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## Nigerian maritime administration : its role in marine environmental protection : a case study on the Escravos Oil Terminal, Niger delta

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**WORLD MARITIME UNIVERSITY**  
Malmö, Sweden

**NIGERIAN MARITIME ADMINISTRATION: ITS  
ROLE IN MARINE ENVIRONMENTAL  
PROTECTION - A CASE STUDY ON THE  
ESCRAVOS OIL TERMINAL**

**(NIGER DELTA)**

By

**MUDI I. ISA**  
**NIGERIA**

A dissertation submitted to the World Maritime University in partial fulfilment of the requirements for the award of the degree of

**MASTER OF SCIENCE**

in


**GENERAL MARITIME ADMINISTRATION & ENVIRONMENTAL  
PROTECTION**

1998

## DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The content of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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## ACKNOWLEDGEMENT

I wish to express my immense gratitude to the GMEP course Professor, Fernando. Pardo who was also my supervisor, Mr Per Eriksson my Co.-assessor, for their advice, objective criticism and guidance, during the writing of this paper.

To Professor T. Sampson for all his perseverance to bring out the best in his studies and to Susan and Cecilia at the W.M.U library for their inestimable assistance in helping my research.

I would like to express my special gratitude to the Director General, **National Maritime Authority** Alhaji B. Galadima and Director RS&P Alhaji A.H. Wasagu for nominating me for the unique opportunity to study at the World Maritime University.

Finally, special thanks to my late mother, Mrs Helen .O .Isa for her noble and exemplary life, guidance and inspiration and my father Alhaji Inusa Isa for every little thing done to enable me attain this height, to other members of my family for their constant support and encouragement, throughout the duration of my studies.

## ABSTRACT

**Title of Dissertation:** Role of Nigerian Maritime Administration in Implementing and Enforcing Marine Pollution Protection, Strength and Weakness. Case Study Escravos Oil Terminal

**Degree:** MSC

The dissertation is an attempt to examine the Nigerian oil industry and its impact on the environment. The world pre occupation in recent years, with green house gas emission and climatic changes has tended to over shadow an equally important problem, oil pollution either land based or marine. Oil spills have an equally devastating impact on the environment, especially in developing countries which have little or no capacity to deal with this problem.

Thus the focal point of this paper is to analyse the Nigerian oil sector and the environmental impact of its activities. This involves identifying sectors within the oil industry that have the most impact on the environment. Oil terminals as an important component of the oil industry is analysed in greater detail, its operational structure and impact on the environment is analysed.

Additionally a comparative analysis is made on oil terminal operation in the in the United States of America and Malaysia, and type of regulatory and safety mechanism in place to prevent oil spills. The dissertation also looks at the function and frame work of the various organisations involved in pollution prevention and control, their strength and weakness.

Finally the paper makes recommendation on ways through which the oil industry could reduce their operational impact on the environment and operate in a more environmental friendly manner. The recommendation entails a combination of legal, political and technical instruments to tackle the above problem..

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## LIST OF ABBREVIATIONS

NMA	National Maritime Authority
NPA	Nigerian Ports Authority
FEPA	Federal Environmental Protection Agency
NNPC	Nigerian National Petroleum Corporation
IMO	International Maritime Organisation
CNA	Clean Nigeria Associates
EU	European Union
SOLAS 74	Safety of Life at Sea 1974
CLC 69	The International Convention on Civil Liability For Oil Pollution 1969
ISM	International Safety Management Code
LC 72	International Convention for the Prevention of Marine Pollution by Dumping of Waste and Other Matters.1972
EEZ	Economic Exclusive Zone
MARPOL 73/78	International Convention for the Prevention of Pollution From Ships 1973/78
OPRC90	International Convention on Oil Pollution Preparedness,Response and Cooperation,1990
UN	United Nations
UNCLOS	United Nations Conference on Law of the Sea
PPM	Parts Per Million
EIA	Environmental Impact Assessment
OPA90	Oil Pollution Act
ITOPF	International Tanker Owners Federation
DPR	Department of Petroleum Resources
MDE	Malaysian Department of Environment

## CHAPTER I

- “Human beings and the natural world, are on a collision course. Human activities inflict harsh and often irreversible damage on the environment and on critical resources. If not checked, many of our current practice put at serious risk the future that we wish for humans society and the plant and animal kingdom, and may so alter the living world, that it will be unable to sustain life in the manner that we know. Fundamental changes are urgent if we are to avoid the collision our present course will bring about.....” (Union of Concerned Scientist 1992 )

### 1.0 INTRODUCTION

Over the years development has meant constant attack and exploitation of the environment, to meet the needs of mankind, these activities in most cases are carried out in an unsustainable manner .

This approach has in recent years, began to manifest itself in the form of climatic changes, these include global warming, depletion of the ozone layer, reduction and extinction of plant and animal life, increase in floods .

This has spurred a number of countries to realise that unsustainable and senseless exploitation of the environment can not continue unchecked, if future generations are to meet their needs.

In recent years a lot has been done to raise awareness of the massive degradation of the environment in the industrialised world, but a large number of countries mainly in the developing world still practice the old path of development at all cost, without considering its effect on the environment.

In the 1960 and 70s it became generally recognised that marine pollution had developed into a serious environmental problem world wide mainly as a result of accidental spillage's and operational discharge of oil at sea and because industrial waste and sewage had seriously polluted the ocean. Nigeria like most developing countries is today experiencing rapid economic growth, which entails maximum utilisation of human and natural resources without regards to the effects of this

activities on the environment, this unsustainable activities has led to serious degradation of the environment, it is estimated that the effect of this non environmentally friendly activities on the environment cost Nigeria \$5.1 billion yearly, according to a world bank report on deforestation and desertification in 1990.

### **1.1 OBJECTIVE OF PAPER**

The main theme of the dissertation is an attempt to review and upgrade information on the adverse effects of oil pollution on the environment, specifically the Niger delta basin of Nigeria and attempt to trace the source of this pollutants and try and proffer solutions to reduce these forms of pollution on the environment with specific interest on oil terminals.

Nigeria is emerging from a decade of political instability and economic mismanagement of the oil sector, it now finds itself on the road to economic reconstruction, these includes the oil sector, thus the author attempts to analyse the organisational weakness that led to massive degradation of the environment by oil pollution from this sector and to make recommendation on how these pollution could be prevented in future..

The dissertation comprises six chapters, summary of each of these chapters includes Chapter two gives a brief, on the economic, political and geographical data of Nigeria, it goes on to give a summary on the structure of the Nigerian oil industry, the location of its activities and the effects of these activities on the environment.. The chapter addresses oil pollution in general and does not focus on oil terminals, a brief is also given on the National agencies involved in the regulation and prevention of oil pollution in the oil sector.

Chapter three, it gives a brief description of operational procedures at oil terminals sources of pollution at the terminals and their effect on the environment. Organisations and agencies with the responsibility of regulating oil terminal operation.

There is a summary of International legal instruments on marine pollution, with a focus on IMO and UN convention.

There is also a brief, on the organisational set up of the American and Malaysian anti oil pollution strategy and its relation to the Nigerian set up.

Chapter four, this section deals with weakness of terminal regulation on oil pollution and it proposes new legislation and operational procedure for effective oil pollution prevention.

Chapter five, gives a summary of National oil spill response plan in place, indicating its strength and weakness. There is also a proposal for a new oil spill response plan.

Chapter six, collates the main conclusion drawn from the study and summarises it, by indicating the vital points that came out during the course of carrying out this project

## ¶ 1.2 DIFFICULTIES ENCOUNTERED IN THE PROCESS OF CARRYING OUT DISSERTATION.

Comprehensive literature on the effects of environmental degradation on most developing countries is not easily available, and where available, the information provided is outdated.

This is precisely the case with Nigeria, where the culture of environmental protection is yet to take root, as a result relevant material in relation to the above i.e. (oil pollution and oil terminals) is difficult to come across .

In Nigeria some of the problems encountered during my search for relevant literature, include

- Most information available on the above subject, tends to be old and out dated
- Sourcing for information from the relevant public bodies, in relation to the above subject, proved very difficult due to red tape and bureaucracy
- Gathering of information from the relevant private organisation proved equally difficult.

- Public information source, such as libraries, Government record and the electronic media had little or no information relevant to the above topic

Due to the above short comings it became necessary for the author to physically visit the Escravos oil terminal and the surrounding villages to get first hand information on the situation on the ground.

### **1.3 RESEARCH METHOD**

Method of information gathering during the visit by the author to the Niger delta town of Escravos include

- Interview with relevant officials of the Escravos terminal, was conducted on the operational procedure of the installation and areas likely to produce toxic pollutants.
- Inhabitants of the surrounding villages where also interviewed by the author on the effects of the activities of the oil terminal on the village
- Quite a number of literature on the operational procedure of the terminal where made available to the author by the public relations department of the oil terminal.

The above where the authors, main source of information in Nigeria .

Other sources of information include

- The WMU library, where the main bulk of the authors information was provided.
- Malmö city library
- lectures and symposium at the WMU, was an important information source for the author.

The above served as the main sources of information for the author.

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## **CHAPTER II**

### **NATIONAL BACKGROUND**

#### **2.0 INTRODUCTION**

Nigeria has a land area of 356,665 square miles (923,768 square kilometres). The northern part of Nigeria is characterised by savannah and semi arid conditions, the south by swamps and forests.

Nigeria has a population of 104 million inhabitants (est. 1996), majority of the inhabitants reside in the rural area, and engage in subsistence agriculture, the other part of the population live in the densely populated urban areas, located in the southern part of the country.

Nigeria operates a federal system of government, it is divided into 32 administrative units, called states, with the federal capital located in Abuja.

#### **2.1 ECONOMY**

Nigeria is a rapidly developing country, with a mono commodity economic structure, 95% of its income is generated from the export of crude oil and other primary products.

It is estimated that the official oil export revenue (1996), is put at \$10.9 billion, the percentage of oil revenue to the total export revenue is put at 90% .Nigeria crude oil production averages 2.21 million barrels per day.

The crude oil produced is the Sweet Bonny Light, which has a low level of sulphur content, a large percentage of crude oil production activities take place in the Niger delta basin .

Estimate of Nigeria oil reserves range 20 Billion to just under 22 Billion barrels.



The Nigerian National Petroleum Corporation (NNPC) is the representative of the Nigerian government in both, upstream/downstream oil industry of the country. NNPC is involved in oil and gas exploration, production, refining and petrochemicals, it is also active in transport and marketing of crude oil.

## **2.2 UPSTREAM/DOWNSTREAM OIL PRODUCTION FACILITIES.**

As indicated earlier, the petroleum sector is the main stay of the Nigerian economy, most of the oil is produced in about 250 oil fields, another 200 fields are known to exist and contain an undisclosed reserve of oil and gas.

The production and exploration of crude oil from the oil fields, is a joint venture agreement between the government through the Nigerian National Petroleum Corporation and private oil companies, majority of this companies are foreign owned, they include-

- Shell Petroleum Nig Ltd
- Mobil Nig Ltd
- Chevron Oil
- Agip Nig Ltd
- Total Nig Ltd
- ELF Nig Ltd

These joint venture activities, involve crude oil production, transportation and export. Eighty percent (80%) of the crude oil produced in Nigeria is for export, and the remainder goes for domestic consumption.

**TABLE 1 MAJOR EXPORT 1984-1988 IN MILLIONS OF NAIRA**

COMMODITY	1984	1985	1986	1987	1988
<b>COCOA BEANS</b>	183	182	371	1498	2627
<b>COCOA PRODS</b>	32	57	54	62	86
<b>PALM PRODUCE</b>	16	6	8	30	103
<b>PETROLEUM</b>	8,841	11,222	8,368	10,268	11,400
<b>RUBBER</b>	17	4	29	61	290
<b>OTHERS</b>	-	248	91	501	739

SOURCE: CENTRAL BANK OF NIGERIA EXPORT REVIEW 1990

### 2.2.1 OIL REFINERIES, PIPELINE NET WORK & OIL TERMINAL

Nigeria has four oil refineries with a combined capacity of 400,000 barrels of crude oil, the refineries include Portharcourt 150,000 barrels per day, Warri 120,000 b/pd, Portharcourt 260,000 b/pd, Kaduna 110,000 b/pd, these refineries are run by the Nigerian National Petroleum Corporation.

source :NNPC information bulletin .Abiodu 1995.

There is an oil pipeline network of 3000 km (1800 miles) that connects oil fields, refineries and the export/storage terminal, this network of pipes are owned and operated by NNPC.

Oil terminals, are sophisticated installations used primarily for the storage and export for crude oil and allied products. Nigeria has 6 main oil terminals,

- Bonny
- Brass river
- Escravos
- Forcados
- Qua iboe
- Odudu.

Approximately 1.8 million barrels of crude oil are exported on a daily bases through these terminals. The oil terminals are owned and operated through joint venture arrangement between the Nigerian ports authority and the oil companies.

The NPA ensures that the oil companies operate the oil terminal in line with National /International safety and environmental standards. The NPA is responsible for maintaining safe approaches to the terminal, by enforcing port state control, dredging and provision pilotage, light house buoys.

The terminals receive crude oil from the oil fields through flow stations, which pumps the oil through pipelines to the oil terminals, where the crude oil are stored in huge oil storage tanks awaiting export.

As stated earlier, all of Nigeria petroleum production activities are concentrated in the Niger delta basin, thus all the major terminals are located in this region .

The six major oil terminals include

- Qua iboe terminal, located on the eastern part of the Qua iboe river in the Niger delta, it is operated jointly between NPA and Mobil oil, the tanker loading facility consist of three berth, with a loading capacity of 53,000 barrels of crude oil per hour, crude oil storage facilities consist of eight storage tanks, each with a capacity for 500,000 barrels of crude.
- Escravos terminal, is located in the Niger delta area and is jointly operated by NPA and Chevron Nig Ltd, it has both On/Off shore terminal, with a total of 4 berths, it also has a large capacity to store crude oil and condensate.
- Forcados terminal, located off the Escavos river bar, in the eastern part of the Niger delta, it is jointly operated by NPA and Texaco Nig Ltd, it has one off shore loading berth and a storage capability of 337,000 barrels.
- Brass terminal, located off the southern Nigerian coast, jointly operated between NPA and Agip, it has two berths and a storage capacity of 200,000 barrels of crude oil and condensate.

**TABLE 2: JOINT VENTURE OPERATIONS IN NIGERIAN OIL INDUSTRY**

<b>JOINT VENTURE PRT</b>	<b>OIL FIELDS</b>	<b>CRUDE OIL BARRELS</b>
-NNPC 55%,SHELL 30% ELF 10%.	Nembe,Kolo creek,Imo Ekulama, Cawthon.	400,000
NNPC60%,CHEVRON 40%	Qwa iboe, Edop,Asasa	250,000
NNPC60%, MOBIL30%, CHEVRON 10%	Meren,okan,Benin river.	60,000
NNPC 60%,AGIP20% PHILLPS PETRO20%	Central Niger Delta .	165,000
NNPC 60%,ELF 40%	Kpomo fields, Edop Eku	150,000

*SOURCE: NNPC HAND BOOK 1996*

### **2.3 POLLUTION CONTROL ADMINISTRATIVE STRUCTURE IN NIGERIA**

Prior to 1987 Nigeria did not have a comprehensive policy on environmental protection, the main policy thrust at that period was development at all cost, with out regards to its effect on the environment. A deliberate and comprehensive policy to address environmental matters came about in the late 80s, through the 4th National development plan (1981-1985) .This plan led to the promulgation of the FEPA Act .

#### **2.3.1 FEDERAL ENVIRONMENTAL PROTECTION AGENCY**

Its the main environmental permitting authority for all industry, including the oil sector, it is in charge of regulating industrial effluents and emission. It reviews and approves Environmental Impact Assessment certificate submitted in support of the authorisation process application .

It also proposes and makes recommendation to the government on policies relating to environmental protection .

FEPA acts as the main centre for co-ordination of the fight against conflict between development and the environment, some of its functions include

- Advice the government on national environmental policies and priorities, on scientific and technological activities.
- Preparation of periodic master plan for the development of environmentally friendly science and technology.
- Promote co-operation in environmental science and technology with similar bodies in other countries and international bodies in relation to environmental protection .
- Promote co-operation with federal and local government council, statutory bodies and research agencies on matters relating to environmental protection

*(Source laws of the Federation of Nigeria)*

### **2.3.2 DIRECTORATE OF PETROLEUM RESOURCES**

In Nigeria today exploration and production of natural resources are subjected to the rules and regulation of two governmental organisation, Federal Environmental Protection Agency (FEPA) and the Department of Petroleum Resources (DRP) of the Ministry of Petroleum.

“The agency shall cooperate with the Ministry of petroleum resource (Petroleum Resources Department) for the removal of oil related pollutant request.”

*SOURCE (LAWS OF THE FEDERATION OF NIGERIA)*

As stated above FEPA is the main co-ordinating body on environmental matters, it operates with the other industrial sectors on environmental protection.

The Ministry of petroleum resources, through the DRP is the main regulatory authority with regards environmental guidelines and standards for the petroleum

industry in Nigeria. The DRP is a unit under the petroleum Ministry, some of its functions include -

- Granting licences regarding, oil exploration and production by oil companies, this is to make sure they meet National legislation on environmental standards .
- Setting standards on water quality, especially amount of effluents from drilling activities and crude oil water separation procedure at oil storage terminals which are deposited into the rivers and surrounding must meet DRP standards.
- Monitoring of gaseous emission from gas flaring at oil fields and refineries, so they meet standards set by FEPA
- Detailed requirement from all oil companies, that they have in place emergency contingency plan in case of any accident.

### **2.3.3 MINISTRY OF TRANSPORT.**

The ministry of transport is one of the regulatory organisation regarding marine pollution prevention, under this ministry there are a number of specialised unit that deal with pollution prevention, they include Nigerian Ports Authority and the National Maritime Authority .

#### **2.3.3.1 NIGERIAN PORTS AUTHORITY**

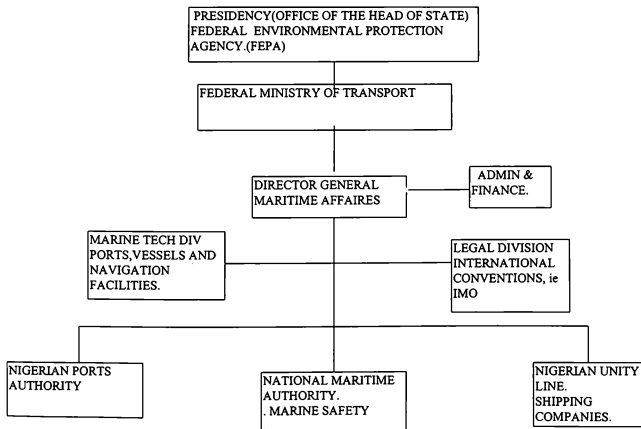
Its a semi autonomous parastatal, it owns and operates all ports in Nigeria, its responsibilities include carrying out the function of port state control. port development, provision of cargo handling facilities, maintaining safe approaches to the ports by providing dredging, pilotage, lighthouse buoys and other navigational aids for all Nigerian ports.

They control most Nigerian oil terminals, although the terminals are operated by oil companies, NPA makes sure they are operated in accordance with National laws/policies on environmental protection, example the terminals are required to have reception and treatment facilities, to receive garbage and other pollutants from oil tankers.,(NPA BULLETIN)1989.

### 2.3.3.1 NATIONAL MARITIME AUTHORITY

N.M.A is an autonomous unit of the Ministry of Transport, it was established by decree 10 of 1987 .Its main function is to promote indigenous shipping by correcting the imbalance between indigenous and foreign vessels owners, through the promotion of training of Nigerian seafarers to meet international standards (STCW), provision of financial incentive (loans) to indigenous shippers to purchase vessels and equipment that meet international standard on environmental safety. NMA is also charged with keeping safety standards onboard ships and oil platforms, and the monitoring of oil spills produced by ship at Nigerian ports and pipeline net work in the coastal areas. It works closely with Federal Environmental Protection Agency.

**FIG1: MARITIME ADMINISTRATIVE STRUCTURE(MINISTRY OF TRANSPORT & FEDERAL ENVIRONMENTAL PROTECTION AGENCY).**



## 2.4 REVIEW OF LEVEL OF POLLUTION ON THE NIGER DELTA

The delta basin has a population of over 15 million inhabitants, this region is home to over 70% Of Nigeria's oil production activities, this includes oil wells, Refineries, oil pipeline net work and six major oil export terminals. Over ten oil companies are located in this region, the Niger delta has one of the worlds largest wet lands.

Nigeria as a whole is increasingly experiencing degradation of its environment this is due to rapid population growth, massive deforestation, unsustainable developmental programmes, for the purpose of this paper, the author shall concentrate on the Niger delta basin, because this is an area experiencing massive environmental degradation due to unsustainable developmental activities .

**Table 3: LAND AREA AND POPULATION DENSITY OF COASTAL STATES IN NIGERIA.**

STATE	1992 CENSUS	AREA(Sq Km)	DENSITY(per Km <sup>2</sup> )
EDO* and DELTA	4,730,029	35,500	133
CROSS. R AND AKWA IBOM	4,225,340	27,237	155
LAGOS	5,685,781	3,345	1,700
OGUN	2,338,570	16,762	140
ONDO	3,884,485	20,959	185
RIVERS	3,983,857	21,850	182

SOURCE: CENSUS NEWS 1992

Note, Edo (is without a coast line ) and Delta were together as one state as at 1992 when census was conducted, same goes for Cross River and Akwa Ibom ( both are coastal states.)

### 2.4.1 ECOSYSTEM

The Niger delta has a delicate and sensitive ecosystem, the area is characterised by



- Sandy coastal waters.
- Seasonal and permanent swamp forest.
- Brackish/saline mangroves

The fresh calm water of the mangrove swamp are breeding ground for young fish and shrimps, while the aerial roots and branches support a variety of fauna and flora, its also home to a diverse group of oysters, snail barnacles, crabs and a large variety of reptiles.

The rain forest of the up land is home to a large number of mammals, birds and insects. Sheltered tidal flats, made of mud are common features on the estuaries and creeks of the Niger delta, the flats are home to a large number clams, worms and snails, birds are also seasonally abundant in this area .

## **2.5 MAIN CAUSE OF OIL POLLUTION .**

The concept pollution is open to a large number of definitions and there is no one generally accepted definition, but from various definitions some generally accepted characteristics as to what pollution entails include.

- Introduction by man directly or indirectly of substance in to the marine environment.
- These substance have negative effect on marine and human life.
- It affects the activities of other users of the marine environment

The main aim of this section is to highlight the level and effects of oil pollution by production and exploration activities, on the environment and socio-economic well being of the people of the Niger delta basin.

This basin is unique in that oil production activities are located on/off shore, this means that the source of pollution can be traced to land and marine based activities, this include drilling, refining, oil pipe line network, oil terminals, ships and crude oil storage facilities.

There are two main sources of oil pollution in this region, operational pollution and accidental pollution, although the latter, is frequently heard when it happens due to

media exposure example when the Afam flow station exploded and spilled oil over a large area it was headline news for over a month.

Equally important is the former (operational pollution) this kind of pollution happens quite often and in most cases, it goes unreported, it is often caused by equipment failure, operational mishaps, human error, intentional damage to facilities(sabotage).

**TABLE 4 :CAUSES OF OIL POLLUTION 1994  
WORLD WIDE .**

<b>OPERATIONAL POLLUTION</b>	<b>TOTAL CASES</b>
COLLISION	388
GROUNDING	426
HULL FAILURE	527
FIRE &EXPLOSION	147
<b>OPERATIONAL POLLUTION</b>	
LOADING &DISCHARGING OIL	2453
BUNKERING	445
OTHER OPERATION	961

*Source(U.S NATIONAL ACADEMY OF SCIENCES)1994*

According to a World Bank report in 1996 which indicated that an average of 500 incidents of oil spillage occur yearly in the Niger delta region of Nigeria .

Over 3000 according to the report, were recorded in the area between 1990 and 1995, details of the spills in which an average of 1.15 million barrels of crude oil was lost, showed that about 351 cases occurred as a result of broken down pipe line facilities, 137 from pipe line corrosion while the rest was attributed to sabotage.

*(source This Day News Paper Jan 31 1998)*

### **2.5.1 DRILLING & EXPLORATION**

This is the process of extracting oil or gas from a given area, an average of 25,000-40,000 square meters is required for drilling activities on a given site, several wells are required for a given field, the impact of these activities include scarce land used up for this activity, this reduces the land available for other productive activities, example farming.

Waste produced during drilling activities, include toxic chemicals, used mud cuttings oily fluids etc, which are dumped into the swamps, they are usually damaging to marine environment.

The Niger delta is characterised by swampy conditions, thus preparing access to the swamps means dredging, this causes obscured and changes in the hydrology of the area and the destruction of habitat of a number of endangered species.

### **2.5.2 GAS FLARING**

Gas produced as a by product of oil, it is estimated that 95% of the gas produced during oil production in the Niger delta is flared, compared with 0.6% in the USA and 4.3% in the UK. Flaring is a serious hazard to the environment, at temperatures of 1300 to 1400 degrees centigrade, in the Niger delta region there are approximately 350 locations that produce such flares, they heat up everything causing noise pollution, producing carbon dioxide.

It is estimated that the Delta basin releases 35 million tons of carbon dioxide per annum and 12 million tons of methane, this means that Nigerian oil fields contribute more to global warming than the rest of Africa put together.

### **2.5.3 REFINERIES**

The Niger Delta is home to 3 oil refineries, these facilities have a combined capacity of 290,000 barrels of refined oil products. The plants require large volume of water and special chemicals (halons, chlorofluoro carbons CFC) to cool and wash

the plants, the effluents (mixture of water, oil and chemicals) are dumped untreated into coastal waters and estuaries.

This contamination affects both humans and other animals in the area and renders the area unfit for agriculture and fishing activities.

#### **2.5.4 OIL TERMINALS.**

At the interface between land and sea transport, pollution here can be traced from both land and sea. The Niger basin has 6 major oil terminals, their main function is the separation of crude oil from water, storage of crude oil and the eventual export of the oil by tankers

At the Escravos terminal, during the process of water separation approximately 35,000 tons of untreated water, which is said to contain variety of salt, traces of heavy metal and oil is dumped in the swamps and creeks around the terminal daily. Another important source of pollution at the terminal, is during normal loading and discharging activities involving oil storage tanks and tankers, spills originate from faulty pipes and pumps, rusty manifolds and hose, all these leak oil and chemicals into the coastal waters.

Another important source of pollution is from oil tankers, they dump their oil residue, tank sludge and garbage into the coastal waters.

"Efforts continued, to find an effective technique to treat oily sludge which comes from clearing tank bottom and pipe lines, the waste remain stockpiled at the Bonny and Escravos terminal"

*source(Shell Nigeria Bulletin).*

Majority of the terminals do not have reception and treatment facilities, where they are available they are inadequate.

A 1995 report by the World Bank on pollution on the Niger Delta coastal waters, concluded that operational discharge from oil tankers was the greatest tanker related source of oil pollution.

### **2.5.5 SABOTAGE.**

This is another important source of oil spill in the Delta, sabotage is carried out to draw attention to the plight of the host community regarding the distribution of oil revenue at National level, this involves disruption of production activities and damage to installations.

The inhabitants of this region continue to live in poverty, they feel that the only way to draw attention to their plight is through sabotage, according to Shell Nigeria, sabotage accounts for 14% of cases of oil spills at Shells installations nation wide.

## **2.6 ENVIRONMENTAL & SOCIAL CONSEQUENCE OF OIL PRODUCTION ON THE NIGER DELTA.**

The Niger delta is one of the worlds largest wet lands and includes by far the largest mangrove forest in Africa, Niger Delta is characterised by under development, rapid population growth, declining agricultural productivity, this is due mainly to the activities of oil companies, instead of a blessing the discovery of oil in this region has been a curse on the region. The region is constantly subjected to conflict between local community and private developers over resource ownership.

### **2.6.1 FISH & CROP FARMING**

The Niger delta contains a rich resource base in its mangrove belt, the delta sits astride a wide net work of rivers, which are very rich in aquatic life, example Black Cat Fish, West African Giant Tilapia and the endangered short tailed flying fish. This rivers and delta have been subjected to massive doses of pollutants from untreated effluents, oil spills, gas flaring, this has reduced the quantity of fish available

“In six years from 1982, when shell oil company started flaring gas in the Iko area, the once flourishing village, known for its fish, was transformed in to the ghost town.....”

*(Aguiyi, 15)*

This has been one of the major sources of tension in the delta region, because approximately 60% of the inhabitants of this region engage in subsistence fishing for their up keep.

The same problem is experienced by land based farmers, they inhabit the drier land north of the delta, the main source of pollution in this area comes from gas flaring this kills any crops around the vicinity where the gas is being flared, the activities of oil exploration (drilling, dredging blasting ) this affects the productivity of the land.

In the delta the creeks and fresh water swamps are a main source of drinking water for majority of the inhabitants, these sources are increasingly being contaminated by the unsustainable production activities of oil companies, there has been, increased reported cases of water borne illness example, gastric enteritis, conjunctivitis, dermatitis among the inhabitants .

## **2.7 EXISTING INTERNATIONAL CONVENTIONS & NATIONAL LEGISLATION ON OIL POLLUTION.**

### **2.7.1 INTERNATIONAL CONVENTION.**

The massive loss of shipping tonnage during and after the second world war, prompted the formation of an International organisation, charged with the task of formulating rules and regulation to reduce and prevent accidents thus reduce pollution, this led to the establishment of the Inter Governmental Marine Consultative Organisation (IMCO) in 1948, now known as the International Maritime Organisation (I.M.O.).

The following IMO conventions on marine pollution have been adopted ,

- International convention for the prevention of pollution of the sea by oil (OilPol)1954.
- Convention on the Prevention of Marine Pollution by dumping of waste and other matters .(LDC)1972

- International Convention for the prevention of pollution from ships, 1973 as modified by the protocol 1978 (MARPOL 73/78)
- International Convention relating to Intervention on the high sea in case of oil pollution casualties .
- International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC90)

The above conventions were developed to allow states that are party to the conventions, incorporate their requirements into their national legislation .

The main aim of these conventions are to act as a bench mark, from where states could develop their National Legislation on oil pollution prevention and safety .

A large number of countries have incorporated the conventions on pollution control in their national legislation, some states have gone further to build on these conventions with more stringent legislation on pollution control, example European Union, American OPA 90.

International conventions has enabled European union countries, to build on this convention and introduce even stringent legislation, this include the “Treaty of Maastricht Environmental Policy “ with the following objectives

- Ensuring that National Resources are used in a sustainable manner.
- Protecting human health .
- To preserve protect and improve the quality of the environment.

Under Maastricht the European court can impose fines on member states, which have failed to implement EU laws.

Nigeria is a signatory to the major international conventions on oil pollution. The government is yet to be affected by the spirit of sustainable development and environmental protection, it has been a participant in major international conference on the environment, they include United Nations Stockholm conference (1972) on problems of the human environment, which tried to raise awareness and concern for

the environment, Nigeria was also a participant at the 10th anniversary of the Stockholm conference .

The 69th international parliamentary union meeting was hosted in Nigeria 1982. Nigeria also participated in the Rabat conference of head of states and ministers under the auspices of the OAU, which was an attempt to develop a comprehensive frame work for regional co-operation in developing environmental protection strategies, for the African sub continent (1977).

Nigeria is party to the following international convention

- International convention for the prevention of pollution of the sea by oil(oilpol)1954 convention on the prevention of marine pollution by dumping of waste and other matters (LDC) 1972.
- International convention on civil liability for oil pollution damage (1969).
- Convention for co-operation in the protection and development of the marine coastal environment of west and central African region (1987).

The only convention that has been incorporated into the National legislation is the International convention for the prevention of pollution of the sea by oil (Oilpol),which was ratified by Nigeria in 1968, it is incorporated. into the municipal law by the "Oil in navigable waters act" 1968, this act has a weakness in that it only covers International discharge into the sea particularly by Nigerian vessels. The 1954 convention oilpol has since been modified by MARPOL73/78, which has been signed but not ratified by Nigeria.

Nigerian courts are not required to effect conventions which are not incorporated into the national legislation, but will take it into consideration the convention, when dealing with cases that deal with damages/compensation or imposition of liabilities.

#### **2.7.2 REVIEW OF NATIONAL ENVIRONMENTAL LAWS**

As indicated earlier on, prior to 1980, Nigeria did not have a comprehensive legislation on environmental protection, it was only with the drafting of the 4th National development plan (1981-1985).



This plan recommended the creation of the Federal environmental protection agency, this led to the creation of FEPA act of 1988, through decree 58.

Decree 42 of 1988, it prohibits the disposal of toxic waste in Nigerian . This decree came up because of the koko incident, when an Italian ship laden with toxic waste from Italy dumped its waste in Nigeria, it states that its a crime to participate in the purchase, sale importation, transit or storage of toxic waste the penalty for this offence is life in prison. Decree 42 deals mainly with the importation of toxic waste into Nigeria.

The decree has a number of short comings, it does not take care of pollution produced by ships and the provision of reception facilities .

Decree of 1975, this is a miscellaneous provision aimed at acts of sabotage and acts of vandalism on oil installation, and it stipulates the death penalty for offenders.

The is decree 20 which stipulates the death penalty for illegal bunkering activities, diversion of oil supplies through pipe lines to unauthorised depots.

Although the legal regime on pollution has the basic foundation, more have to be done, there is need to stream line the various legislation to meet the challenges of today .

The is need for a comprehensive and holistic approach in formulation of legislation, which Integrates some of the relevant international convention on pollution control. in to National legislation.

## CHAPTER III

### REVIEW OF EXISTING OPERATIONAL PROCEDURE AT ESCRAVOS OIL TERMINAL .

#### 3.0 Introduction

The Escravos terminal is located on the Niger delta, its one of the largest oil terminal in Nigeria, it has a capacity to load 650,000 barrels of crude oil per day and a storage capacity for 2.8 million barrels of crude at any given time .

The terminal is jointly operated by Chevron oil and Nigeria port Authority, the terminal receives an average of 4 vessels per week .

**TABLE 5 NET REGISTERED TONNAGE OF VESSELS THAT PASSED THROUGH NIGERIA OIL TERMINALS.**

YEAR	TANKERS	NRT
1990	760	38,331,029
1991	761	39,283,275
1992	710	37,881,470
1993	711	37,200,451
1994	690	37,300,461
1995	696	44,256,000
1996	715	38,204,305

*SOURCE (NPA HAND BOOK)1997.*

#### 3.1 ESCRAVOS OIL TERMINAL OPERATION

An oil terminal is an installation that moors or anchors ships and allows the vessel to load and discharge oil products. The terminal has the capacity to store huge quantity of oil products.

Escravos terminal receives its crude, from a number of flow stations situated on and off shore, the oil is transported through a net work of pipe lines to the terminal.

At the terminal the oil undergoes a separation process at the separation plant, these are huge tanks that use the dehydration process to separate water from the crude oil. The treated crude is then stored in tanks, the waste water produced during the separation process is discharged into the Imo river and coastal water around the terminal untreated.

According to a study carried out by a non governmental organisation "Movement for the Survival of Ogoni people" on the Imo river, it estimates that for every ton of waste water discharged, it contains 80 litres of crude oil and other impurities.

**TABLE 6: OILY WASTE STANDARDS AT NIGERIA OIL TERMINALS.**

TERMINALS	WASTE WATER PROD/TONS WEEKLY	OIL WASTE PART/PER MILLION	F.E.P.A STANDARD
ESCRAVOS	35,000	54 PP/MILLION	40 PP/MILLION
FORCADOS	65,000	56PP/MILLION	40 PP/MILLION
BONNY	52,000	54 PP/MILLION	40 PP/MILLION
UGHELLI	36,000	47 PP/MILLION	40 PP/MILLION
QUAIBOM	53,000	48 PP/MILLION	40 PP/MILLION

*SOURCE: FEDERAL ENVIRONMENTAL PROTECTION AGENCY EFFLUENT & WASTE STANDARD 1990*

The treated crude oil is stored in huge storage tanks awaiting export. Tanker loading takes place 5 kilometres off shore, buried under sea pipelines take the oil to a floating buoy mooring, which loads the tanker through flexible floating hose. Its a practice at Escravos for oil tankers that have come to load crude oil to discharge a large quantity of their ballast waste off shore, the terminal does not posses adequate reception and treatment facilities to receive the waste.

### **3.2 SOURCES OF POLLUTION AT ESCRAVOS TERMINAL AND ITS EFFECT ON THE ENVIRONMENT.**

Author made a trip to the Escravos terminal to have a first hand experience of terminal operations, author had an audience with the external relations manager of the terminal, he was given a brief run down of operations, and a guided tour of the terminal. Also visited, where some of the fishing settlements located close to the terminal, here the author meet some of the inhabitants and asked their opinion on the effects of the terminal operation on their environment, villages visited include Escravos, Nana and Buru .

The sources of pollution, observed by the author during his visit to the terminal can be classified under two groups, pollutants produced during normal terminal operations and pollution emanating from accidents. The latter is the most frequent cause of pollution and produces the most quantity of pollutants, while the former, although an important source of pollution happens infrequently.

#### **3.2.1 OPERATIONAL POLLUTION**

The main pollutant produced during operations at the terminal is waste water, this is produced during the treatment of crude oil before it is stored, the waste water is said to contain heavy concentration of salt, heavy metals, sludge and oil . This waste is dumped into the Imo river untreated, although there is a small water treatment plant within the terminal, its unable to cope with the volume of waste produced during the separation process, the plants treats less than 10% of the waste water produced.

The author investigation revealed that the effects of this untreated waste dumping has seriously affected the eco system of the area, there has been a decline in the amount of fish available for harvest by the fishing villages, there has also been increased cases of water borne disease.

“This is the entire fish farm I have no where else to fish. I have nine children two have already died -----the contamination is common here in Escravos and Fokana, this is how Chevron treats us”.

*source interview Osaro .G fisherman Escravos village .*

Another equally important source of pollution is from ships that call at the terminal. A United Nations Environmental programme report in 1993, devoted to the study of West African coastal states, concluded that operational discharge from tankers, were the greatest source of tanker related marine pollution .

Tanker traffic is an integral part of most oil terminal, and as indicated earlier, an important source of pollution. The main source of operational oil spill from tankers include

- Ballast water, this ballast is discharged into the coastal water untreated, because the oil terminals do not have the facilities to receive ballast water from oil tankers. This unregulated discharge of ballast water causes significant and harmful changes to the eco system, example it was reported last year(1997) by an independent study carried out by the Institute of marine research Lagos, on the coastal water around the Niger delta, that the carnivorous Russian jelly fish and the Japanese sea slugs which are not indigenous to these waters have been found in large numbers, and where affecting the delicate marine eco system of the area.
- Fuel oil sludge, though some of the tankers that utilise the Escravos terminal have slop tanks and are used to store oily sludge, there are quite a number of other tankers that do not have this tanks, and since oil terminals in Nigeria do not have reception facilities, the oil tankers simply dump the sludge in to the sea.

- Machine space bilge, this is another source of oil pollution from tankers, due to lack of reception facilities at the terminals, bilge water is dumped into the sea.
- Air pollutants produced by ships is a major source of pollution at the terminals, the use of fuel with a high content of sulphur and nitrogen oxide by ships and machines used for port operations are an important source of pollution at the terminals and its environs

Due to lack of adequate reception facilities, poor monitoring equipment and antiquated regulations, example the only regulation in Nigeria that deals with pollution by vessels in the sea is the 1954 oilpoll convention, and the liability for such illegal dumping is 25, 000 Naira (\$500) which is unrealistic, thus this encourages the vessel to dump their waste into the sea untreated.

The terminal has a number of reception facilities, to receive oily waste and sludge from tankers, the terminal does not have provision for the treatment of this waste, thus the collection of oily waste from tankers have been stopped at Escravos, until a treatment facility has been established at the terminal. Thus reception facilities at the terminal have been laying idle for over 18 months. Thus tankers coming to load crude have no alternative but to dump their waste into the sea.

Leakage due to poor maintenance and corrosion on pipe line network, equipment's and storage tanks, contribute immensely to the problem of pollution at the terminal, a large quantity of this pollutants find their way into the coastal waters and surrounding farms in the area, this contributes to the degradation of the environment . According to one of the farmers I spoke to at the village of Escravos, he said close to 25% of their farm land have been rendered unproductive by pollution from the terminal.

The loading operation at the terminal is another important source of pollution, the leakage originate from faulty valves, hose and machine space, the amount of oil discharged into coastal water is not known, but this type of discharge takes place daily, thus over a long period of time the quantity discharged is significant.

Dredging operations at oil terminals and its environs is an important and continues exercises, and due to poor pollution control, the seabed of most terminals are highly polluted, thus these toxic dredged material from the terminal in most case is dumped several miles off the terminals untreated, these materials have a negative impact on the marine environment

### **3.2.2 ACCIDENTAL SOURCE OF POLLUTION .**

According to an official of the terminal, the plant has not experienced any major accident, for quite some time, although there has been reported cases of near misses by oil tankers, and this has been attributed to poor navigational facilities at the terminal. From what I saw at the terminal in relation to emergency response the terminal is adequately prepared to deal with small spills and accidents.

For small spills and accidents, the terminal has its own emergency response unit, this include a fire fighting station and a well equipped medical centre to treat any casualty there is also a small unit for the recovery of minor oil spills.

In case of large oil spill and accident at oil installation, oil tankers, there is a rapid response agency established jointly by the major oil companies operating in the delta region, the response unit has its organisation and personal located at strategic points in the Niger delta, to respond to any emergency required by any of its members, but this organisation has its own weakness this would be discussed latter in detail .

### **3.3 REGULATORY AUTHORITY ON ENVIRONMENT**

#### **ESCRAVOS OIL TERMINAL .**

The main regulatory agencies for pollution and safety, for the oil industry include:

1. Department of Petroleum Resources.(DPR)
2. Federal Environmental Protection Agency (FEPA)

The main function of the DPR stated in its environmental guidelines for the oil industry include

- Setting standards on water quality, specific amount of effluents from production activities that can be discharged, water separation procedure at oil terminals .
- Monitoring of gas emission from oil fields and refineries, to make sure that they meet standards set by FEPA.
- Training and Competency verification of the work force at the various Refineries and oil terminals meet internationally accepted standards.

In 1992 the Government reviewed the existing standards, and put in place new environmental and safety standards that the oil Industry must comply with, by 1996. These standards have largely been taken from American legislation on safety standards at oil terminals and represent internationally accepted standards.

The Escravos terminal as at 1997 did not meet any of the standards on safety and pollution reduction set by DPR, this is according to a 1990 report by a non governmental organisation "Movement for the survival of ogoni people" the organisation claimed that the main reason for non compliance of these standards by oil companies was due to the following reasons, poor enforcement of these standards by the inspectorate arm of the DPR, which is notorious for its red tape and corruption.

The terminal operators are equally to blame, due to poor enforcement on the part of the DPR, these multi national companies use sub standard and inferior equipment at the terminal to reduce cost, to the detriment of the environment.

This standards include

- waste water and effluent limit .
- Approved disposal facilities for sand, oily waste and sludge.
- Gas flaring, condition and limits
- Drilling deck drainage system.

It should be noted that Nigeria has not ratified the MARPOL73/78 convention, thus its standards on pollution prevention, do not apply to terminal operations, the only convention ratified, and incorporated into its National legislation is OILPOL, and as explained earlier, it has a lot of shortcomings .



As a supplement to the above legislation, the operators of the terminal Chevron oil, has its own set of secondary regulation, these are safety guidelines from international associations that help to ensure safety standards are complied with, during normal operations at the terminal they include,

- The International safety guidelines for oil tankers and terminals (ISGOTT) issued by the International chambers of shipping .This are safety guidelines for loading operation, storage of oil products and guidelines for responding to emergencies .
- Safety guidelines for terminals handling, ships carrying liquefied gas in bulk issued by oil companies International marine forum.
- The tanker safety guide (chemicals), issued by International chambers for shipping The enforcement of this legislation is the sole responsibility of the terminal operators, and it is in their own interest to protect their equipment, thus this legislation are an important means to that objective. From my investigation of the Escravos terminal, I found that this legislation are strictly adhered too.

#### FEPA

This is the main regulatory agency on National environmental matters, including the oil sector, its main function is the implementation of government policy on the environment, and makes sure that all sectors of the society adhere to National environmental regulation.

### **3.4 COMPARATIVE STUDY OIL TERMINAL OPERATION AND POLLUTION CONTROL(UNITED STATES OF AMERICA AND MALAYSIA)**

#### **3.4.1 UNITED STATES OF AMERICA**

America has the largest number of oil terminal facilities in the world, and an equally large volume of tanker traffic it supports, Oil terminal operation in the USA is carried out under the worlds most stringent standards on safety and environmental protection. The American legal regime on terminal operation has evolved over a long period of time to the stage it has reached today. The main National legislation on safety and pollution control is the Oil Pollution Protection Act of 1990 (OPA,90). This act came about following the 1989 Exxon Valdez oil spill in Alaska, the American congress found it necessary to introduce a more stringent legislation to reduce the risk of pollution and ensure the safe transport and storage of oil products . Oil pollution 1990 act has the following provision

- Oil pollution liability & compensation
- Prince William sound provision
- Oil pollution research and development programmes.

The prince William sound provision has direct relationship to terminal operation, it calls for a holistic approach in the monitoring of terminal operations, this should involve the Government and local communities in overseeing compliance with environmental standards in the operations of oil terminal.

This legislation imposes high liability on operators of oil installation and vessels in case of an oil spill that affects the environment, the OPA 90 standards on liability is higher than what is found in most International convention on oil pollution liability .

### **3.4.2 AMERICAN ENVIRONMENTAL PROTECTION AGENCY(EPA)**

Its main function is to make sure that oil storage facilities, including oil terminals, Refineries comply with the oil pollution prevention regulation. The EPA goes on periodic site inspection, this inspection ensures

- The oil storage facilities comply with the legislation on pollution prevention .
- On site inspection allows the EPA to educate owners and operators about the regulation and methods of ensuring compliance
- The EPA ensures that this facilities have in place, plans for spill prevention control and countermeasures ( SPCC). If this facilities violates the legislation the EPA has the authority under the OPA90 to impose appropriate penalties.

### **3.4.3 COAST GUARD,**

The American coast Guard is one of the agencies tasked with the responsibility of oil pollution prevention, their function include:

- 1 Pollution incidence response, it organises contingency plan for a given area in co-operation with other agencies .
2. It regulates the standard on oil vessels that ply the American water way, it enforces standards stipulated by the OPA90 on double hull and requirement for spill response plan to be put in place by installations that deal with oil products in case of an emergency.
- 3 Oil spill liability trust fund is administered by the Coast guard, this fund is available in case of an oil spill, the funds are used to finance efforts to tackle a given spill.

The United States approach to maintaining safety and pollution prevention at its oil installation, is based on four major principals.

- Maintaining and enforcing high safety standards in the oil industry, through OPA 90, this is carried out through periodic inspection of oil facilities and educating the operators of this facilities on safe operational practice

- The second approach to minimise pollution by oil terminals is the involvement of communities in which the installation are located, in the monitoring of operational activities at the terminal, this would help to reduce pollution. (OPA 90 Terminal & Tanker oversight )
- Oil spill response is another important aspect to control pollution, according to American legislation it stipulates that all oil terminals must have in place a contingency plan in case of an accident .
- The imposition of stiff penalties on operators of oil plants and vessels that pollute the environment is another weapon used by the Americans to encourage high safety standards, this is carried out in accordance with the international civil liabilities convention (ICLC) and the various state legislation that deal with liabilities in case of an oil spill. It should be noted that America is a federation, and OPA 90 is a federal legislation, states have the right to impose their legislation on higher safety standards on environmental protection over OPA 90.

### **3.5 MALAYSIA.**

Malaysia is one of the major oil exporting countries of South East Asia, Malaysia been a maritime nation, transports close to 99% of its oil exports by sea.

The Malaysian oil industry evolved approximately the same time as the oil industry in Nigeria did, but the situation today is different, if we are looking at the aspect of safety and pollution prevention, the Malaysian side has a better system in place, thus the purpose of this section is to analyse the Malaysian safety and pollution prevention mechanism at its oil terminals and other oil installations and find out which of these standards would apply to the Nigerian situation, that would help reduce the problem of oil spills at its oil terminals.

Malaysia has roughly the same number of oil terminals as Nigeria they are located at Nigri Simbilan, Port Dickson and Port of Klang .According to a Malaysian Department of Environment report in 1994, the main cause of oil pollution at

terminals, was from oily waste discharge, oil sludge discharge, leakage's during transfer of crude oil and tanker cleaning activities.

### **3.5.1 REGULATORY AUTHORITY, ON ENVIRONMENTAL PROTECTION, MALAYSIAN OIL TERMINALS.**

The main co-ordinating and monitoring agency on environmental and safety standards in the oil industry is the Malaysian Department of Environment, function includes

- Implementation of National legislation and International convention on environmental safety in the oil sector
- Monitoring of environmental and safety standards at oil installations, and making sure that this standards are strictly adhered to.
- Formulation and Implementation of Regional and National spill contingency plan To assist the MDE with its functions are a number of standing committee, their function, is to advice the MED on areas that would strengthening environmental standards in the oil industry, and suggest appropriate mechanism to tackle problems on oil pollution. The committees include :
  - a) Environmental law review committee
  - b) National committee on oil spill contingency plan .
  - c) National committee on marine resources protection.

### **3.5.2 MALAYSIAN LEGAL REGIME, INTERNATIONAL CONVENTION & NATIONAL LEGISLATION.**

Malaysia is a signatory to major International convention on oil pollution prevention, this includes Unclos, Marpol 73/78, Solas and London dumping convention, the above conventions have been incorporated into the Malaysian National legislation, most of its laws on pollution prevention and control are based on guidelines provided by the law of the sea convention (Unclos)

### **3.5.3 INTERNATIONAL CONVENTIONS**

As indicated earlier, Malaysia is party to the main International conventions on oil pollution and has incorporated most of these conventions into its national legislation. The main International convention ratified by Malaysia and incorporated into its national legislation include:

- MARPOL 73/78
- SOLAS CONVENTION.
- LONDON DUMPING CONVENTION 1972
- INTERNATIONAL CONVENTION ON CIVIL LIABILITY FOR OIL POLLUTION DAMAGE 1969
- LAW OF THE SEA CONVENTION.

### **3.5.4 NATIONAL LEGISLATION**

The main National legislation, dealing with environmental and safety standard at its oil facilities is embodied in the following legislation:.

1. Environmental quality act 1974, this act deal with

- Control of waste water(sewage and effluents, Reg 1979)This regulation deals with the control of discharge of oil waste at oil terminals, refineries and ships. The guidelines related to ships are based on Marpol standards.
- Toxic, hazardous and Garbage waste (waste disposal and treatment order 1989) This regulation makes it mandatory for oil installation to have in place the capability to treat and dispose of waste produced in a clean and environmental friendly manner.
- Environmental impact assessment order 1987, stipulates that every oil terminal installation must have an E.I.A certificate included in its construction plan .

2.The Economic Exclusion Zone Act 1984 is a national legislation that deals with the management of marine resources and the prevention and control of marine pollution.

This act gives coastal states the authority to protect the marine environment from pollution. The EEZ act, specifically deals with fisheries, ships, offshore exploitation and exploration of mineral resources, and control of pollution produced by these activities.

### **3.5.5 ASEAN OIL SPILL RESPONSE PLAN.**

There is a Regional agreement on joint oil spill response, called the ASEAN oil spill response plan, this plan calls for regional members to pull their resources together to tackle any oil spill in the region. This plan calls for the involvement of member countries of the ASEAN regional pact to establish a joint early warning unit, this organisation would act as a co-ordinating body for the activities of member nations in the early warning and containment of any given oil spill.

Malaysia has a comprehensive legislation on the control of oil pollution and maintenance of safety standards at its oil terminals, although not as comprehensive as what is found in the United States of America, the legislation in place has been able to drastically reduce oil pollution and its impact on the environment .

The Malaysian strategy, in its battle against oil spills and related accidents at oil installations, is based on a combination of three approaches,

- Prevention and reduction of oil pollution at source, that is introduction of legislation that encourages the use of qualitative operational standards at its oil terminals and ships that operate within its territorial waters
- Putting in place effective and efficient contingency plans (Regional and National ) to respond to any kind of oil spill and accident.

This multi approach has succeeded in reducing oil pollution in Malaysia.

- Another approach adopted by the Malaysians in its effort to reduce oil pollution at its oil terminals, is the imposition of strict liability, to be incurred by any terminal operator, in case of an oil spill, this liabilities are in the form of stiff penalties and fine imposed by the government on the terminal operators.

The Malaysian approach, although not as comprehensive as the American model in terms of mechanism but in place for pollution prevention, has been able to meet the challenges of oil spill prevention and containment in Malaysia, this model has been able to effectively utilise available resources for maximum benefit of the country, the author is of the opinion that this model would best suit the Nigerian situation, given that both countries have roughly the same human and material resources at their disposal.



## CHAPTER IV

### PROPOSAL TO REVIEW LEGISLATION ON OIL POLLUTION AT OIL TERMINALS IN NIGERIA

#### 4.0 INTRODUCTION

A long list of laws and regulation govern oil operation and practice in Nigeria they are enforced primarily by FEPA and DRP. The greatest potential danger of destructive oil pollution to Nigeria's coast line arises from the activities of laden oil tankers plying Nigerian terminal waters and spills from oil terminal operation .

As indicated earlier, there is urgent need to review and restructure the Nigerian legislative frame work, the system in place at present is characterised by substandard legislation, duplication of legislation's and a weak enforcement base.

**TABLE 5 INTERNATIONAL CONVENTION ON MARINE POLLUTION AND  
NIGERIAN REGULATION.**

INTERNATIONAL CONVENTIONS	SIGNATORY	RATIFIED	INCORPORATED	YEAR
LAW OF THE SEA	YES	YES	NO	1986
MARPOL 73/78	YES	NO	NO	
SOLAS	YES	NO	NO	
L.D.C 72	YES	YES	NO	1972
OIL POL 1954	YES	YES	YES	1964
INTERNATIONAL CON ON CIVIL LIABILITY	YES	NO	NO	1969
BASEL CONV	YES	YES	YES	1991

*SOURCE (THIS DAY NEWS PAPER 12/7/97)*

#### 4.2 INTERNATIONAL CONVENTIONS

All though Nigeria is a signatory to most of the International conventions on marine pollution, it has not incorporated them in to its National legislation, the only convention it has integrated into its national legislation is the 1954 oilpol convention

convention it has integrated into its national legislation is the 1954 oilpoll convention which is the bases of its "oil in navigable water act"1968, this convention is not in tune with modern trends in the oil and shipping industry and has been replaced by a number of new conventions, basel convention on toxic waste has also been incorporated in the national legislation..

Thus it is necessary for Nigeria to ratify some of the relevant international convention on marine pollution and integrate them into its National legislation, some of this conventions that urgently need to be incorporated into the National legislation include :

**•MARPOL 73/78**

Its standards on pollution prevention can be applied to ships, port Installations on/off shore oil facilities .Its technical standards are internationally recognised .Marpol deals with a variety of sources that pollute the marine environment i.e. oily waste garbage, toxic and noxious waste.

**•UNCLOS.**

This convention provides the general guideline and obligation by states, on the need to protect the marine environment, it contains provision relating to pollution from sea bed activities subject to national jurisdiction, although this convention has been ratified by Nigeria it has not been incorporated into the National legislation of Nigeria.

**•SOLAS.**

Deals with safety and technical standards on board ships.

**•LONDON DUMPING CONVENTION.**

This convention provides information on materials, allowed to be dumped into the marine environment and those prohibited, Nigeria is a party to this convention, but it has not been integrated this convention into its National legislation.

**•INTERNATIONAL CONVENTION ON OIL POLLUTION  
PREPAREDNESS, RESPONSE AND COOPERATION 1990**

This convention makes it mandatory on oil installation and tankers, to put in place contingency plan to deal with oil spills and accidents .

**•CIVIL LIABILITY CONVENTION (CLC)1969.**

This convention makes provision for the compensation of victims affected by oil spills and accidents. There is need to incorporate the above convention into the National legislation of Nigeria, or tailor national legislation in the frame work of this conventions.

National legislation and International conventions should be seen as an integral part of each other. The situation in Nigeria today, is that International conventions are seen as distinct from National legislation, this does not allow for effective implementation .The two regulations are meant to complement each other.

**TABLE 6 REGIONAL & NATIONAL REGULATION ON MARINE  
POLLUTION IN NIGERIA**

<b>REGIONAL CONVENTIONS</b>	<b>YEAR</b>
ABIDJAN CONVENTION	1981
AFRICAN CONVENTION ON CONSERVATION OF NATURE AND NATURAL RESOURCES	1980
<b>NATIONAL LEGISLATION</b>	<b>YEAR</b>
FEPA ACT	1988
DECREE 42 ON TOXIC WASTE	1988
DPR( PETROLEUM &DRILLING ACT)	1969
DPR (GUIDE LINES ON WASTE &EFFLUENTS DISPOSAL)	1992
OIL IN NAVIGABLE WATER ACT	1968
MINERAL OIL SAFETY REGULATION	1963

*SOURCE: SABOTAGE AND THE PROBLEM OF OIL SPILL MANAGEMENT IN NIGERIA.*

*(C .O IKORUKPO)*

### 4.3 NATIONAL LEGISLATION ON ENVIRONMENTAL PROTECTION.

Its a recent phenomena, over the years the Nigerian government had paid lip service to the environment, it was not until recently that the government saw the need for a link between developmental activities and the need for an environmental regulatory mechanism.

This came about through the enactment of the "FEPA act "1988, FEPA has the task of enforcement of all pollution issues and waste management, EIA and to co-ordinate the activities of other agencies and bodies involved in the prevention of pollution .

With the enactment of this act, this led to a proliferation of legislation on the environment, by state authorities, local government administration and private Industrial concerns, the effect of this large number of laws, led to chaos and conflict and has made implementation and enforcement of environmental laws in Nigeria slow, ineffective and chaotic.

Nigeria has a large number of national legislation on oil pollution protection, some of this regulation include

- **FEPA ACT 1988.**

This is the main environmental legislation, It has a broad mandate to conserve and protect all aspect of Nigeria environmental and it provides the general frame work in which the other legislation operate .

- **Decree 42 of 1988.**

This act deals with toxic waste, prohibits the importation of toxic waste, transit and transportation, deposit and storage of this waste.

- **Decree 28 of 1981.**

Came into force to prevent sabotage of oil installations and depots and to prevent the illegal diversion of oil products .

- **Waste management legislation (s. 1.1.5) of 1991.**

It has to do with the control and management of effluents produced by oil installations and other industrial facilities.

- **Department of Petroleum Resource.**

It has the statutory function to formulate laws on safety standards in relation to the oil industry, through its environmental guidelines and standards for the petroleum industry, the department also imposes fees and fines on oil establishments that fail to comply with its standards.

- **Oil in Navigable waters Decree 1968.**

This decree was promulgated based on 1954 oil pollution convention, this decree is applied only to Nigerian ships, and it prohibits the dumping of oily waste into prohibited waters, designated by Nigeria.

#### **4.3.1 SUPPLEMENTARY LEGISLATION.**

This includes laws enacted by state administrative units, local government units, regulation on safety standards formulated by private industrial concerns. Example of some of this non governmental regulation adopted by the oil industry ,include

- ISGOTT (International Safety Guide for Oil Tankers And Terminals)
- TSG(CH) (Tanker Safety Guide )
- SGLTH (Safety Guide Lines For Terminal Handling of Ships)

The implementation and enforcement of this regulations is carried out by the terminal operators, during normal terminal operations, the Nigerian government recommends that this safety rules be applied by operators of oil terminals, it is not obligatory that the operators must adhere to them.

#### **4.4 CONSTRAINTS TO IMPLEMENTATION OF GENERAL NIGERIAN ENVIRONMENTAL LAWS.**

1. Uncoordinated policy and legal instrument on environmental and natural resources. The existence of a large number of environmental laws and policy

document, has been a major constraint on policy implementation, due to the large number of legislation, scarce resources have been thinned out to try and implement this laws, thus making the laws quantitative rather than qualitative.

Nigeria is a federation of 36 states and over 500 local government administrative unit, each of this unit has one form of legislation on environment protection, with this large number of laws, it becomes difficult to effectively co-ordinate and implement this laws.

2. Inadequate enforcement, apart from the short comings of policy and legal instruments, the enforcement of the existing environmental rules have been ineffective, due to lack of clear demarcation of responsibility amongst the various agencies involved in the implementation of the existing regulation, lack of required manpower and expertise required for the smooth implementation of this regulations.

Example, the inspectorate department of FEPA has a staff strength of 20, which is inadequate for the National mandate .

3. Political Instability, due to frequent changes in government, the smooth implementation of environmental regulation has been affected, every new government introduces its own regulation and method of implementation .

In the long run nothing ever gets done, in relation to implementation of these laws.

#### **4.5 OPERATIONAL WEAKNESS AT NIGERIA OIL TERMINAL.**

Apart from a weak National regulation on safety and environmental standards, the basic operational practice at the terminals have a number of faults. As I indicated earlier, the oil sector is the main stay of the Nigerian economy.

This sector is dominated by a large number of foreign multinational oil companies, as is the case with most developing countries, these multi- nationals operate the oil terminals in Nigeria, in co-operation with the Nigerian ports authority and the Department of Petroleum resources in theory, but in reality the situation is that the multinationals have total control of operations at the terminals, with little or no involvement from N.PA and DPR .

Terminals are unique installations, in that they form an interface between marine and land based terminal activities, thus pollution to the environment emanate from these two sources .

There is urgent need to review some of the operational procedure at the terminal to reduce pollution, for a better understanding of improvements required at the terminals, operations at the terminals shall be divided into two areas, shore based operation and marine based operation.

#### **4.5.1 SHORE BASED OPERATION .**

##### **a) Reception and Treatment facilities**

Lack of adequate reception facilities at the Escravos terminal is one of the major cause of pollution at the terminal and its surrounding waters, because vessels that utilise the terminal have no where else to discharge their ballast water and oily waste, thus the only solution is to discharge this waste into the marine environment .

Thus there is urgent need to provide adequate reception and treatment facilities to receive oil waste and capacity to treat this waste, although as indicated earlier the Escravos terminal has a number of reception facilities they do not have the capacity to treat this waste, thus waste received by the reception facilities, end up being dumped back into the coastal water around the terminal .

##### **b) Port State Control.**

As indicated earlier on, there is little or no involvement of Nigerian Ports Authority at the oil terminal ,this situation is due to deliberate government policies which is to keep all oil terminals and their operations secret, for security and military reasons.

Thus in the case of the multi- national companies that run this terminals they do not have the expertise and legal authority to carry out the function of port state control.

Thus you have a proliferation of substandard ships that utilise the terminal due to lapse in effective port state control.

There is need to urgently reverse this situation, several of the notable tanker accident at the Escravos terminal example, a tanker under the flag of ST Vincent, caught fire

in the bay off the terminal, after investigation the cause of the fire was discovered to have originated from welding work, this would not have been allowed if there was effective port state control to rigorously carry out inspection on vessels .

(c) Man Power Training.

This is another area that needs to be looked at, the qualification of the large number of Nigerian work force at the terminals do not meet the standards of their counterparts at terminals located in western countries .Thus there is a need by the authorities, this includes the Nigerian government and the oil companies to encourage the training of the manpower of these terminals to meet international standards

d) ISM CODE

This mandatory code is an internationally accepted standard devised for safety management of shipping companies and ships which if properly implemented, can greatly reduce the risk of human error, it is important that this standard is introduced into terminal operations at the Escravos terminal this would drastically cut down accident caused by human error.

#### **4.5.2 MARINE BASED OPERATION**

Vessel Traffic System, There is a need for a modern and effective traffic system to prevent risk from tanker accidents according to data supplied by the NPA handbook an average of 4 VLCC ply this area weekly, the area around the terminal is noted for its busy marine activities, these activities include movement of large general cargo vessels, fishing vessels, oil production support vessels and naval ships, there have been frequent cases of collision and near misses with oil tankers to and from the terminals .

Besides the vessel traffic system problem, there is the problem of under keel clearance, many of the terminals at the Niger delta including the Escravos terminal, lack modern up to date charts of terminal approaches to provide adequate data on water depth. Thus these terminals must put in place effective traffic separation schemes in



place in co-operation with appropriate organisation, the provision of modern and effective navigation aid, this would help to prevent accident by the tankers thus preventing spills .

#### **4.5.3 FACTORS THAT INHIBIT IMPLEMENTATION OF EXISTING LEGAL REGIME AT OIL TERMINALS.**

As indicated earlier, terminal operations in the Niger delta of Nigeria are a major source of oil pollution to the Nigerian environment. This installation are unique in that their activities affect resources on the mainland and at sea.

The operation at these terminals are carried out under very strict National and supplementary regulations, but over time there has been a rapid increase in the cases of pollution from this terminals, this pollution originate from daily operational activities and accidents at the terminals.

The aim of this paper is to find out why there has been an increase in the cases of oil pollution at the terminals, despite the introduction of numerous legislation.

**TABLE 7 SUPPLEMENTARY REGULATIONS IN FORCE AT NIGERIA OIL TERMINALS**

<b>TERMINAL</b>	<b>SUPPLEMENTARY REGULATION</b>	<b>OPERATING COMPANY</b>	<b>YEAR IN FORCE</b>
QUA IBOE	ISGOTT,TSG(CH)	MOBIL	1990
ESCRAVOS	ISGOTT,TSG(CH)	CHEVRON	1991
BONNY	ISGOTT,SGLTH TSG(CH).	SHELL	1990
BRASS	ISGOTT	AGIP	1993
FORCADOS	ISGOTT,TSG(CH)	SHELL	1990
PINNINGTON	N/A	N/A	N/A

*SOURCE(Nigerian Ports Authority Hand Book 1997)*

#### **4.5.4 CONSTRAINTS TO IMPLEMENTATION OF POLLUTION PREVENTION REGULATION AT OIL TERMINALS .**

As indicated earlier, the Nigerian legal regime in place to combat oil pollution, have a number of structural inadequacies, they include

- **Nigerian Environmental Laws**

Do not meet international standards, this is evident from the fact that Nigeria has not integrated any of the major conventions into its national legislation, the only convention that has been integrated is the 1954 OilPol convention. Which is inadequate to meet today challenge .

- **Proliferation and Duplication of Regulation**

This is one of the most important problems inhibiting the proper and effective implementation of national legislation.

Nigeria has a large number of administrative unit, and each of these units has the statutory right to enact laws on environmental protection, thus there is always conflict and duplication of regulation, because there is no clear demarcation of roles and responsibilities, this creates chaos, which makes it difficult to implement any legislation effectively .

- **Enforcement**

Enforcement of National regulation on oil pollution at the various oil terminals, has been hampered by lack of adequate resources to effectively implement this regulation. Example, the environment and Inspectorate division of FEPA, has a staff strength of 15, which is inadequate for the National mandate (source Earth Summit watch 94 Nigeria). For any regulation to be effective the is need for a highly trained and well financed agency to enforce this regulation .

- **Man Power**

There is a chronic shortage of qualified personal, to implement and regulate this legislation's, the judicial system has very few qualified personal for the implementation and interpretation of these environmental laws.

This has resulted in wrong and poor interpretation of these laws, and the slow progress in the implementation of these laws.

- **Political Instability**

This has taken its toll on the implementation of national legislation in relation to the oil industry. Every new administration has a new priority and method of interpretation of policies on pollution .

- **Lack of Awareness and Political Will**

This is the main cause of failure of environmental laws in relation to oil terminals. The government and oil industry still operate under the frame work, that development and harnessing of Nigeria's oil resources must be exploited at all cost with no regards to its effect on the environment, thus implementation of environmental regulation, does not hold much importance in the governments list of policy priorities.

- **Weak Data Base,**

This constitute a major constraint to policy formulation, technical data in most cases is not available on natural resources need to be conserved, or where this data is available, they are out dated, thus without this information it makes policy regulation and implementation ineffective.



### **OIL SPILL RESPONSE AND PREVENTION**

#### **5.0 Introduction.**

This is an important aspect in the fight against oil pollution, no country can claim to have in place, an effective structure against oil pollution, without a well planned spill response structure, even if it has the best legislation and trained manpower in place.

As I indicated earlier, in my comparison between the American and Malaysian oil pollution protection effort, a very important element in their pollution prevention strategy, is the provision of an effective oil spill response programme

#### **5.1 WHAT IS AN OIL SPILL RESPONSE ?**

An oil spill response plan is a systematic and planned structure, with a combination of various elements required to tackle an oil spill or accident involving an oil installation or related facilities. some of these elements necessary in an oil spill plan include

- Good communication and monitoring system
- Stock of oil spill clean up equipment strategically located and easily accessible
- Well trained man power (with periodic surpass drills).
- Sound organisational structure clearly stating the ladder of authority and responsibility(incident command structure) and job description.
- Notification and alert procedures.
- Spill control and clean up procedure.

A combination of the above elements make for an effective spill response

#### **5.2 NIGERIAN OIL SPILL RESPONSE PLAN AND THE OIL INDUSTRY.**

The Nigerian oil spill plan is organised predominantly by the private oil sector with very little input by the state.

The Nigerian oil industry established the Clean Nigeria Associates in 1981 as a co-operative for mutual assistance in the event of an oil spill, it became fully operational in 1985 with the location of spill fighting equipment's at Onne, Portharcourt, and Warri.

The CNA was formed by 10 leading oil companies in Nigeria, including the state oil company Nigerian National Petroleum Co-operation, the contribution of NNPC to CNA is limited, they do not make any financial contribution.

The list of founding members are as follows

Ashland Oil

Elf Nig Ltd

Mobil Nigeria

Gulf Oil

Agip Nig Ltd

NNPC

Pan Ocean

Shell Nig Ltd

Texaco Nig

The above stated companies nominate a private contractor to run CNA on their behalf.

The participating companies contribute to an oil spill fund according to a weighted formula which ensures that each members participation cost reflects size of its operation .

### **5.3 NIGERIAN OIL SPILL RESPONSE PLAN FRAME WORK**

According to CNA, the Nigerian spill response plan frame work could be roughly divided in to three, depending on the severity of the oil spill

1. Tier one, small spills that can be handled by the individual oil companies with equipment already in the field, this level is described as the first line of defence it deals with spills from 0- 10,000 tons .

2. Tier two spills that are beyond the capability of individual companies, would call on the assistance of CNA if its a member of the association .CNA has its spill response equipment located in most part of the country where there is threat of an oil spill. This second line of defence is for spills between 10,000 tons to 40,000 tons.

3. Tier Three, major spills beyond the national clean up resources and spills over 40,000 tons, this would require the resources of international assistance and International spill response companies e.g. Shell International response unit to tackle spill of these magnitude

Nigeria has not ratified the main international convention on oil spill response. Oil pollution preparedness, response and co-operation 1990 (OPRC90), which makes it mandatory for countries party to the convention to put in place comprehensive spill response plan for their oil industry, it requires government and industry to cooperate in drawing up spill response plan, it also promotes international co-operation between governments in relation to spill response

#### **5.4 WEAKNESS OF NIGERIA OIL SPILL RESPONSE STRUCTURE.**

The oil spill response regime in place for Nigeria has a number of structural flaws that inhibits its effectiveness.

On January 12 1998, a spill estimated at over 45,000 tons of crude oil leaked from a Mobil oil pipe line at Qua Iboe oil terminal into the coastal waters

“Qua Iboe oil spill left Mobil scampering for assistance from local and international rescue organisation ..... How ever not much seems to have been archived despite concerted effort put into the clean up exercises”

*Source (This Day News Paper vol. 4, pg. 27, 12.1 98)*

Some of the problems inhibiting an effective spill response regime in Nigeria include.

- **Lack of effective co-ordination between the state and the private oil sector.**

The government does not have in place a dedicated contingency plan in case of a major oil spill that involves the private oil industry.

There are no mechanism in place to help a smooth co-ordinated effort between the public and private sector, example lack of proper communication between the two sectors, joint utilisation of manpower and hardware to combat oil spill this would drastically reduce cost, there is no unified incident command structure to co-ordinate and direct the activities of the two sectors.

- **Lack of adequate funding.**

This is a very serious problem, in relation to governmental agencies involved in oil spill response, the police and navy who are usually in the forefront in oil spill response are chronically under funded, this has affected their communication capability and the number of boats and aircraft at their disposal to fight any spill .

- **Bureaucracy and Red tape.**

This is a problem amongst the various organisation involved in the oil industry, this has affected the ability of these organisations to respond fast to an oil spill emergency, example the recent oil spill at the Qua Iboe terminal, it took Mobil oil close to one week after it had got information about the spill to respond and the government close to one month to admit and announce to the Nation that a major spill had occurred .

- **Regional spills**

The west African sub region is made up of five countries majority of these countries have one form of oil activity or the other and most of these installations are located in the coastal areas, there has been frequent cases of spills which end up in the coastal waters, oil spills do not respect national boundaries, thus oil spill that originate in one country end up polluting the marine resources of another country, and this spills has been made worse due to lack of proper mechanism on ground to promote a regional frame work to effectively combat these spills.

## 5.5 PROPOSAL FOR A NEW OIL SPILL PLAN STRUCTURE FOR NIGERIA

As indicated earlier an effective fast and reliable oil spill response plan is an essential instrument in the overall strategy against oil pollution .

Nigeria urgently needs to restructure its existing system of oil spill response which at the moment is slow unreliable and not efficient, some of the structural reforms necessary to be put in place an effective spill response include

- There is need to incorporate the OPRC90 convention into national laws, this would make it mandatory for all industrial concern that directly or indirectly deal with oil, to have in place an oil spill response plan, unlike the situation today where a few multinational companies have spill response plan in place.

The Nigerian government has in the last few years opened the upstream oil sector to local indigenous businessmen, it is well known that they lack the technological sophistication of the multinational oil companies, and so they are more prone to oil spill accidents, thus the incorporation of OPRC90 would make it mandatory to have an oil spill response plan or take up membership of C.N.A.

- There is urgent need for the Nigerian government to prepare and put in place a dedicated National oil spill contingency plan, this would involve both the state and private sector and communities where this oil installation are located, this plan would take care of spills that happen at the Local, Regional and National levels. The aim of a National joint oil spill contingency plan, that involves the public and private sector include

A). To improve response time to tackle oil spills, this is achieved through better coordination between the public and private sector .

B). Pooling of limited resources from both sector to ensure maximum utilisation and elimination of duplication .



C) To share information amongst the two sectors this would help in the smooth integration and co-operation of the two sectors in case of an emergency that requires a joint command structure.

#### **5.5.1 COMMAND STRUCTURE**

The joint spill response plan between the private and public sector, shall come under the unified command of the Governor of the given administrative area (State), where the spill or accident has occurred and he shall be assisted by a representative of the oil industry that is responsible for the given accident. The following section should be established:

- **Operation**

This section would come under the joint command of the Navy and representative of the oil sector.

- **Equipment**

shall be the responsibility of the private oil companies, example (CNA), they would provide most of the equipment and personal and they shall be responsible for periodic training of manpower that operate this equipment.

- Air support shall be provided by the Airforce, Navy, Army and the Private oil industry.
- Hazardous material and vessel salvage operations would be carried out by private oil companies and the Navy.
- Planning section, this would come under the joint command of the state administrative unit and the private oil industry, this section would include elements of the technical and scientific unit for support.
- Logistics, this section would be organised by the Navy, with support from the Army, State government and private oil sector. Communications would be the responsibility of the Navy and police, because of their extensive communication net work.

- Public relations and finance would be the joint responsibility between the State government and the oil industry.

This is a summary of a proposed oil spill response plan unified command structure at the National level, this plan is applicable to all sectors of the oil industry, including oil terminals and port facilities.

It should be noted that in case of smaller spills and accidents the individual installation affected, should by law have in place a contingency plan to deal with such incidents effectively.

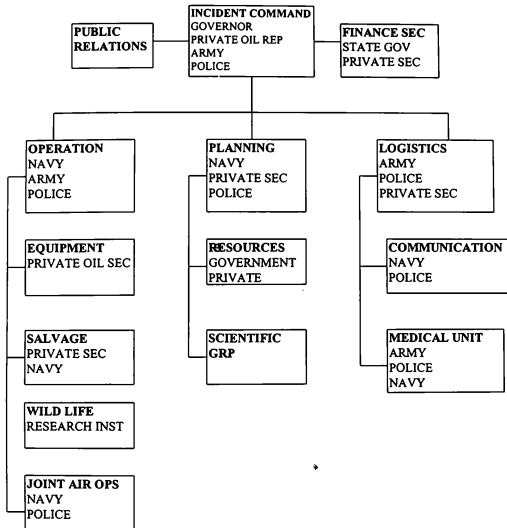
#### **5.5.5.2 OIL SPILL RESPONSE FUND**

A special fund should be established, to help in funding oil spill emergencies, this fund would be tailored like the American oil spill contingency fund, which is managed by the Coast guard. This fund would be used to fund the acquisition of equipment and man power needed for an effective spill response out fit .

This fund would be raised from mandatory contribution from oil companies and state government, and a special account would be opened for the fund. This account would be made available to any company or organisation that is involved in an oil spill accident and does not have the capability to effectively carry out a clean up.

The fund would be jointly managed by the funds contributory members.

**FIG 2 PROPOSED UNIFIED OIL SPILL RESPONSE INCIDENT  
COMMAND STRUCTURE FOR NIGERIA.**



## CHAPTER VI

### CONCLUSION AND RECOMMENDATION

#### 6.0 INTRODUCTION

Environmental degradation is seen as the greatest threat to the corporate existence of the state of Nigeria and indeed the world as we enter the next millennium.

The impact of these unsustainable activities can be physically seen in all corners of the country, they include

- Desertification due to uncontrolled logging activities, and overgrazing by live stock in the northern part of the country.
- The southern part of Nigeria, including the Niger Delta is experiencing massive soil degradation, erosion and environmental pollution from deforestation and massive industrial growth..

The oil industry of Nigeria which is the main stay of the economy and located in the Niger Delta and its environs, has had the most environmental impact, due to long use of unsustainable productive practice by the oil industry. The activities of this industry has been a curse rather than a blessing to the Niger delta, and has resulted in massive environmental degradation and poverty amongst the inhabitants of the region .

#### 6.1 OIL POLLUTION AND THE NIGER DELTA.

The main conclusion derived from chapter two, which deals with the general level and sources of pollution on the Niger delta, is that the impact of oil sector on the environment has reached an epidemic level and urgent action is need by the government and private sector to tackle the problem .

In view of the above, some important recommendations are made

- Urgent reforms are necessary on the existing National legislation on oil pollution prevention. to meet present day realities.
- Need to put in place effective structures to implement these regulations.
- Need for the involvement of local communities in the formulation and implementation of policies that have to do with oil pollution prevention .
- There is need to raise the awareness of Nigerians on the culture of sustainable development and the effects of pollution on the environment.
- Need for the application of the principles of agenda 21 on integrated coastal management in the formulation of developmental policies by the government.
- Pressure should be put on members of the oil industry on the need to use environmental friendly technology, to reduce the impact of their activities on the environment.

#### **6.1.2 OIL TERMINALS**

- Oil terminals as specific source point of pollution on the environment is dealt with in chapter three. Terminal operation are an important source of pollution on the Niger Delta, these has been as a result of weak legislation and operational practice .In view of the above, important recommendations to reduce and prevent pollution at terminals include

- Urgent need to reform legislation on pollution prevention at oil terminals  
Nigeria needs to ratify and incorporate the main International convention on pollution prevention into national legislation, some of these convention include

MARPOL Convention

SOLAS Convention

CLC

OPRC

- Urgent need to review and upgrade operational procedure at oil terminals by the introduction of safety management code (ISM).

- Introduction of a comprehensive oil spill response plan to effectively tackle emergencies.

### **6.1.3 NATIONAL LEGISLATION**

This is dealt with in chapter four, the Nigerian legal regime on pollution prevention in relation to the oil sector specifically oil terminals, need to be restructured, there is need to stream line the legal frame work in place presently, which is characterised by duplication and a history of poor implementation.

International conventions ratified and incorporated into the National legislation, should be seen as one whole, rather than the situation presently where international conventions are seen as a threat to indigenous laws, they should be seen as complementary to each other. Important recommendations made include

- Urgent need to put in place a dedicated and comprehensive regulatory frame work on pollution prevention in the oil sector, this frame work should include required international convention and supplementary laws.
- The problem of political instability, which is the greatest threat to implementation of any given regulatory frame work, should be addressed if any legislative regime is to be effective.

### **6.1.4 OIL SPILL RESPONSE PLAN**

This is an important component in the fight against oil pollution, no matter how good your pollution prevention laws and operational practice are, there is bound to be an accident, thus the need to put in place an effective oil spill response plan for any contingency. OPRC convention makes it compulsory for all oil installations to have a spill response plan in place. Some recommendations include

- Revised contingency plan is need, the new plan should include input from the private and public sectors.
- Should be under one joint unified command structure.

- Proper training of oil spill response team should be under taken.
- Needed equipment and infrastructure should be provided.
- Regional co-operation in fighting oil spills should be encouraged.

## **6.2 ENVIRONMENTAL IMPACT ASSESSMENT**

EIA is a theoretical frame work to measure the effects/ impact of a given project on the environment, over the years the importance of these mechanism in policy recommendation has grown in importance .

The RIO declaration (Agenda21) has specifically recommended EIA for all projects in its drive to encourage sustainable developmental practice.

This concept is applicable to the Nigerian situation in its plan to encourage sustainable development. As indicated earlier the Nigerian economy is a fast developing one, in order to carry out this development in a sustainable manner the is need to apply the EIA concept in its developmental policies.

This concept is of great importance to the oil sector, which is rapidly growing and has had the greatest impact on the environment through its unsustainable production activities, thus the is need for the government to make it mandatory for the EIA concept to form part of the decision making process for all projects.

- EIA should be integrated into the general decision making process and conducted within the frame work of a single integrated policy on environmental protection .
- The EIA regime must be carried out in line with international standards and must be open to periodic review by international audit.

## **6.3 FLAG AND PORT STATE CONTROL**

The Nigerian ports authority who own, most of the oil terminal, and operate them jointly with the oil companies have an important role to play in the reduction of marine pollution at oil terminals, the application of port state and flag state control can be effective in this regards, i.e. provision of reception facilities at oil terminals,

and the enforcement of Marpol and Solas safety code on board oil tankers that patronise the oil terminals.

#### **6.4 CONCLUSION**

The above has been an attempt to identify the cause of environmental degradation in the Niger delta and to try and proffer solutions to this problem, five major approaches were identified as effective instruments to prevent the degradation of the environment,

- Legal instrument (International Conventions and National legislation)
- Improved safety standards
- Effective spill response frame work
- Appropriate liability regime against party that pollute the environment
- Improved training for operators of the oil industry.

Although these instruments if well implemented would go a long way in protecting the environment of the Niger Delta, an inherent problem which has inhibited the smooth implementation of the above instruments in the case of Nigeria is political instability, this is a situation that is usually forgotten, when analysing the problem of environmental degradation in Nigeria.

If you have in place the best legislation, safety standards or spill response regime, without political stability to back up these policies, they would end up in failure. The Nigerian state has been plagued by political crises in recent years and these has taken its toll on implementation of environmental policies in Nigeria and indeed the Niger Delta, which has been experiencing rapid environmental degradation, even though the best environmental regulatory standards have been put in place to halt these slide, but due to political instability implementation of these standards have proved ineffective.

Thus there is urgent need to establish political stability in the country as a prerequisite for smooth and effective implementation of the above policies.



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