

Research Article

THE IMPACTS OF OIL SPILLAGE ON MARINE ECOSYSTEM IN NIGER DELTA REGION, NIGERIA

***Dr. G. A. Wokocho**

Department of Integrated Science, Ignatius Ajuru University of Education, Port Harcourt

ABSTRACT

The purpose of this research is to ascertain the impact of oil spillage on marine ecosystem in the Niger Delta region of Nigeria. To achieve this study 14 items structured questionnaire of yes or no was developed by the researcher and administered to one hundred and fifty (150) respondents randomly sampled from five communities in Ogba/Egbema/Ndoni Local Government Area of Rivers state. The data gathered were analyzed with a simple percentage. From the analysis, it was found that:

1. Oil spillage damage the environment, degrade the soil destroy buildings and aquatic life.
2. Oil and gas exploration affect the culture of the people.
3. Oil and gas exploration affect the health of the people.

Recommendations were also made.

Key Words: Government Area, Rivers state, Recommendations.

Copy Right, IJISR, 2014. World Research Publications. All rights reserved.

INTRODUCTION

The Nigerian coastal zone is richly endowed with oil and gas. Nigeria crude oil reserve is over 25 billion barrels, while crude oil production per day is estimated at 2.2 million barrels. Oluwole, Sambo, Sikkholazo (2008), large areas of the mangrove ecosystem have been destroyed by the activities of oil exploration and exploitation. Oil spillage has also destroyed farmland, polluted underground and drinkable water and caused drawback in fishing of the coastal water. There has been a continuous crisis in Niger Delta area over compensation for oil pollution of the coastal ecosystem. Atlas and Bartha (1992) explained that oil spillage of water surface interfere with gaseous interchange of the sea surface and Dissolved Oxygen (DO) level. This in no doubt reduces the life span of marine animals.

Each type of soil contains a particular amount of soluble matter which possesses a specific reaction manifested during interaction with water and salt solution. The reaction of soil solution is determined by the concentration of hydrogen ion (H^+) and P^H value and varies with the acidity or alkaline graduation. This soil reaction has an influence on the availability of nutrients and on certain process that takes place in soils. Acidity decreases the availability of major elements like nitrogen, phosphorus, potassium, sulphur, magnesium and calcium and consequently the soil fertility. This is why yam, cocoyam, three leaves yams and other varieties have very low yield in the area, and the important food items are disappearing in the area. The most visible effect of oil and gas in the area is the severe corrosion of corrugated roofing sheets used in the

building due to combined presence of oxygen in the atmosphere and acid rain caused by oil spillage. The hydrogen released enters steel where it alloy with the steel and form molecular hydrogen which blister ductile steel and crack high strength steel damaging rods, machine, and farm implement. Aquatic and wild lives are affected by the constant brightness from the oil and gas exploration. Every moment appears to be day and fish find it difficult to reproduce. Fish output has fallen and fish farmers have been frustrated out of business due to noise and vibration from oil exploration wild lives have migrated a way and are almost extinct.

STATEMENT OF THE PROBLEM

Oil pollution occurrences on surrounding drinking water and on agricultural land are becoming common phenomenon. The frequent cases of these oil spillages have their root causes ranging from sabotages, transportation to mechanical errors. Farming and fishing activities were the main occupation of the people of Niger Delta before the oil exploration. There was no acid rain, the P^H value was neutral and optimum, conditions for flora to exist. Natural vegetation and crops flourished and food was abundant. Today acid rain has introduced acidity to the soil and reduced soil fertility. Apart from palm trees, the crops that grow in the area react poorly to acidic conditions. Banana grown in such acidic soils are susceptible to diseases which cause wilting roots, trunks and leaves. The diminishing yield of banana is suspected to be caused by gas flaring. The acidity is suspected to have decreased the availability of major elements like nitrogen, phosphorus, potassium, sulphur, magnesium and calcium and thus the soil fertility. This may be why yam, cocoyam three leaf yam and other varieties now have very low yield in the area. Farmers get less and less far all their efforts. Consequently, these important food items are disappearing.

***Corresponding author: Dr. G. A. Wokocho**

Department of Integrated Science, Ignatius Ajuru University of Education, Port Harcourt

This prompted this research to investigate the impact of oil spillage on marine ecosystem.

PURPOSE OF THE STUDY

The purpose of the study was to:

1. Find out the impact of oil spillage on marine environment
2. Find out the impact of oil spillage on the socio-economic activities of the people
3. Find out the impact of oil spillage on the health of the people
4. Find out the impact of oil exploration and its related activities on cultural heritage of the people.

RESEARCH QUESTIONS

Based on the stated purpose, the following research questions were posed to achieve the goal of the study;

1. What are the impacts of oil spillage on marine environment?
2. What are the impacts of oil spillage on the socio economic activities of the people?
3. How does oil spillage affect human health?
4. How does oil exploration and its related activities affect the culture of the people?

SCOPE OF THE STUDY

This study was to ascertain the impact of oil spillage on marine ecosystem in Ogba/Egbema/Ndoni Local Government Area of Rivers State in Niger Delta Area of Nigeria.

MATERIALS AND METHODS

Design of the Study

The research design used for this study is the survey design.

Area of the Study

The area of the study is Ogba/Egbema/Ndoni Local Government Area of Rivers State, Niger Delta. This area is chosen for the study because the soil was fertile for crop production and the people were predominantly farmers and fishermen before the oil exploration. It is also an oil and gas producing area and oil and gas processing, production, transportation and utilization occur daily in the area.

Study Population

The population of this study comprises of all adult residents in Ogba/Egbema/Ndoni local government area of Rivers State.

Study Sample and Sampling Techniques

The study sample consists of One Hundred and Fifty (150) respondents who are randomly sampled from five communities in Ogba/Egbema/Ndoni Local Government Area.

Research Instrument

The researcher developed a structured questionnaire of “yes” or “No” type containing items which was used to illicit information on various issues raised in the research questions.

Administration of Instruments

The researcher personally administered the instrument to the respondents and also retrieved them on completion.

Research Question I

What are the impacts of oil spillage on marine environment? Items 1-3 of the questionnaire were analyzed to provide answers to the research question as shown in Table 1.

Table 1. Responses on the impact of oil spillage on marine environment

S/N	ITEMS	YES	%YES	NO	%NO
1.	Does oil pollution affect the environment like buildings, crops etc	128	85	22	15
2.	Does oil spillage affect the source of livelihood of the community	120	80	30	20
3.	Does oil spillage affect Agriculture	129	86	21	14

From Table 1 above, it is clear that oil spillage affect environment such as building, agriculture and other sources of livelihood.

RESEARCH QUESTION II

What are the impacts of oil spillage on the socio economic activities of the people? Items 4-7 of the questionnaire were analyzed to provide answers to the research questions as shown in Table 2.

Table 2. Responses on the impact of oil spillage on socio-economic activities of the people

S/N	ITEMS	YES	%YES	NO	%NO
4.	Has the presence of oil companies better the lives of the community?	71	47	79	53
5.	Have the prices of food items and other commodities increased in the market due to the presence of oil workers	127	85	23	15
6.	Does oil exploration cause dispute in the communities	122	81	28	19
7.	Does presence of oil companies cause prostitution among the females in the communities	114	76	36	24

From Table 2 above, it is observed that lives of the people are worse now than before; prices of commodities have gone up communal crisis and prostitutions are taking place in the area.

Research Question III

How does oil spillage affect human health? Items 8-11 were analyzed to provide answer to the above research question as shown in Table 3. From the above table, the people have no good source of drinking water and also notices some diseases like cancer, respiratory problems etc.

Research Question IV

How does oil exploration and its related activities affect the culture of the people? Items 12-14 were analyzed to provide answer to this research question as shown in table 4 below.

Table 3. Responses on the impact of oil spillage on human health

S/N	ITEMS	YES	%YES	NO	%NO
8	Do you have a good source of drinking water	60	46	90	60
9	Does oil spillage have any health effect in the community?	98	65	52	35
10	Have you noticed any disease as a result of oil spillage in your community?	108	72	42	28
11	Do you notice diseases such as cancer, bronchitis, respiratory problems, etc.	99	66	51	34

Table 4. Responses of the impact of oil spillage on culture of the people

S/N	ITEMS	YES	%YES	NO	%NO
12	Does oil spillage affect the orientation of the people	120	80	30	20
13	Do oil workers lure girls and married women to prostitution?	114	76	36	24
14	Does oil workers contribute to broken homes in the area	96	62	57	38

The above table confirmed that culture has lost its value in the area.

RESULTS AND DISCUSSION

The result in Table 1 shows a higher percentage of 85, 80, and 86 percent as against 15, 20, and 14 percent indicating that oil spillage has a negative impact on marine environment as it affects buildings, crops and water bodies like creeks, rivers and ponds killing fishes and other aquatic organisms. This is in line with the findings of Baker (1993) who reported that acid rains corrodes roofing sheets causing leakages due to the combined presence of oxygen and acid rain corrodes metals. The hydrogen released enters steels and form molecular hydrogen which blister ductile steel and crack high strength steel. In this way rod, machines, farm implement are damaged. Table 2 also recorded high percentage of 53, 83 and 81 as against 47, 15 and 19 indicating the negative socio economic impact of oil spillage. This is in line with the finding of Loffa (1990) who reported that oil spillage pollutes the environment destroy the vegetation and increased the environmental threat to the existence of man. Aquatic and wild lives are affected by the oil and gas exploration, fish output has fallen and fish farmers have been frustrated out of business, because of the spillage, noise and vibration of oil explorations wild lives are almost extinct as some die as a result of the spillage while some migrate to other countries for their safety.

Table 3 also indicated a higher percentage of 60, 65, 72 and 66 indicating presence of diseases in the area associated with oil spillage. Water and air borne diseases have been very common in the area, water borne disease such as dysentery, cholera typhoid etc. The noise pollution resulting from oil exploration reduces rates of concentration annoy, confuse and disturb conversation according to Arsova (1995) noise is a high risk for the deadly disease called high blood pressure. Excessive noise can cause both physical, psychological as well as physiological discomfort and damages. Table 4, again noticed a high percentage of 80, 76 and 62 as against 20, 24 and 38 indicating a complete neglect of the people culture. Culture is

the way of life of the people, share language, norms, laws, method of dressing, method of worship. Oluwole *et al.* (2008) observe that moral is completely neglected as prostitution has become a trade for girls and even married women in pretence of seeking for contracts. Social vices such as stealing, Kidnapping, high rate of divorce, abortion, smoking, drug addition are common in the area.

Summary

The study sought to ascertain the impact of oil spillage on marine ecosystem in Rivers State, Niger Delta region.

To achieve this, the researcher designed a structured questionnaire and administered to one hundred and fifty respondents randomly sampled from five communities in the area. The data was analyzed using simple percentage. The findings show;

1. Oil spillage damage the environment, degrades the soil, destroy buildings and aquatic life and causing deforestation.
2. Oil and gas exploration affect the culture of the people, making the youth to involve in cultism, girls and married women going into prostitutions resulting in broken homes.
3. Oil and gas exploration affect the health of the people resulting in water born diseases and air born diseases.

Conclusion

From the result of the research, it can be concluded that oil spillage affect the environment negatively resulting in corrosion of building and affecting the agricultural practices causing low productivity. There is economic crisis as prices of commodities have g one up. It also impact on the health of the people as there are both air and water borne diseases.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. The oil companies should embark on projects that will advance the quality of the environment.
2. Educational advancement should be enhanced through award of scholarships for the study of science and technology.
3. There must be Environmental Impact Assessment (EIA) before construction of flow stations for oil explorations.
4. Government should enact laws against oil spillage.
5. There should be tree plantings to check deforestation.
6. Skill Acquisition programmes should be provided in these communities.
7. There should be remediation projects to check air and water pollutions.

REFERENCES

- Atlas, R. M. and Bartha R. 1992. Hydrocarbon Biodegrading Oil Spill Bioremediation, advanced Microbial Ecology 12, 287-338.
- Arsova, A. 1995. Effect of fertilizer application and soil PH on the acidic and Absorption properties of maize leaves and stems; Bulgarian Journal of plant physiology 21 (1) 52-57.

Baker, J.M 1993. Impact of Petroleum industry on Mangrove Ecology. Unpublished paper presented at NNPC seminar.
Loffa, E. 1990. Oil Exploration and the dangers ahead
England: Longman Group limited.

Oluwole, F. A., Sambo J. M. and Sikkhalazo D. 2008, long term effects of different burning frequencies on the dry savannah grass land in South Africa Academic Journal.
<http://www.academicjournal.org/AJAR>.
