, Lead and Iron using Atomic Absorption Spectrophotometer.

3. Results and Discussion

3.1. Physico-Chemical Parameters of Leachates and Borehole Water

Table 2. *Physic- chemical analysis of leachate samples.*

Sample code	Conductivity (μScm^{-1})	TDS (ppm)	Alkalinity (ppm)	Acidity (ppm)	pH
Le1	7170	3585	880	ND	7.8
Le2	6370	3184	500	ND	7.68
Le3	2610	1304	400	ND	6.95
Le4	2620	1310	160	ND	8.24
Le5	3730	1865	304	ND	7.13
Le6	16900	8450	1320	ND	7.36
Le7	2960	1480	20	12	7.18
Le8	4860	2429	292	ND	7.76

Table 3. *Physico- chemical analysis of borehole samples.*

Sample code	Conductivity (μScm^{-1})	TDS (ppm)	Alkalinity (ppm)	Acidity (ppm)	pH
Bw1	30	14.8	8	4	6.29
Bw2	410	205	24	8	6.43
Bw3	249	124	8	12	5.62
Bw4	36.2	18.1	6	4	5.95
Bw5	133	66	12	4	7.2

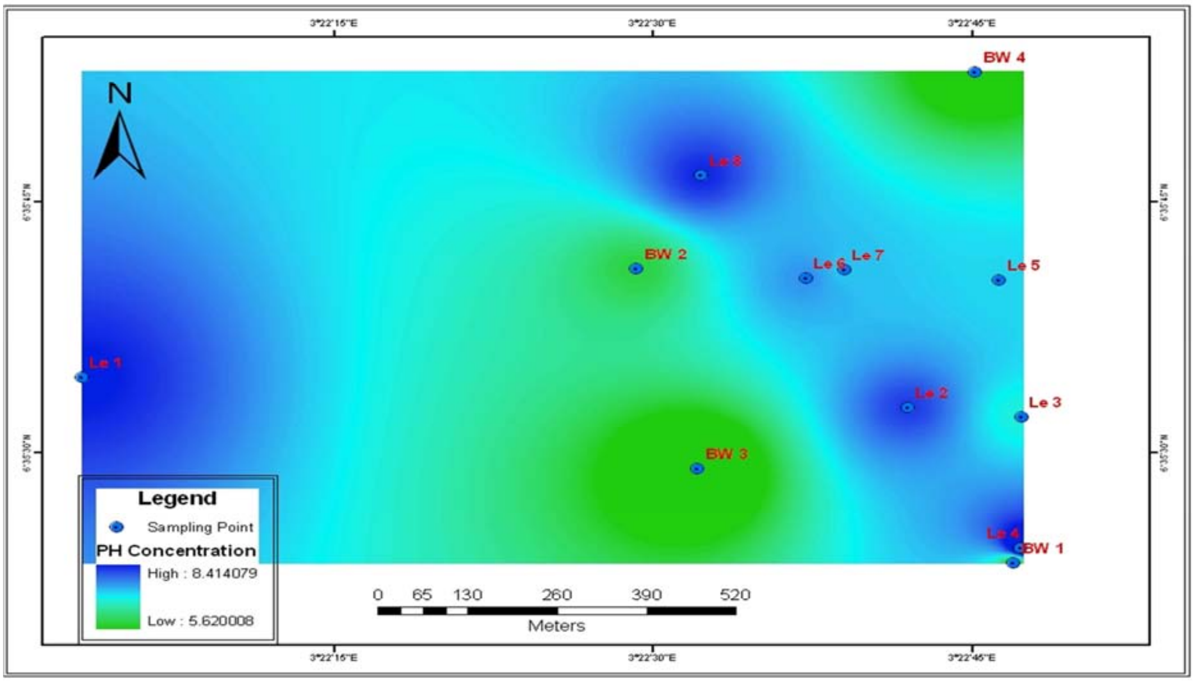

Fig. 8. *Leachate and borehole water pH.*

The physico-chemical characteristic of the leachate depends primarily upon the waste composition and water content in the total waste (Suman et al., 2010). Leachate samples had a high pH values ranging from 6.95 to 8.24. This indicated anaerobic or methanogenic fermentation stage of the leachate. This state is usually characterized with production of volatile fatty acids (VFAs) and high partial pressure of carbondioxide with a pH range of 6 to 8 (Kjeldsen et al., 2002).

The pH of the borehole water samples ranged from 5.62 to 6.29. These were highly acidic when compared with the control sample (Bw5) with neutral pH of 7.2. Acidic pH is not a good characteristic of drinking water. Prolong ingestion could cause stomach ulceration, it can also results to corrosion of pipes and tanks used for storage. The pH range recorded is below the minimum and maximum allowable limit of 6.50 to 8.50 set by Nigerian Standard for Drinking Water Quality (NSDWQ) and WHO guidelines for potable water. Past studies (Longe et al., 1987) also confirmed the acidic nature of Lagos groundwater. The acidic nature of Lagos groundwater is characteristic of the coastal groundwater whose pH is primarily controlled by its hydrogeological settings.

The conductivity for leachate ranged between 2610 to 16900 μScm^{-1} and that of borehole ranges from 30 to 410microsiemen per centimeter (μScm^{-1}). It is observed that sample Le6 (leachate) has the highest conductivity value of 16900 (μScm^{-1}) while Bw2 has the highest conductivity value for borehole samples. There is high possibility of free percolation of leachate into the aquifer, because Le6 and Bw2 are in close proximity. This also suggested that the direction of flow of underground water is from Le6 towards the Bw2 (i.e. towards the main entrance to Olusosun dumpsite). The high conductivity value observed is an indication of the presence of inorganic materials especially metals in the sample.

Conductivity measurements are used routinely in many industrial and environmental applications as a fast, inexpensive and reliable way of measuring the ionic content in a solution (Grey, 2004). Measure of conductivity is a typical way to monitor and continuously trend the performance of water purification systems.

Total Dissolved Solids (often abbreviated TDS) is a measure of the combined content of all inorganic and organic substances (impurities) contained in a liquid in molecular, ionized or micro-granular or suspended form. The highest TDS recorded is observed in Le6 and Bw2 respectively, it ranges between 1304-8450ppm in leachate and 14.8 to 205ppm for borehole water samples, though it is below the maximum allowable limited of 500ppm set by Nigerian Standard for Quality Water but considerably low when compared with the control sample Bw5. The principal application of TDS is in the study of water quality for streams, rivers and lakes is as an indication of aesthetic characteristics of drinking water and as an aggregate indicator of the presence of a broad array of chemical contaminants(US EPA, 1991 and DeZuane, 1997).

It is observed that the leachate sample with the highest electrical conductivity and highest TDS has the highest degree of alkalinity (Le6). This suggested that the degree of conductivity varied positively with TDS and degree of alkalinity in a given sample. This is further indicated in Leachate sample Le1, with conductivity value of 7170μScm^{-1} TDS (3538pm) and alkalinity (880) respectively. Therefore it can be deduced that, in all the samples, conductivity, TDS and alkalinity are directly proportional (i.e. EC α TDS and

Alkalinity).

In contrast, table 2 showed that pH values did not vary directly with degree of acidity and alkalinity of the sample in question. This is seen in sample Le4 where the pH value is the highest (i.e 8.24) but has 160ppm alkalinity, so also the sample with lowest pH of 6.25 neither have the lowest acidity nor alkalinity infactadicity was not detected as against the popular notion that a lower pH indicate acidity. From this analysis it can be suggested that the degree of alkalinity or acidity of a leachate sample is not pH dependent meaning that pH values is not a good indicator or direct interpretation of the degree of acidity or alkalinity of a given sample.

The values obtained for conductivity, TDS and alkalinity is relatively low in borehole water samples. This may be due the extent and the stage of decomposition of waste as well as the age of the landfill. But the highest value was recorded in Bw2. This sampling point is in close proximity to leachate point Le8, Le6 & Le7. The highest conductivity value here indicates some levels of contaminants in the water sample. It is equally a good indicator of the impacts of landfill on the water quality. High value of TDS is attributable to leaching of various pollutants into the groundwater. This finding is interdem with Olaniyan and Saxena (1977) who reported the groundwater pollution from refuse in the vicinity of the dumpsite detectable through increased TDS concentration of water. The high value of TDS decreases the palatability of water and may cause gastro-intestinal irritation in human and may have laxative effect particularly upon transit (WHO, 1997). The highest TDS of 205ppm and 129ppm observed in Bw2 and Bw3 is relatively high when compared with the control sample (TDS =66ppm).

Heavy metals in leachates and borehole water

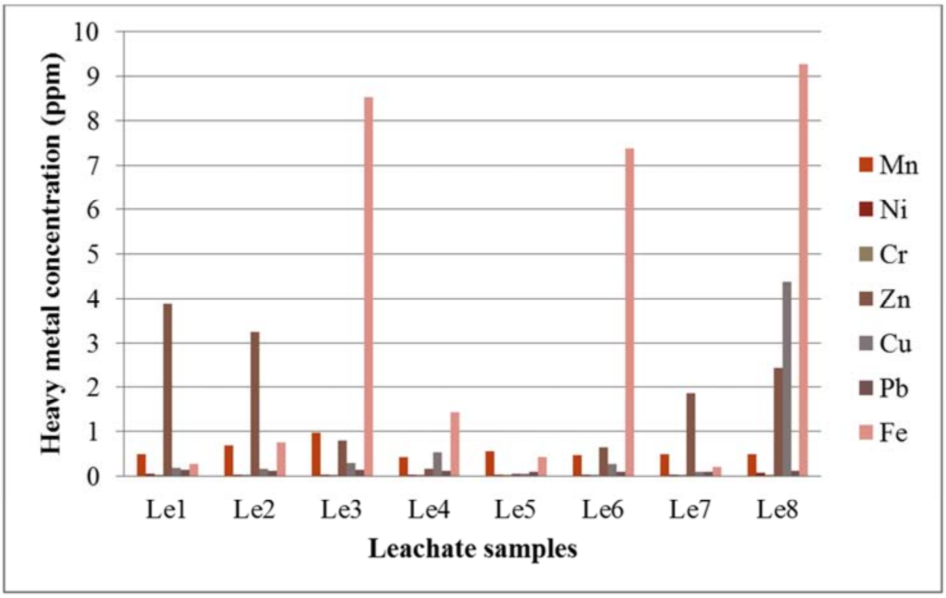

Fig. 9. *Heavy metal concentrations in leachate water.*

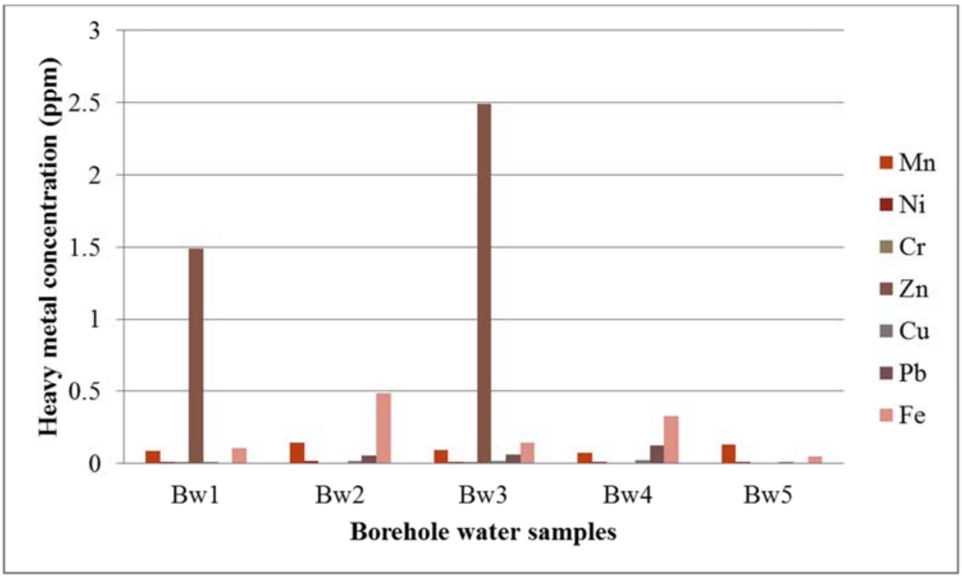

Fig. 10. *Heavy metal concentrations in borehole water.*

Seven metals were considered in an effort to assess the extent of heavy metal contamination of leachate and groundwater. These metals are: Manganese (Mn), Nickel (Ni), Chromium (Cr), Zinc (Zn), Copper (Cu), Lead (Pb) and Iron (Fe) each with different degree of toxicity. Zn, Cu, Fe and Pb are said to be more toxic and should be eliminate and should be completely discourage in potable water supply most especially Lead(Pb) that have a high tendency towards causing brain damage in infants.

Table 4 and 5 show case the concentration of metals in the leachate sample borehole samples. This data is a confirmation of the presence of heavy metals in all the samples analyzed. The presences of high level of Fe in leachate sample indicate that Fe and steel scrap are also dumped in the landfill. The dark brown coloration of the leachate is mainly attributed to the oxidation of ferric-hydroxide colloids and complexes with fulvic/humic substance (Chu et al., 1994). The presence of Zinc is attributable to batteries and Fluorescent lamp waste received on the dumpsite. The presence of Lead (Pb) in the Leachate samples indicated the disposal of Pb batteries chemical for photograph processing Pb-based paints and pipes at the landfill site (Moturi et al.,2004). Chromium and Copper were also present in the leachate samples as well as other metals like Ni, and Manganese. These are all gotten from varieties of waste from different origin on the dumpsite.

From the analysis of borehole samples, the result in Table 7 shows that, the rate of occurrence in terms of highest concentration in each group is the same for both the Zn and Fe are equal. It is good to know that the soil of Olusosun dumpsite, Ojota of clay, this is evident in one of the picture of deeply excavated landscape on the site presented in early chapter (chapter 2). The presence of abundant clay in the soil layer is capable of protecting the aquifer from direct leachate contamination. This assertion may not be true in all cases especially in areas with no or less clay composition. This is evident in the result presented above. Majority of the metals detected were found in borehole samples to a lesser concentration but the most interesting part been that, despite the young age of the dumpsite and the degree of decomposition of waste, the leachate thus produced still found its way down to the underground water.

Lead (Pb):

The concentration of Lead ranges between 0.088 to 0.137 mg/L in leachate samples and 0.00 to 0.126mg/L in borehole water. The concentration (0.057, 0.061 and 0.0126mg/L) found in Bw2, Bw3, and Bw4 respectively is higher than the allowable limit of 0.01mg/L or standard set by the Nigerian Standard for drinking water quality, the consequence been that, continuous use or intake of these water could lead to cancer, interference with vitamin D metabolism, affect mental development in infant, toxic to the central and peripheral nervous systems (Nigerian Industrial Standard-NIS 554:2007).

Iron (Fe):

The concentration of Fe ranges from 0.279 to 9.268 in leachate and 0.108 to 0.485mg/L in borehole water. Bw2 and Bw4 has concentration of 0.33 and 0.485mg/L respectively which was also found to exceed the maximum standard of 0.30mg/L set by WHO and NSDWQ. The consequence of this can be seen in table 6. When compare to the control sample, the results obtained are generally not acceptable.

Zinc (Zn):

The concentration ranges between 0.00 to 2.493mg/L in borehole sample. This is below the maximum allowable limit of 3mg/L set by WHO and NSWDQ, but despite this fact, the concentration obtained for Zinc is far higher than the control sample (Bw5), this may be due the young age of the dumpsite. This is pointing to the fact that, the concentration would increase over a long period of time since the leachate-aquifer leakage (contamination) has been established from the results of the analysis.

Fe has the highest concentration value, in leachate sample than in borehole water while Zinc has highest concentration in water sample than in leachate samples as shown in fig 14 and 15 respectively. Three things can be deduced from this:

1. Zinc has higher percolation rate than Fe
2. It can also be inferred that clay has higher affinity and retention coefficient for Fe than Zn
3. Iron present in leachate undergo oxido-reduction reaction, hence are reduced in transit

Chromium (Cr):

Concentration of Chromium in the borehole water analyzed is between 0.004 and 0.01mg/L compared with the maximum allowable limit of 0.05mg/L. Chromium concentration in the aquifer could escalate above the allowable limit with time if leachate prevention, collection and treatment system is not adopted on Olusosun dumpsite. This could as well increase the risk of cancer in local resource users in the surrounding.

Copper (Cu):

The concentration of copper ranges between 0.01 to 0.024mg/L. it is below what we have in the control sample i.e. 0.009mg/L but still within the maximum acceptable limit of 1mg/L. When compared with the control, it shows that the water is unfit for drinking therefore adequate treatment must be applied in order to matchup with the control sample and to reduce the dose or quantity of copper consumption per day. This would go a long way to prevent the users from having gastrointestinal abnormalities.

Manganese (Mn):

Manganese concentration ranges between 0.074 to 0.146mg/L in borehole samples. It is close to the maximum acceptable limit of 0.2mg/L for drinking water set by WHO as shown in table 6. This is also pointing to the fact Manganese concentration would escalate beyond normal as time goes on if the source of the leachate is not tackled. The effect of this could be lethal, because of manganese tendency to cause neurological disorder when the recommended daily allowance is constantly exceeded especially if the water is not treated before drinking.

Nickel (Ni)

The concentration of nickel ranges between 0.01 to 0.016mg/L in borehole water. The control sample has Nickel concentration of 0.009mg/L. This indicated that borehole water around Olusosun dumpsite is highly contaminated with nickel. This concentration may as well increase if the leachate percolation continues.

Nevertheless, it is worthy to note that, the criteria for leachate control and prevention is not by relying on clay alone but to employ the use of geo-membrane for leaching prevention and control. This is because, the geo-membrane with good tensile strength would prevent direct leaching or percolation of leachate and can help channel the leachate towards leachate collection points for treatment.

3.2. Security and Safety of Olusosun Community

Looking at victimless offences such as prostitution, gambling, marijuana use, one may say that to engage in those acts there is usually an element of agreement and consent. Therefore, the participants may not see their habits as acts of harm perpetrated in the society. However, the family of the participants and the moral fabric of the society is jeopardised by such behaviour (Bohn & Haley, 2002). In most cases, participation such behavior as listed above are poverty driven and they promote crime. When crime prone (poverty stricken) people invade a place and find it lucrative, it is not very easy to ward them off. The invaded community has become their home. As the case with Olusosun dumpsite, it may be taken that there are restrictions presently to control movements in the site. Yes, but the people have already established their abode within that community and can always find their way around. Forcing them out of the site that served as their only source of livelihooh would only force them into crime in order to survive. Ugly trends in burglary attacks and the invasion of the victim by criminals in large, intimidating numbers are likely to occur more at Olusosun and Ojota area. Security personnel need to look into this issue. This is not only peculiar to Olusosun dumpsite but all other dumpsites scattered all over Lagos state. The Lagos state government also has a big role to play because the poor are also part of the society and they have the right to survive.

On the safety aspect, this study reveals that Olusosun community is not safe. The Love Canal site in the City of Niagara Falls, New York, is a site that has many similarities with Olusosun dumpsite at Ojota in Lagos, Nigeria. In 1978, residents of the love canal neighbors in upstate New York noticed high rate of cancer and an alarming number of birth defects. Residents in the area began to notice this "Toxic Ooze" emerging in their back yards and under their houses. Household pets began losing hair where they had come into contact with the substance. Children began falling ill with long lasting health issues. Children in the schoolyard were burned by toxic waste. Local officials were alerted, but took no action.

Love Canal is a useful case study in this research and so comparisons are hereby made with Olusosun. Olusosun dumpsite is 42 hectare (103.7 acres) in size while Love canal was 70 acres.

Olusosun dumpsite is the biggest repository of waste in the most populous city in sub-Saharan Africa, receiving more than 50% of the 9,000metric tones of solid waste generated daily in the state. In Love Canal over 21,000 tons of wastes were deposited.

Olusosun dumpsite harbors comingled wastes which include industrial waste, medical waste (as a result of need for medical care), chemical waste agricultural wastes, E-wastes, domestic and other municipal solid wastes. The Love Canal harbored various chemical wastes, including pesticides and dioxin.

The drainage system is poor and there is no leachate collection and treatment system presently. Love Canal had a drainage system and leachate collection and treatment system that are in place and operating.

Around Olusosun dumpsite the smoke billowing into air, and the peculiar stench of that environment make the area unbearable to some people. At Love Canal strange odors and substances were reported by residents, especially those with basements. Pieces of phosphorus made their way to the surface.

Hazardous chemicals were found in the soil and ground water of the Love Canal. It is important to carry out a comprehensive assessment of the soil and ground water of Olusosun dumpsite. The profound and devastating effects of the Love Canal tragedy, in terms of human health and suffering and environmental damage, cannot and probably will never be fully measured. At Olusosun dumpsite, various environmental media, like ground water, soil and air, have become contaminated. This poses immediate and potential threats to public and environmental health. The A lot more researches are needed at Olusosun dumpsite but the findings from this research work will contribute some help to the decision makers in their choice of project to be sited at Olusosun in the process of transformation.

4. Conclusion

Heavy metal concentrations in all the leachate samples were much higher than what was obtained in the underground water samples. Lead concentrations of 0.057, 0.061 and 0.0126mg/L, found in Bw2, Bw3, and Bw4 respectively were higher than the allowable limit of 0.01mg/L set by the Nigerian Standard for drinking water quality. Iron concentrations of 0.33 and 0.485mg/L found in Bw2 and Bw4 respectively, also exceed the maximum limit of 0.30mg/L. BW2 and BW 3 were the closest locations. The pH values for the underground water (5.62 in BW3 to 6.43 in BW4) were below the allowable NSDWQ and WHO range of 6.50 to 8.50. BW3 had all the heavy metals found in the leachates and also had the lowest pH of 5.2. This showed that proximity performs a strong role in leachate – underground water contamination. From this study, it can be concluded that there is a link between leachate percolation and heavy metal contamination of underground water. The security and safety of Olusosun community are highly threatened by the presence of the dumpsite. Even the scavengers and the people doing businesses around the site are exposed to serous health risks. The recommendations made in this study will help greatly in the reduction of crimes and health risks in our society.

Recommendations

- Security personnel need to look into the issue at Olososun.
- The Lagos state government, along with the security personnel should fish out these people and create jobs for them to do and to the benefit of the state.
- The government can set up recycling companies and employ those removed from the dumpsites, both men and women, to work in those companies and earn good money to lift up their status.
- Those that have already gone into crimes can be taken to remand homes for some time and later get absorbed into government employment once they are restored and sober.
- There is need to establish and implement appropriate cleanup plans.
- Encourage researches to determine the extent of pollution of the site, the potential health risks and long term effects.
- Residents should be encouraged and sensitized to make complains to the local government and their complaints should be taken serious with appropriate urgent response to aid the security and safety of the people.

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