

OIL SPILLAGE AS ONE OF THE CONTRIBUTORY FACTORS FOR HEALTH PROBLEMS AMONG RESIDENTS OF AWOYE COMMUNITY, ONDO STATE.

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ABSTRACT

Oil spills have posed a major threat to the environment of the oil producing areas, which if not effectively checked can lead to the total destruction of ecosystems. The study investigated oil spillage as a contributory factor for health problems among residents of Awoye Community, Ondo State. The objectives of the study investigate whether oil spillage contribute to the incidence of (i) Asthma, (ii) Gastrointestinal disease, (iii) Skin disease among residents of Awoye community Ondo State, Nigeria. A descriptive research design of survey type was employed for the study. The population of the study comprised residents of Awoye community in Ilaje Local Government Area of Ondo State. Multistage sampling techniques of stratified, purposive and simple random sampling techniques were used to select 365 respondents that participated in the study. A researchers' designed structured questionnaire validated by three experts in the related field was used for the study. A reliability co-efficient (r) of 0.85 was obtained through test re-test method. Data collected were analyzed using inferential statistics of chi-square to test the result of stated hypotheses at 0.05 level of significance. The findings revealed that: Oil spillage was a contributory factor for the incidence of Asthma among residents of Awoye community, Ondo State (calculated chi-square value of 20.32 > critical value of 16.92 at df = 9); Oil spillage was a contributory factor for the incidence of Gastrointestinal disease among residence of Awoye community Ondo State (calculated chi-square value of 18.45 > critical value of 16.92 at df = 9); and Oil spillage was a contributory factor for the incidence of Skin disease among residents of Awoye community, Ondo State. (calculated chi-square value of 20.02 > critical value of 16.92 at df = 9). Based on findings of the study, it was concluded that oil spillage was a contributory factor for the incidence of asthma, gastrointestinal disease and skin disease among residents of Awoye community, Ondo State. The researchers' recommend amongs others that the Ondo State government should relocate the community closer to oil pipe line to another save area so as to protect them against asthma disease which may occur due to oil spillage.

INTRODUCTION

An oil spill is the release of a liquid petroleum hydrocarbon into the environment, especially marine area, due to

human activities, and is a form of Pollution. The term is usually applied to marine oil spills, where oil is released into the ocean or coastal water, but spill may

also occur on land (Steiner, 2008). Oil spills have posed a major threat to the environment of the oil producing areas, which if not effectively checked can lead to the total destruction of ecosystems. The Niger Delta is among the ten most important wetland and marine ecosystems in the world. The oil industry located within Niger Delta region has contributed immensely to the growth and development of the country which is a fact that cannot be disputed unsustainable oil exploration activities has rendered the Niger Delta region one of the five most severely petroleum damaged ecosystems in the world. (Shekwolo, 2005).

Oil spillage is a global issue that has been occurring since the discovery of crude oil, which was part of the industrial revolution. In April 2001, Gulf of Mexico oil spill involves crude oil released from the explosion of an off-shore drilling rig. The total spillage of petroleum into the oceans, seas and rivers through human activities is estimated to a range of 0.7-1.7 million tons per year (United Nations Development Programme (UNDP), 2006). The major causes of oil spills around the world include routine operations such as refueling, loading or unloading, mishaps and collisions between vessels or tankers and other transportation vehicles, ships running aground, ruptured pipelines, oil exploration activities, mechanical failure of oil

collection and storage equipment (William, 2000).

According to Anderson and Labelle (2000), oil spills might occur for numerous reasons such as equipment failure, disasters, deliberate acts, or human error. Tolulope (2004) observed an estimated 9 million- 13 million (1.5 million tons) of oil has been spilled into the Niger Delta ecosystem over the past 50 years; 50 times the estimated volume spilled in Exxon Valdez oil spill in Alaska 1989. Some notable oil spills recorded in Nigeria include Bomu 11 oil well blow-out 1970, Gocon's Escravos spill 1978, Forcados Terminal Spillage 1980, In July 1979 the Dorados tank 6 Terminal in Delta state incidence spilled 570,000 barrels of oil into the Forcados estuary polluting the aquatic environment and surrounding swamp forest (Ukoli, 2005; Tolulope, 2004). The Funiwa No.5 Well in Funiwa Field blew out an estimate 421,000 barrels of oil into the ocean from January 17th to January 30th 1980 when the oil flow ceased, 836 acres of mangrove forest within six miles off the shore was destroyed (Ukoli, 2005).

In August 1983 Oshika village in River state witnessed a spill of 5,000 barrels of oil from Ebocha-Brass (Ogada-Brass 24) pipeline which flooded the lake and swamp forest, the area had previously experienced an oil spill of smaller quantity; 500 barrels in September 1979 with

mortality in crabs, fish and shrimp. Eight months after the occurrence of the spill there was high mortality in embryonic shrimp and reduced reproduction due to oil in the lake sediments. The Ogada-Brass pipeline oil spillage near EtiamaNembe in February 1995 spilled approximately 24,000 barrels of oil which spread over freshwater swamp forest and into the blackish water mangrove swamp. In 2012 bonge oil spillage in Molutehin and Awoye communities (Alexander, 2012).

Oil spillage from drilling processes creates problems that disrupt the lives of people living in close proximity to oil camps, wells, pumping stations, and pipelines. In addition, oil contamination creates hazards to the local environment. People living on oil-rich sites around the world are subjected to contamination of drinking water, top soil, and livestock due to toxic pollution that could result from the oil extraction process. In some contaminated sites, serious illnesses resulting from exposure had been documented. Before the introduction of petrochemical industries, environments around the world that sat upon large oil reserves supported healthy human life and vibrant ecosystems. Oil contamination from drilling processes, however, had adversely affected the people living in these areas by polluting the environment around

them. The water, soil and air had been severely tainted by petroleum pollutants. As a result, wildlife, livestock, and humans have been sickened (Nonye, 2004),

Oil contamination had adversely affected the lives of many people living in areas near oil exploration sites. With crude oil and production chemicals polluting water supplies, air, and surrounding plant and animal life, human health has suffered. Because a high percentage of those affected by oil contamination live off the land, local economies had also been impacted by the destruction of the surrounding environment. In addition to physical effects, economic stress affects the psychological health of the individuals living in polluted areas. A number of investigations had focused on specific ailments noted in particular contaminated sites (UNDP, 2006).

Oil spill is a type of pollution that occurs mostly on water as well as on land and could have devastating effects on plant and animal life, and the environment. It occurs mainly as a result of human activity (exploration and transport of oil) and is the release of oil/liquid petroleum hydrocarbon into the aquatic environment such as oceans and coastal waters and on land. Spills might occur of crude oil (unrefined oil) from tankers, oil rigs and platforms and oil wells as well as during

the transport of the refined petroleum product in vessels and tankers. (Nonye, 2004).

Illegal waste oil dumping into oceans by organizations who do not want to invest in the cost of degrading their waste oils also contributes to increasing oil spills. Natural disasters such as hurricanes and earthquakes can also contribute to oil spills from oil rigs and wells as well as during transport in vessels and tankers. In a country like Nigeria where there is illegal oil bunkering by militants, oil spills occur quite frequently and constitute a major environmental challenge. (Gabriel, 2004). According to Long and Holdway (2002), health problems from oil might be difficult to prove because they take a long time to affect people. But most people who live and work near oil drilling sites and refineries are familiar with the pollution of air and water from oil. Drilling for oil, refining it, and burning oil as fuel all lead to many serious health problems.

The natural environment has always provided man with a vast source of materials, and resources for his wellbeing. Concern about preserving the environment for future generation was therefore secondary to those who tap the natural resources. The result was that the air, land and water become society's junkyard.

In 2012, no fewer than 17 communities in Ilaje local government area of Ondo state were affected by the Bonge oil spillage. Molutehin and Awoye communities were mostly affected by the spillage (Alexander, 2012). The residents of these communities knew oil companies were destroying their land, but there was little understanding about how the oil affected people's health. The researcher observed that asthma disease, gastrointestinal disorder, malnutrition, cancer and skin diseases were part of health problems affecting residents of Awoye community.

There is deterioration of air quality and diminishing in fish and crops harvest. The environment is very poor that agricultural activities cannot take place on the land. Many students could not go to school regularly due to their ill health, some parents absent from working place as a result of illnesses that affecting them due to their exposure to environmental pollution. Many people sustain injuries or lost their lives due to problem of oil spillage that occurred in study area. Based on all these problems, the researchers carried out the study to know whether the oil spillage was one of the contributory factors for health Problems that affecting residents of Awoye Community, Ondo State.

The following hypotheses were tested for the study.

- I. Oil spillage will not significantly

the transport of the refined petroleum product in vessels and tankers. (Nonye, 2004).

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The following hypotheses were tested for the study.

1. Oil spillage will not significantly

contribute to asthma disease among residents of Awoye community;

- II. Oil spillage will not significantly contribute to gastrointestinal disease among residents of Awoye community; and
- III. Oil spillage will not significantly contribute to skin disease among residents of Awoye community.

METHODOLOGY

The researchers adopted descriptive research design of survey type for this study. A multistage sampling technique consisting of stratified, purposive sampling and simple random techniques were used to select sample size of three hundred and sixty five respondents for the study. The sample consisted of adult males and females residents of Awoye community in Ilaje Local Government Area of Ondo State.

In the first stage, Awoye community was stratified into different compounds and quarters. The community was divided into 10 main streets and quarters namely: Ebisanmi, Omomowo, Olabinjo, Abiye, Opoakaba, Iyalaju, Metelewawon, Ehinmola, Sadara, and Apede. Second stage: the purposive sampling technique was used to select only the head of households who had reached 18 years and above. This was necessary since the researchers were of the opinion that the adults were more

likely to give appropriate responses. Third stage: Simple random sampling technique was used to select respondents using lucky dip of fish bowl method. The respondents that pick 'yes' were used for the study.

The questionnaire validated by three experts from department of Geography and department of Health Promotion and Environmental Health Education, University of Ilorin. The reliability of this instrument was carried out using test re-test method. Twenty copies of questionnaire were administered to head of house hold in Molutehin community in the same local government area but not used for the study; the same instrument was re-administered after two weeks interval to the same respondents. The results of both administrations were analyzed using Pearson Product Moment Correlation (PPMC) and a reliability coefficient of 0.85 was obtained, this was high enough for the study. The researchers administered the 365 copies of the questionnaire with the help of two trained research assistants. Inferential statistics of chi-square was used for analysed the results of stated hypotheses at 0.05 level of significance. using SPSS version 20.0

Results and Discussion of Findings

Research Hypotheses

Ho1: Oil spillage will not significantly contribute to asthma disease among residents of Awoye community.

Table 1: Chi-square analysis showing the contribution of oil spillage on asthma disease among residents of Awoye community.

S/N	ITEM	SA	A	D	SD	ROW TOTAL	Df	Cal χ^2 -value	Crit. 2-value	DECISION
1.	Oil spillage has an effect on respiratory disease of residents of the community	195 (53.4%)	105 (28.8%)	50 (13.7%)	15 (4.1%)	365				
2.	Oil spillage may cause shortness of breath.	175 (47.9%)	96 (26.0%)	65 (17.8%)	30 (9.7%)	365				
3.	Oil spillage causes 'chest tightness or pain	180 (49.3%)	100 (27.5%)	60 (16.4%)	26 (6.8%)	365				
4.	Oil spillage may lead to trouble sleeping caused by shortness of breath coughing and wheezing	120 (32.9%)	160 (43.8%)	55 (15.1%)	30 (8.2%)	365				
		670	460	230	100	1460				

$P < 0.05$

Table 1 show that the calculated chi-square value of 20.32 was greater than critical chi-square value of 16.92 with degree of freedom of 9 at 0.05 alpha level. Since the calculated chi-square value was greater than the critical chi-square value, therefore, the null hypothesis was rejected. Implying that oil spillage is a significant contributory factor for the incidence of asthma disease among residents of Awoye community, Ondo state.

Table 2: Chi-square analysis showing the contribution of oil spillage on gastrointestinal disease among residents of Awoye community.

S/N	ITEM	SA (%)	A (%)	D (%)	SD (%)	TOTAL &%	Df	Cal χ^2 value	Crit. χ^2 - value	DECISIO
1.	Oil spillage in water may cause pollution in water which lead to indigestion	95 (26.1%)	155 (42.5%)	50 (20.5%)	75 (10.9%)	365 (100%)				
2.	Oil spillage causes nausea and vomiting	100 (27.4%)	140 (38.4%)	95 (26.0%)	30 (8.2%)	365 (100%)	9	18.45	16.92	Ho2 Rejected
3.	Oil spillage causes emotional stress	133 (36.4%)	117 (32.1%)	80 (23.9%)	35 (9.6%)	365 (100%)				
4.	Diarhoea is very common among residents in the community.	195 (35.4%)	86 (23.6%)	59 (16.2%)	25 (6.8%)	365 (100%)				
		523	498	309	130	1460				

$P < 0.05$

Table 2 shows that the calculated chi-square value of 18.45 was greater than critical chi-square value of 16.92 with degree of freedom of 9 at 0.05 alpha level. Since the calculated chi-square value was greater than the critical chi-square value, therefore the null hypothesis was rejected. This implies that oil spillage is a significant contributory factor for the incidence of gastrointestinal disease among residents of Awoye community, Ondo state.

Ho3: Oil spillage will not significantly contribute to skin disease among residents of Awoye community.

Table 3: Chi-square analysis showing the contribution of oil spillage on skin disease among residents of Awoye community

S/N	ITEM	SA (%)	A (%)	D (%)	SD (%)	TOTAL &%	Df	Cal χ^2 [J] ² value	Crit. [J] ² value	DECISIO
5.	Oil spillage may cause peeling of skin among residents in the community	120 (32.9%)	160 (43.8%)	30 (8.2%)	365 (100%)					
6.	Oil spillage causes scaly or rough skin of the residents in the community	170 (46.6%)	130 (35.6%)	50 (13.7%)	15 (4.1%)	365 (100%)	9	20.02	16.92	Ho3 Rejected
7.	Oil spillage also cause red and sometimes itchy bumps on the skin	95 (26.1%)	155 (42.5%)	75 (20.5%)	40 (10.9%)	365 (100%)				
8.	Oil spillage may lead to impetigo(a skin infection caused by bacteria)	100 (27.4%)	140 (38.4%)	95 (26.0%)	30 (8.2%)	365 (100%)				
		485	585	275	155	1460		P < 0.05		

Table 3 shows that the calculated chi-square value of 20.02 was greater than critical chi-square value of 16.92 with degree of freedom of 9 at 0.05alpha level. Since the calculated chi-square value was greater than the critical chi-square value, therefore, the null hypothesis was rejected. Indicating that oil spillage is a significant contributory factor for the incidence of skin disease among residents of Awoye community, Ondo state.

DISCUSSION OF FINDINGS.

The result of the first hypothesis tested revealed that oil spillage had contributed to the incidence of asthma disease among residents of Awoye community. This finding was in line with Long and Holdway, (2002) who asserted that most people who live and work near oil drilling sites and refineries were familiar with

the pollution of air and water from oil. Drilling for oil, refining it, and burning oil as fuel all lead to many serious health problems which include asthma, bronchitis, pneumonia and other respiratory diseases. According to Gastañaga and Pashamova (2002), the vast range of health problems of American and Australian veterans related to their exposure of

crude oil in the Gulf War, include asthma, acute bronchitis, chronic bronchitis and a lot of other diseases of the respiratory system. Akpofure study (2008) revealed that children who lived close to the oil spill area had more asthmatic symptoms, increased impaired lung function, and an increased prevalence of bronchial hyperactivity than those who lived far from the oil spill area.

The result of the second hypothesis tested revealed that oil spillage had contributed to the incidence of gastrointestinal disease among residents of Awoye community. The finding was in agreement with UNDP (2006), which stated that iron which was one of the constituents of crude oil was likely safe for most people when it was taken by mouth in appropriate amounts. However, it could cause gastrointestinal problems like stomach upset and pain, constipation or diarrhea, nausea, and vomiting.

The result of the third hypothesis tested revealed that oil spillage had contributed to skin disease that affecting residents of Awoye community. The finding was in line with view of Egbe and Thompson, (2010) who opined that stress that Skin contact with certain chromium compounds (which is one of the constituents of crude oil) could cause skin ulcers. Ndubuisi, and Asia, (2007) explained that Chronic exposure to vanadium

tpentoxide dust and fumes might cause severe irritation of the eyes and skin.

CONCLUSIONS

Based on the findings from the analysis of the tested hypotheses, the following conclusions were drawn.

1. Oil spillage was a contributory factor for the incidence of asthma disease among residents of Awoye community;
2. Oil spillage was a contributory factor for the incidence of, gastrointestinal disease among residents of Awoye community; and
3. Oil spillage was a contributory factor for the incidence of skin disease among residents of Awoye community.

RECOMMENDATIONS

Based on findings and conclusion of this study, the following recommendations were made:

- * The Ondo State government should relocate the community closer to oil pipe line to another save area so as to protect them against asthma disease which can occur due to oil spillage.
- * The federal government of Nigeria in collaboration with the state and local government authority should assign the security offic

ers that will monitor criminals that may plan to break the oil pipe so as to protect Awoye community against health problems associated with oil spillage such as gastrointestinal disease and skin disease.

* The Awoye community should be vigilant and report any person suspected that having plan to destroy oil pipe to nearest security officers so as to protect the life of the community members.

* The Awoye community should abstain from oil spillage area to avoid inhalation of oil spills which may cause respiratory diseases such as lung cancer.

* The residents of Awoye community should avoid oil spillage from getting into their mouth through water in order to avoid water borne diseases.

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