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**NATIONAL OIL SPILL DETECTION AND RESPONSE AGENCY
ACT (NO. 15 OF 2006)**

**OIL SPILL AND OILY WASTE MANAGEMENT
REGULATIONS, 2011**



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NATIONAL OIL SPILL DETECTION AND RESPONSE AGENCY ACT (NO. 15 OF 2006)

OIL SPILL AND OILY WASTE MANAGEMENT REGULATIONS, 2011

In exercise of the powers conferred on it by section 26 of the National Oil Spill Detection and Response Agency Act (No. 15) of 2006 and all other powers enabling it in that behalf, the NATIONAL OIL SPILL DETECTION AND RESPONSE AGENCY (in these Regulations referred to as "the Agency" makes the following Regulations :

[26th May, 2011]

Commencement.

PART I—REGULATORY SETTING AND SCOPE OF APPLICATION

1. For ease of monitoring, compliance and enforcement of applicable laws and regulations, the petroleum sector is classified into the upstream, midstream and downstream sub-sectors as follows—

(i) the upstream sub-sector covers crude oil, condensates and gas exploration and production activities including crude oil terminals ;

(ii) the midstream sub-sector consists of crude oil pipeline transportation, storage, refining and petrochemicals production, liquefied natural gas, and gas conversion, including all processing facilities ; and

(iii) the downstream sub-sector entails petroleum products and natural gas distribution to final consumers involving (marketing operation, jetties, Above Ground Storage Tanks (ASTs), retail outlets, products pipelines and Underground Storage Tanks (USTs) operations.

2.—(1) These Regulations apply to on-shore and off-shore petroleum facilities in Nigeria and in particular, to facilities which due to their locations can reasonably be expected to discharge oil or oily waste in harmful quantities into or upon the land or navigable waters of Nigeria. These include facilities used for seismic survey, drilling, producing, gathering, storage, processing, refining, distribution and consuming activities.

Scope of Application.

(2) The Regulations contained in PARTS II to IV, PARTS V to VII and PARTS VIII to IX of these Regulations, respectively apply to the upstream, midstream and downstream sub-sectors of the petroleum sector.

(3) Appendix I-I to these Regulations contains explanations on the regulatory and legal framework on the petroleum sector emphasizing the concerns and problems of discharges of oil and oil wastes on land and navigable waters in Nigeria and noting the importance of constantly updating the laws and regulations pertaining to the sector to prevent the damaging effects of oil spills and discharge of oily waste upon land and navigable waters in Nigeria.

**PART II—ENVIRONMENTAL MANAGEMENT FOR ONSHORE AND OFFSHORE
PETROLEUM EXPLORATION, PRODUCTION AND DEVELOPMENT**

Description
of
Operations.

3.—(1) *Appendix 1-2* to these Regulations contains details of exploration, production and development activities in the petroleum sector and the extent of the damage to land and navigable waters in Nigeria of oil spillage and discharge of oily wastes from on-shore and off-shore oil exploration and development activities.

(2) The Regulations contained in this Part prescribe uniform best environmental management practices for the prevention, control and monitoring of oil spills and oily waste discharges from petroleum exploration and development activities.

(3) In this Part 'On-shore' or 'Off-shore' petroleum exploration, production and developments facilities include on-shore and off-shore mobile or portable facilities, such as, on-shore drilling or work over rigs, barge mounted off-shore, off-shore drilling or work over rigs and portable fueling facilities (hereinafter in this Part referred to as the 'Facility' or 'Facilities').

Spill
Prevention
Control,
Measures,
Plans, etc.

4.—(1) Owners or operators of Facilities which due to their locations, could reasonably be expected to discharge oil or generate oily wastes into or upon land or navigable waters of Nigeria, shall prepare in written form a Spill Prevention Control and Counter Measures Plan ('SPCCP') and an Oil Spill Contingency Plan ('OSCP') as prescribed in these Regulations and in accordance with specifications contained in *Appendices II-1* and *III-1* to these Regulations.

(2) The SPCCP and OSCP shall apply when a Facility is in a fixed operating mode.

Agency to
Approve
SPCCP and
OSCP.

5.—(1) A mobile or portable Facility shall not be operated unless the SPCCP and OSCP have been approved by the Agency and implemented by the operator.

(2) A completed copy of the approved SPCCP and OSCP shall be maintained at all times at the Facility during operations.

Changes in
Facility
Design, to
require
Amendment
of SPCCP
and OSCP.

6. Whenever there is a change in Facility design, construction, operation or maintenance, which materially affects the Facility's potential for the discharge of oil or oily wastes into or upon the land and or navigable waters of Nigeria, the owner or operator of the Facility shall amend the SPCCP and OSCP as prescribed in *Appendices II-I* and *III-I* to these Regulations.

7. Owners or operators of Facilities shall make provisions to prepare for and prevent the occurrence of oil spills or oily wastes discharges and put in place appropriate measures to respond to oil spills or oily wastes discharges in their areas of operations.

Preparation
for and
Prevention
of Oil Spills
and
Discharge.

8.—(1) The discharge of oil or oily wastes upon land or navigable waters in Nigeria by the owner or operator of a Facility shall be recorded and reported to the Agency within 24 hours by the spiller or Facility owner.

Reports on
Oil
Discharge or
Oily Wastes.

(2) The oil spill or oily wastes discharge report shall be furnished to the Agency in an 'Oil Spill Report Form' in accordance with the specifications contained in *Appendix II-2* to these Regulations.

(3) The report shall include such details as the Agency may from time to time prescribe in guidelines issued pursuant to these Regulations.

9.—(1) A Joint Investigation Team ("the JIT") comprising of the owner or the operator of spiller Facility, representatives of the affected community, the State Government and the Agency, shall be constituted within 24 hours of the spillage notification to visit the location where the oil spillage or oil discharge occurred to investigate the cause and extent of the spillage.

Investigation
into Cause
of Oil
Discharge or
Oil Spillage,
etc.

(2) A report of the findings of the JIT shall be written in the JIV Report Form prescribed by the Agency in the form and specifications contained in *Appendix H-3* to these Regulations.

10.—(1) Where a spillage of oil or oily waste has occurred, the spilled oil or oily waste shall be removed or cleaned up by the owner or operator of the Facility from which the oil or oily waste is discharged, using the best practicable technology currently available.

Clean-Up
Methods to
be Approved
by the
Agency.

(2) The method of cleaning up adopted by the owner or operator of the Facility shall be approved and monitored by the Agency.

(3) The clean-up contractor to be engaged by the owner or operator of the Facility shall be accredited by the Agency.

(4) A report on the clean-up operation shall be in accordance with the specification contained in Forms A, B and C, of *Appendix 11-2* or on such other forms to these Regulations as the Agency may from time to time prescribe in guidelines.

Discharge of Oil Resulting from On-shore or Off-shore Well Blow-Out, Equipment Malfunction or Accident.

11. In the case of on-shore or off-shore well blow-out, equipment malfunction or accident resulting in the discharge of oil into or upon land or navigable waters of Nigeria, the owner or operator of the production Facility shall immediately activate the company's SPCCP and OSCP and commence appropriate control and monitoring measures to track the oil movement to prevent potential harmful or dangerous consequences or impact to nearby areas or communities.

Discharge of well treatment waste, deck drainage, etc upon land or navigable waters prohibited.

12. Owners or operators of on-shore or off-shore mobile or fixed drilling rigs or work-over rigs, oil or gas wells, flow-lines, separation equipment, storage facilities, gathering lines, platforms and auxiliary non-transportation related equipment shall not discharge any well treatment wastes, deck drainage or permit overflow of retention tanks or sump which contain oil or any of the synthetic based fluids, into or upon land or navigable waters of Nigeria.

Treatment of Oily Wastes to attain Oil Removal Efficiency.

13.—(1) Wastes from on-shore or off-shore production activities consisting of produced water and oil-based mud or fluids, treatment fluids, oil and water-based drill cuttings, deck drainage shall be treated to achieve oil removal efficiency satisfactory to the Agency.

(2) The oil recovered from the treatment shall be recycled.

Water or Oil based Mud or Fluids to be Monitored and Analyzed.

14. Produced water-based mud or fluids, oil-based mud or fluids, water-based drill cuttings, oil-based drill cuttings, deck drainage and well treatment fluids, shall be monitored as set out in Table 1-2 of Regulation 32 of these Regulations, and analyzed to determine the oil content using the laboratory analysis procedures prescribed by the Agency in *Appendix II-4* to these Regulations.

Packaging for Transportation of Oil Based Mud or Fluids, etc for Treatment.

15. Produced water-based mud or fluids, oil-based mud or fluids, water-based drill cuttings, oil-based drill cuttings, deck drainage and well treatment fluids, shall be appropriately stored, packaged in skips during production or work-over operation, on-shore or off-shore, and transported to an approved onshore Facility for treatment by the best available technology in accordance with the specification contained in *Appendix II-5* to these Regulations.

Liability of Owners or Operators of Facilities for Oil or Oily Waste Discharges.

16. Owners or operators of production Facilities from which oil or oily wastes are discharged into or upon land or navigable waters of Nigeria are liable for specific damages resulting from the discharged oil, and the removal costs incurred in a manner consistent with the National Oil Spill Contingency Plan.

17. Owners or operators of a Facilities whose activities negatively impact the environment and cause oil spillage, seepage, leakage or discharge oil or oily wastes in medium or major quantities into or upon land, flood plains, swamp, upland, valleys, reservoir or navigable waters of Nigeria shall in the event of such occurrence, clean up the impacted site using the methods set out in *Appendix II-5* to these Regulations and shall also furnish to the Agency a mandatory Post Remediation Report in the form and substance contained in *Appendix II-6*, to these Regulations.

Owners or Operators responsible for Oil Spillage, etc to Clean Up and Furnish Post Remediation Report to Agency.

18.—(1) Owners or operators of Facilities with potentials of oil spills or oily waste discharges shall regularly carry out oil spill response equipment audit.

Oil Spill Equipment Audit and Annual Oil Drills or Exercise.

(2) The Agency shall carry out annually OSCP or SPCCP activation drills or exercise to determine Facilities preparedness to handle potential oil spill risk and thereafter provide the owner or operator of the Facility an assessment report.

(3) Further to the provisions of paragraphs (1) and (2) of this Regulation, the Agency shall, as considered appropriate, conduct periodic inspections of Facilities to ensure adequate stockpile of oil spill response equipment, safety checks and carry out general inspection of the environment in which the Facility is located.

19. Owners or operators of oil exploration and development Facilities that fail to comply with Regulations contained under this Part shall, in addition to meeting the specific obligations required to remedy the breach of any of these Regulations, be liable to pay the penalties provided for in section 6(2) and (3) of the Act.

Penalties for Violation of the Provisions of Regulations 10 to 16.

PART III—ENVIRONMENTAL MANAGEMENT FOR PRODUCTION OPERATIONS

20.—(1) *Appendix 1-3* to these Regulations describes production processes in the oil and gas sector to include all on-shore and off-shore activities employed to harness trapped hydrocarbon from the reservoirs, which consist of bored wells, flow-lines, separation equipment, storage facilities, gathering lines, platforms and auxiliary non-transportation related equipment and facilities in a single geographical oil or gas field operated by a single or joint venture. These activities could be on land, swamp, shallow coastal waters, estuary, deep off-shore or ultra deep off-shore waters.

Description of Operation.

(2) The Regulations contained in this Part prescribe uniform best practices for the prevention, control and monitoring of oil spills and oily waste discharges in the course of production operations.

(3) In this Part, oil and gas production facilities include 'on-shore' or 'off-shore' production facilities, including on-shore drilling or work over rigs, barge mounted off-shore drilling or work over rigs, oil or gas wells, flow-lines, separation equipment, storage facilities, gathering lines, platforms and auxiliary non-transportation related equipment such as FPSO, FPS, (hereinafter in this Part referred to as the 'Facility' or 'Facilities').

Effective
Environmental
Management
Practices.

21.—Owners or operators of oil or gas production Facilities shall ensure that roles, responsibilities and authorities of personnel involved in production operations are well-defined, documented and communicated for effective environmental management practices.

Oil Spill
Contingency
Plan and
Spill
Prevention
Control
Counter
Measure
Plan to be
Prepared by
Owners on
Operation.

22.—(1) Owners or operators of on-shore or off-shore production Facilities shall prepare and have in written form an Oil Spill Contingency Plan ('OSCP') and Spill Prevention Control and Counter Measures Plan ('SPCCP') in accordance with specifications contained in *Appendices II-I AND III-I* to these Regulations.

(2) The SPCCP and OSCP shall apply when the Facility is in a fixed operating mode.

Agency to
approve
SPCCP and
OSCP.

23.—(1) A mobile or portable Facility shall not be operated unless the SPCCP and OSCP has been approved by the Agency and implemented by the operator.

(2) A completed copy of the approved SPCCP and OSCP shall be kept at all times at a Facility during operations.

Changes to
Facility
Design to
require
Amendments
to SPCCP
and OSCP.

24. Whenever there is a change to the design, construction, operation or maintenance of a Facility which materially affects the Facility's potential for the discharge of oil or oily wastes or waste oil into or upon the land and or navigable waters of Nigeria, owners or operators of the Facility shall amend the SPCCP and OSCP as prescribed in *Appendices II-I and III-I* to these Regulations.

Preparation
for and
Prevention
of Oil Spills
or Oily
Waste
Discharges.

25.—(1) Owners or operators of on-shore or off-shore Facilities shall make provisions to prevent the occurrences of oil spills or oily wastes discharges and shall put in place appropriate measures to respond to oil spills or oily wastes discharges that may occur in the course of production operations.

(2) In meeting the requirement of paragraph (1) of this Regulation, owners or operators of oil and gas production Facilities, shall provide the appropriate oil spill response equipment with trained personnel and carry out periodic oil spill response exercises.

(3) *Appendix III-2* to these Regulations contains a list of Spill Response Equipment Materials for adoption by owners or operators of Facilities.

26.—(1) Any discharge of oil or oily wastes shall be recorded and reported to the Agency within 24 hours by the owner or operator.

Report of
Oil
Discharge or
Oily Wastes.

(2) Reports shall be made in an 'Oil Spill Report Form' as contained in *Appendix II-2* to these Regulations and shall include such details as the Agency may prescribe from time to time in guidelines.

27.—(1) A Joint Investigation Team ("JIT") comprising of the owner or operator of the Facility responsible for the oil spill or oily waste discharge, representatives of the affected community, the State Government and the Agency, shall be constituted within 24 hours of notification of the spillage to visit the Facility or the affected area or location to investigate the cause and extent of the spillage.

Investigation
into cause of
Oil
Discharge or
Spillage.

(2) A report of the findings of the JIT shall be produced by the Agency on the JIV Report Form as prescribed in *Appendix II-3* to these Regulations and endorsed by the JIT.

28.—(1) Where a spillage of oil or oily waste has occurred, the spilled oil or oily waste shall be removed or cleaned-up by the owner or operator of the Facility from which the oil or oily waste is discharged, using the best practicable technology depending on the sensitivity of the environment.

Clean-Up
Operation
by Owner or
Operator and
Furnishing of
Report to
the Agency.

(2) The method of cleaning up adopted by the owner or operator of a Facility shall be approved by the Agency with report furnished to the Agency.

(3) The clean-up contractor to be engaged by the Facility owner or operator shall be accredited by the Agency and the clean-up process monitored by the Agency.

29. In the case of on-shore or off-shore well blow-out resulting in the discharge of oil into or upon land or navigable waters of Nigeria, the owner or operator of the blown-out well shall immediately activate the company's SPCCP and OSCP and commence appropriate control and monitoring measures to track the oil movement to prevent harmful potential impact on nearby or coastal communities.

Oil
Discharge on
Land or
Navigable
Waters
arising from
Well Blow-
Out.

30.— (1) Owners or operators of on-shore or off-shore mobile or fixed drilling rigs or work-over rigs shall not discharge any drilling mud or fluids, spent drill mud or fluids, drill cuttings, well treatment wastes, deck drainage, bund-wall content, produced water, effluents, which contain oil or any of the synthetic based fluids, into or upon land or navigable waters of Nigeria.

Discharge of
Mud, Fluids,
Well
Treatment
Wastes, etc
on Land or
Navigable
Waters
Prohibited.

(2) *Appendix III-4* to these Regulations contains the Disposal Plan for Oil Spills and Oily Contaminated Wastes or Materials prescribed by the Agency.

Treatment of
Oily Waste
to Achieve
Oil Removal
Efficiency.

31.—(1) Waste from on-shore or off-shore drilling and work-over activities consisting of produced water and oil-based mud and fluids, well treatment fluids, oil and water-based drill cuttings, deck drainage, produced formation water, effluents shall be treated to achieve oil removal efficiency satisfactory to the Agency.

(2) Oil recovered from the treatment shall be recycled.

(3) The acceptable levels of treatment for each category of wastes are as indicated in Table 1-1 below :

TABLE 1 : 1—LIMITATIONS FOR OILY WASTE WATER

Characteristics	Compliance Maximum Limits within 30 days Period	
	Inland	Near-shore
Ph	6.5 – 8.5	6.5 – 8.5
Temp. °C	25	30
THC, mg/l	7.0 - 10	20 – 40
TPH, mg/l	4.5	8.0- 20
TOC, mg/l	6.5	20
PAH, mg/l	4.0	7.5- 15
TSS, mg/l	-	50 - 5,500
Turbidity, NTU	-	10 - 2,000
Oil and Grease	10	20
COD, mg/l	10 – 40	125
BOD ₅ , mg/l	10	125
BTEX		

Monitoring
and
Analyzing
Waste
Waters.

32. Produced formation water, water-based mud or fluids, oil-based mud or fluids, water-based drill cuttings, oil-based drill cuttings, deck drainage, effluents, oil and grease including well treatment fluids, shall be monitored as set out in Table 1 : 2 below and analyzed to determine the oil content using the laboratory analysis procedures prescribed by the Agency in *Appendix II – 4* to these Regulations.

**TABLE 1-2: PARAMETERS FOR MONITORING AND ANALYSING OILY
WASTE WATER**

<i>Parameters</i>									
Waste Stream	Ph	Temp °C	COD mg/l	BOD ₅ mg/l	Oil & Grease mg/l	TPH mg/l	PAH mg/l	THC mg/l	TOC mg/l
Drilling Mud	6.5 – 8.5	25 - 30 -	10 - 125	10 - 125	10g/kg	25	25	50	10
Drill Cuttings	6.5 – 8.5	25 - 30	10 - 125	10 - 125	50g/kg	25	25	50	10
Produced Formation Water	6.5 – 8.5	25 - 30	10 - 125	10 - 125	40g/kg	20	20	40	10
Oily Sludge	6.5 – 8.5	25 - 30	10 - 125	10 - 125	100g/kg	50	50	100	20
Produced Sand/Soil	6.5 – 8.5	25 - 30	10 - 125	10 - 125	10g/kg	5	5	10	5
Storm Water Drainages	6.5 – 8.5	25 - 30	10 - 125	10 - 125	5 - 10	5	5	5 - 10	5

33. Water-based mud or fluids, oil-based mud or fluids, water-based drill cuttings, oil-based drill cuttings, and well treatment fluids, shall be appropriately stored, packaged in skips during development drilling or work-over operation, on-shore or off-shore, and transported to an approved on-shore Facility for treatment by the best available technology to prevent the risk of oil spills.

Packaging for Transportation of Water or Oil-Based Mud or Fluid, etc for Treatment Purposes.

34. Owners or Operators of production Facilities shall ensure that levels of pollution control technology are fully in line with the best practicable control technology currently available, which represents the average of the best existing performances of well-known technologies for the management of pollutants.

Adoption of Best Practicable Pollution Control Technology.

35. Table 1-3 below, contains the monitoring requirements for oil spills and oily wastes management in Nigeria.

Monitoring Requirements for Oil Spills and Oily Wastes Management.

TABLE 1-3

<i>Discharge</i>		<i>Monitoring Requirement</i>		
<i>Type</i>	<i>Monitored Parameter</i>	<i>Sampling Methods</i>	<i>Measuring Frequency</i>	<i>Recorded Value</i>
1. Produced Formation Water	(i) Volume/ Discharge Rate	Estimate	Once/day during discharge	Maximum daily rates
	(ii) Oil and Grease	Grab	Once daily	Daily maximum/ month Average/ mg/l
	(iii) Free Oil	Visual Sheen	Once/day during Discharge	Number of days Sheen is Observed
2. Oily Waste Water	Volume/ Discharge Rate	Estimate	Once/week	Minimum Weekly Rate
	Physico-chemical, pH, Temperature, THC, COD, BOD ₅ , PAH, TPH	Grab	Once/Week	Monthly Average in mg/l, NTU d °c as appropriate
3. Oil Sludge	(i) Quality/ Volume	Estimate	During tank/ vessel Clean-up, pigging & dislodging Operations	Tons and/or kg
	(ii) Total Hydro-carbon Current (THC)	Composite Grab	"	M

4. Deck and Storm water Drainage	Volume/ Discharge Rate	Estimate	Daily	Minimum Weekly Rate
	Physico-chemical, pH, Temperature, COD, BOD ₅ , TOC	Grab	Daily	Monthly Average in mg/l, NTU d °c as appropriate
5. Drilling Mud and Drill Cuttings	Volume/ Discharge Rate	Estimate	During Operation	Minimum Weekly Rate
	Physico-chemical, pH, Temperature, COD, BOD ₅ , THC, PAH, Oil & Grease, TPH	Grab	During Operation	Monthly Average in mg/l, NTU d °c as appropriate

36. Owners or operators of Facilities from which oil or oily wastes are discharged into or upon land or navigable waters of Nigeria are liable for specific damages resulting from the discharged oil, and the removal costs incurred in a manner consistent with the National Oil Spill Contingency Plan.

Liability of Owners or Operators of Facilities for the Discharge of Oil or Waste

37.—(1) Owners or operators of any production Facility, whose activities significantly and negatively impact the environment or causes oil seepage, spillage, leakage or discharge or impact with oil or oily wastes in a medium or major quantities into or upon land, flood plains, upland valleys, reservoir or navigable waters of Nigeria, shall clean-up the polluted environment, using the Risk-Based Corrective Action ('RBCA') approach approved by the Agency and shall at the end of the clean-up exercise submit a Remediation Report to the Agency using the format contained in *Appendix II-6* to these Regulations.

Clean-up Operation using the Risk-Based Corrective Action Approach

(2) The procedures for the adoption and application of RBCA for remediation of polluted environment, approved by the Agency are as set out in *Appendix III-3* to these Regulations.

Oil Spill
Equipment
Audit and
Annual Oil
Drill
Exercise.

38.—(1) Owners or operators of Facilities with potentials of oil spills or oily waste discharges shall regularly carry out oil spill response equipment audit.

(2) The Agency shall carry out annually OSCP or SPCCP activation drills or exercise to determine Facilities preparedness to handle potential oil spill risk and thereafter provide the owner or operator of the Facility with an assessment report.

(3) Further to the provisions of paragraphs (1) and (2) of this Regulation, the Agency shall, as considered appropriate, conduct periodic inspections of Facilities to ensure adequate stockpile of oil spill response equipment, safety checks and carry out general inspection of the environment in which the Facility is located.

Penalties.

39. Owners or operators of oil production Facilities that fail to comply with the Regulations contained in this Part shall, in addition to the specific obligations imposed on them, including the obligations to carry out necessary clean-up operations and to furnish reports to the Agency, be liable for the payment of an amount of not less than Five Hundred Thousand Naira (₦500,000.00) to the Agency for the account of the Government of the Federation for each day the violation continues.

PART IV— ENVIRONMENTAL MANAGEMENT FOR TERMINAL OPERATIONS

Description
of
Operation.

40.—(1) Appendix 1–4 to these Regulations contains the description of terminal operations and problems of oily wastes and oily wastes discharges in the course of terminal operations.

(2) The Regulations contained under this Part prescribe uniform best environmental management practices for the prevention, control and the monitoring of oil spills and waste discharges for terminal operations.

(3) In this Part, terminal operations include onshore and offshore mobile or portable facilities, such as onshore water treatment plants, loading systems, storage tanks, equipment for pumping, piping systems, dehydration systems or units and loading vessels, (hereinafter in this Part referred to as 'Facility' or 'Facilities').

Effective
Environmental
Management
Practices.

41.—(1) Owners or operators of Facilities shall institute comprehensive environmental management practices to contain and bring to acceptable standards unforeseen, identified and un-identified sources of oil spill or oily wastes from terminal operations.

(2) Roles, responsibilities and authorities of personnel responsible for the Facilities shall be defined, documented and communicated for effective environmental management practices.

42.—(1) Owners or operators of Facilities shall prepare and have in written form an Oil Spill Contingency Plan (OSCP) and Spill Prevention Control and Counter measures Plan (SPCCP).

Oil Spill
Contingency
Plan and
Spill
Prevention
Control and
Counter
Operation
Plan.

(2) The SPCCP and OSCP shall apply when the Facility is in a fixed operating mode.

43.—(1) A Facility under this Part shall not be operated unless the SPCCP and OSCP have been approved by the Agency and implemented by the operator.

Agency to
Approve
SPCCP and
OSCP.

(2) A completed copy of the approved SPCCP and OSCP shall be maintained at the Facility at all times during operations.

44. Whenever there is a change to the design, construction, operation or maintenance of a Facility which materially affects the Facility's potential for the discharge of oil or oily wastes or waste oil into or upon the land and or navigable waters of Nigeria, the owner or operator of the Facility shall amend the SPCCP and OSCP as provided in these Regulations or in guidelines issued by the Agency from time to time.

Changes to
Facility
Design to
Require
Amendments
to SPCCP
and OSCP.

45.—(1) Owners or operators of Facilities shall take necessary steps to prevent, prepare for and respond to oil spills or oily wastes discharges that may occur in the course of operations.

Preparation
for and
Prevention
of Oil Spills
for Terminal
Operation.

(2) In meeting the requirements of paragraph (1) of this regulation owners or operators of Facilities, shall provide the appropriate oil spill response equipment and materials, such as skimmers, boats, booms, dispersants and necessary oil containment apparatus as prescribed in *Appendix III-2* to these Regulations.

46.—(1) Any discharge of oil or oily wastes shall be recorded and reported to the Agency within 24 hours by owners or operators of oil and gas terminal operations.

Report on
Discharge of
Oil or Oily
Wastes.

(2) The oil spill or oily wastes discharge report referred to in paragraph (1) of this regulation, shall be furnished to the Agency in an 'Oil Spill Report Form' in accordance with the provision of *Appendix II-2* to these Regulations and in such details as may be prescribed in guidelines issued by the Agency from time to time.

Investigation
into Cause
of Oil
Spillage or
Discharge.

47.—(1) A Joint Investigation Team ('JIT') comprising of the owner or operator of the Facility responsible for the discharge of oil or oily wastes, representatives of the community, the State Government and the Agency, shall be constituted within 24 hours of notification of the spill to visit the Facility and investigate the cause and extent of the spillage.

(2) A report of the findings of the JIT shall be produced by the Agency in accordance with the Form contained in *Appendix II-3* to these Regulations and endorsed by the JIT.

Clean-Up
Methods to
be Approved
by the
Agency.

48.—(1) Where a spillage of oil or waste oil has occurred, the spilled oil, oily wastes or sludge from tank farm shall be removed and cleaned-up by the owner or operator of the Facility from which the oil or oily waste is discharged, using the best practicable technology currently available, depending on the sensitivity of the environment.

(2) The method adopted for the clean-up exercise shall be approved by the Agency.

(3) The clean-up contractor to be engaged by the Facility owner or operator shall be accredited by the Agency and the clean-up process monitored by the Agency.

Tracking of
Movement
of oil
spillage to
prevent
negative
impact to
Surrounding
Communities.

49. In the case of onshore or offshore fire out-break or malfunction of equipment in terminal operations resulting in the discharge of oil or oily wastes into or upon land or navigable waters of Nigeria, the operator of the Facility shall immediately activate the company's SPCCP and OSCP and commence appropriate control and monitoring measures to track the oil movement or spread of fire to prevent potential harm or danger to nearby areas or coastal communities.

Discharge of
Oil Treated
Wastes, etc,
upon Land
or Navigable
Waters
Prohibited.

50.—(1) Owners or operators of onshore or offshore mobile or fixed terminal Facilities shall not discharge treated wastes, deck drainage, containing oil or any synthetic-based fluids or sludge from tank farm, into or upon land or navigable waters of Nigeria.

(2) The method of disposal of oil treated waste shall be as specified in *Appendix III-4* to these Regulations.

Treatment of
Oil Wastes
to Achieve
Oil Removal
Efficiency.

51. Waste from the Facilities consisting of produced water and oil-based fluids, treated water or fluids, oil and water-based deck drainage shall be treated to achieve oil removal efficiency and the oil recovered from the treatment shall be recycled in accordance with the Agency's specifications as contained in *Appendix III-4* to these Regulations.

52. Storm water from 'storage tanks' enclosure and treated produced water or fluids, shall be monitored in accordance with the specifications contained in Table I-2 of Regulation 32 of these Regulations and analyzed to determine the oil content using the laboratory analysis procedures prescribed by the Agency in *Appendix II-4* to these Regulations.

Storm Water and Treated Produced Water or Fluid to be Monitored.

53. Owners or operators of Facilities under this Part from which oil or oily wastes are discharged into or upon land or navigable waters of Nigeria, are liable for specific damages resulting from the discharged oil and the removal costs incurred in a manner consistent with the National Oil Spill Contingency Plan.

Liability of Owners or Operators of Facilities for the Discharge of Oil or Oily Wastes upon Land or Navigable Waters.

54.— (1) The owner or operator of a Facility under this Part whose activities significantly and negatively impact the environment shall clean-up the pollution using the Risk-Based Corrective Action ('RBCA') approach and shall submit to the Agency a Post-Remediation Report using the Form contained in *Appendix II-6* to these Regulations.

Clean-Up Operation using the Risk-Based Corrective Approach and submission of Post Remediation Report.

(2) The procedures for the adoption and application of RBCA for remediation of polluted environment shall be in accordance with the procedures approved by the Agency in *Appendix III-3* to these Regulations.

(3) The clean-up contractor to be engaged by the Facility owner or operator shall be accredited by the Agency and the clean-up process monitored by the Agency.

55.— (1) Owners or operators of oil and gas terminals, shall regularly conduct oil spill response equipment audit and activate drills annually to determine preparedness to handle potential oil spill risk.

Oil Spill Equipment Audit and Annual activation of Drills.

(2) The Agency shall carry out annually OSCP or SPCCP activation drills or exercise to determine Facilities preparedness to handle potential oil spill risk and thereafter provide the owner or operator of the Facility with an assessment report.

(3) Further to the provisions of paragraphs (1) and (2) of this Regulation, the Agency shall, as considered appropriate, conduct periodic inspections of Facilities to ensure adequate stockpile of oil spill response equipment, safety checks and carry out general inspection of the environment in which the Facility is located.

Penalties.

56. Owners or operators of oil and gas terminals that fail to comply with any of the Regulations contained under this Part shall, in addition to the specific obligations required to remedy the breach of any of the Regulations including the obligations to carry out necessary clean-up operations and to furnish reports to the Agency, be liable for the payment of an amount of not less than Five Hundred Thousand Naira (N500,000.00) to the Agency for the account of the Government of the Federation for each day the violation continues.

**PART V—ENVIRONMENTAL MANAGEMENT FOR REFINERIES AND
PETROCHEMICAL PLANTS**

**Description
of
Operation.**

57.—(1) *Appendix 1-5* to these Regulations describes the activities of refineries and petrochemical plants in the mid-stream sub-sector of the petroleum industry and how refineries and petrochemical plants operations contribute to the problems of oil spill and discharge of oily wastes on land and navigable waters in Nigeria.

(2) The Regulations contained under this Part prescribe uniform best environmental management practices for the prevention, control and monitoring of oil spills and oil wastes discharges for refineries and petrochemical plants.

(3) In this Part, refineries and petrochemical plants are hereinafter referred to as 'Facility' or 'Facilities'.

**Effective
Environmental
Management
Practices.**

58. Owners or operators of refineries or petrochemical plants shall ensure that roles, responsibilities and authorities of personnel responsible for refinery and petrochemical operations are well-defined, documented and communicated to ensure for an effective environmental management practices.

**Spill
Prevention
Control and
Counter
Measures
Plan and Oil
Spill
Contingency
Plan.**

59. Owners or operators of Facilities shall prepare and have in written form a Spill Prevention Control and Counter Measures Plan ('SPCCP') and Oil Spill Contingency Plan ('OSCP') in accordance with specifications contained in *Appendices II-1* and *III-1* to these Regulations.

**Agency to
Approve
SPCCP and
OSCP Prior
to
Operation.**

60.—(1) A Facility shall not carry out any operation unless its OSCP and SPCCP have been prepared and approved by the Agency and implemented by the operator.

(2) A completed copy each of the OSCP and SPCCP shall be maintained at the Facility at all times during operations.

61. Whenever there is a change in the design, construction, operation or maintenance, which materially affects the potential of the Facility to discharge oil or oily wastes into or upon the land and or navigable waters of Nigeria, owners or operators of the Facility shall amend the SPCCP and OSCP in accordance with the requirements of these Regulations.

Changes to Facility Design to require Amendments to OSCP and SPCCP.

62.—(1) Owners or operators of Facilities shall take necessary measures to prevent, prepare for and respond to oil spills or oily wastes discharges that may occur in the course of operation through adequate monitoring.

Preparation for and Prevention of Oil Spills or Oil Waste Discharges.

(2) In meeting the requirements of paragraph (1) of this regulation, materials used in the construction, maintenance, repairs of Facilities must pass through stress test.

(3) All storage tanks bund walls are to be laden with leak-proof materials, of high standard and capable of accommodating 110% content of product without a spill over.

63.—(1) Any leakage, spill or discharge of oil or oily wastes shall be recorded and reported to the Agency within 24 hours.

Report and Record of Oil Spill, Oily Discharges, etc. to the Agency.

(2) The oil spill or oily wastes discharge report shall be furnished to the Agency using the 'Oil Spill Report Form' in the form contained in Appendix II -2 to these Regulations and in such details as may be prescribed from time to time in guidelines issued by the Agency.

64.—(1) A Joint Investigation Team ('JIT') comprising of the owner or operator of the Facility responsible for the discharge or spillage, a representative of the community, State Government representative and the Agency, shall be constituted within 24 hours of oil spill notification to visit the Facility and investigate the cause and extent of the spillage.

Investigation into the Cause and Extent of Spillage.

(2) A report of the findings of the JIT shall be produced by the Agency on the JIV Report Form as prescribed in the form contained in Appendix II-3 to these Regulations and endorsed by the JIT.

65.—(1) Where a leakage, seepage, discharge or spillage of oil or oily waste has occurred, the spilled oil or oily waste shall be removed or cleaned-up, by the owner or operator of the Facility from which the oil or oily waste is discharged, using the best practicable technology available.

Clean-Up Methods to be Approved by the Agency.

(2) The clean-up method adopted shall be approved by the Agency.

(3) The clean-up contractor to be engaged by the Facility owner or operator shall be accredited by the Agency and the clean-up process monitored by the Agency.

Tracking of
Oil
Movement
to Prevent
Danger to
Surrounding
Communities.

66. In the case of leakage, seepage, discharge or spillage due to rupture, corrosion, third party interference, tank overflow or malfunction of equipment in refining operations resulting in the discharge of oil or oily waste into or upon land or navigable waters of Nigeria, the operator of the Facility shall immediately activate the company's SPCCP and OSCP and commence appropriate, clean-up and monitoring measures to track the oil or material movement or spread of fire as may arise, to prevent potential harmful or dangerous impact to nearby facilities, communities or coastal areas.

Discharge of
Oily Wastes,
etc. on Land
or Navigable
Waters
Prohibited.

67.—(1) Owners or operators of Facilities shall not discharge treated effluent wastes, off-spec products, oily wastes, oily or organic sludge, spent catalyst, storm water, surface drainage, containing oil into or upon land or navigable waters of Nigeria.

(2) *Appendix III-4* to these Regulations contain the Disposal Plan for Oil Spills and Oily contaminated wastes and materials approved by the Agency for compliance by owners and operators of Facilities under this Part.

Treatment of
Oily Wastes
etc. to
Achieve all
Removal
Efficiency.

68. Waste from operations of Facilities consisting of oily contaminated solid wastes, spent catalyst, storm waters, surface drainages or off-spec products shall be treated to achieve oil removal efficiency satisfactory to the Agency and recovered oil from the treatment shall be recycled.

Monitoring
and Analysis
of Spent
Catalysts,
Oily
contaminated
Solid
Wastes, etc.

69. Spent catalyst, sludge, off-spec product, storm-water, surface drainage, oily contaminated solid wastes and treated process water, shall be monitored in accordance with the specifications contained in Table I-2 of Regulation 32 of these Regulations and analyzed to determine the oil content using the laboratory analysis procedures as set out in *Appendix II-4* to these Regulations.

Packaging
and Storage
of spent
Catalyst, Oil
contaminated
Solid
Wastes, etc
for
Treatment
Purposes.

70.—(1) Spent catalyst, oil contaminated solid wastes, off-spec products, sludge, storm water, surface drainage and treated waters and fluids shall be appropriately stored in containers for the purpose of treatment by the best current available technology to prevent the risk of oil spill or pollution of the environment prior to using the disposal method as may be approved by the Agency.

(2) Table 1-1 set out in Regulation 31 of these Regulations contains the acceptable levels of treatment for each category of oil waste water.

71. Owners or operators of Facilities from which oil or oily wastes are discharged into or upon land or navigable waters of Nigeria, are liable for specific damages resulting from the discharged oil and the removal costs incurred in a manner consistent with the National Oil Spill Contingency Plan.

Liability of Owners or Operators Refinery Facilities or Plants for specific Damages Resulting from Discharged Oil.

72.—(1) Owners or operators of any Facility whose operations significantly and negatively impact on the environment or cause oil seepage, spillage, leakage or discharge or impact with oil or oily wastes in any minor, significant or major proportion into or upon land, flood plains, upland valleys, reservoir or navigable waters of Nigeria, shall clean up the polluted environment using the Risk-Based Corrective Action ('RBCA') approach as contained in Appendix III-3 to these Regulations, and shall submit to the Agency a Post Remediation Report in the form contained in Appendix II-6 to these Regulations.

Clean-Up operations using Risk Based Corrective Action approach and Submission of Post Remediation Report.

(2) The Agency shall from time to time draw up and approve RBCA guidelines and procedures for adoption and application for remediation of oil polluted environment.

73.—(1) Owners or operators of Facilities with potentials for oil spills or oily waste discharges shall regularly conduct oil spill response and fire fighting equipment audit.

Oil Spill Equipment Audit and Annual Activation of Drills.

(2) The Agency shall carry out annually OSCP or SPCCP activation drills or exercise to determine Facilities preparedness to handle potential oil spill risk and thereafter provide the owner or operator of the Facility with an assessment report.

(3) Further to the provisions of paragraphs (1) and (2) of this regulation, the Agency shall, as considered appropriate, conduct periodic inspections of Facilities to ensure adequate stockpile of oil spill response equipment, safety checks and carry out general inspection of the environment in which the Facility is located.

74. Owners or operators of Facilities that fail to comply with any of the Regulations contained under this Part shall, in addition to the specific obligations imposed on them, including the obligations to carry out necessary clean-up operations of the areas of impact and to furnish reports to the Agency, be liable for the payment of an amount of not less than Five Hundred Thousand Naira (N500,000.00) to the Agency for the account of the Government of the Federation for each day the violation continues.

Penalties.

PART VI—ENVIRONMENTAL MANAGEMENT FOR BLENDING PLANTS

Description
of
Operations.

75.—(1) The activities involved in blending Plants operations and the oil spills and discharges from their operations are contained in *Appendix 1-6* to these Regulations.

(2) The Regulations contained under this Part prescribe uniform best environmental management practices for the prevention, control and monitoring of oil spills and waste discharges in activities and processes of blending plants.

(3) In this Part, blending plants include facilities, such as retention pits, bund-walls, bulk storage tanks, treatment units, pipelines, and portable fuelling or loading facilities (hereinafter in this Part, referred to as the 'Facility' or 'Facilities').

Spill
Prevention
Control and
(“SPCCP”)
Counter
Measure
Plan and Oil
Spill
Contingency
Plan
(OSCP).

76.—(1) Owners or operators of Facilities under this Part, shall prepare and have in written form SPCCP and OSCP in accordance with the requirements of these Regulations and guidelines issued from the time to time by the Agency.

(2) The SPCCP and OSCP shall be prepared in accordance with the specifications contained in *Appendices II-1* and *III-1* to these Regulations and shall apply when a Facility is in operation.

Agency to
Approve
SPCCP and
OSCP.

77.—(1) A Facility shall not operate unless the SPCCP and OSCP has been approved by the Agency and implemented by the operator.

(2) A completed copy of the SPCCP or OSCP shall be maintained at the Facility at all times during operations.

Changes to
Facility to
Require
Amendments
to SPCC
and OSCP.

78. Whenever there is a change in the design, construction, operation or maintenance schedule of a Facility under this Part which materially affects the Facility's potential for the discharge of oil or oily wastes or waste oil into or upon the land, flood plains, upland valleys, reservoir and navigable waters of Nigeria, owners or operators of Facilities shall amend the SPCCP and OSCP as provided in these Regulations or guidelines issued by the Agency from time to time.

Preparation
for and
Prevention
of Oil Spills
and
Discharges.

79.—(1) Owners or operators of Facilities shall take all necessary measures to prepare for and prevent the occurrence of oil waste discharges and shall put in place appropriate measures to respond to oil spills or oily waste discharges in their areas of operation.

(2) Owners or operators of Facilities shall comply with the provisions of *Appendix 11-1* to these Regulations.

80.—(1) Any discharge of oil or oily wastes shall be recorded and reported by the owners or operators of Facilities to the Agency within 24 hours on the Oil Spill response forms contained in *Appendix II – 2* to these Regulations.

Reports on
Discharge of
Oil or Oily
Wastes.

(2) The Agency may from time to time specify other information to be included in the reports referred to in paragraph (1) above in guidelines issued pursuant to these Regulations.

81. A Joint Investigation Team ('JIT') comprising of the owner or operator of the Facility responsible for the oil spill or discharge, representatives of the community, State Government and the Agency shall be constituted within 24 hours of the oil spill notification to visit and investigate the cause and extent of the spillage.

Investigation
into the
Cause and
Extent of Oil
Spill or
Discharge.

82.—(1) Where a spillage of oil or oily waste has occurred, the spilled oil or oily waste shall be removed and cleaned-up by the owner or operator of the Facilities from which the oil or oily waste is discharged, using the best practicable technology available, to the satisfaction of the Agency.

Clean-Up
operation by
Owner or
Operator
and
Monitoring
by the
Agency.

(2) The clean-up contractor to be engaged by the owner or operator of the facility shall be accredited by the Agency.

(3) A report on the clean-up operation in the form contained in Forms 'A', 'B' and 'C' of *Appendix 11-2* to these Regulations shall be furnished to the Agency.

83. In the case of fire out-break, equipment malfunction or accident at a Facility resulting in the seepage, spillage or discharge of oil into or upon land, flood plains, upland valleys, reservoir and navigable waters of Nigeria, the operator of the Facility shall immediately activate the company's SPCCP and commence appropriate control and monitoring measures to track the discharge to prevent potential negative impact on nearby communities and the environment.

Tracking of
Oil
Movement
to Prevent
Negative
Impact on
Surrounding
Communities.

84.—(1) Owners or operators of Facilities, including base oil or additives storage tanks, equipment for processing cooling water, spent catalyst, organic sludge, run-offs, separation equipment, gathering lines, and auxiliary non-transportation related equipment, shall not discharge any treated wastes into drainage or permit overflow of retention tanks or bund-walls, containing oil into or upon land, flood plains, swamp, upland valleys, reservoir and navigable waters of Nigeria.

Discharge of
Treated
Wastes, etc
on Land or
Navigable
Waters
Prohibited.

(2) *Appendix III-4* of these Regulations contains provisions for the disposal of oily contaminated wastes or materials.

Treatment of
Oily Wastes,
etc. to
Achieve Oil
Removal
Efficiency.

85.—(1) Waste from Facilities consisting of organic sludge, grease, spent water and oily solids, treatment fluids, storm or drainage water or run-off from process area shall be treated with the best available technology to achieve oil removal efficiency.

(2) Table I-1 of Regulation 31 of these Regulations sets out the acceptable levels of treatment for each category of wastes.

Monitoring
of Process
Water
Effluent,
Oily Solid
Waste, etc.

86. Process water effluent, organic sludge, grease, spent catalyst, oily solid waste, storm or drainage oily water and treatment fluids shall be monitored as set out in Table I-2 of Regulation 32 of these Regulations and analyzed to determine the oil content using the laboratory analysis procedures provided in *Appendix II-4* to these Regulations.

Liability of
Owners or
Operators of
Facilities for
the
Discharge of
Oil or Oily
Wastes, etc.

87. Owners or operators of Facilities from which oil or oily wastes are discharged into or upon land, flood plains, upland valleys, reservoirs and or navigable waters of Nigeria, are liable for specific damages resulting from the discharged oil, and the removal costs incurred in a manner consistent with the National Oil Spill Contingency Plan.

Post
Remediation
Report.

88.—(1) The owner or operator of Facilities shall clean-up the impacted site resulting from the oil spill or discharge of oily substances or materials and shall submit a Post Remediation Report to the Agency in the form contained in *Appendix II-6* to these Regulations.

(2) The Agency shall monitor all clean-up and remediation process.

Risk-Based
Corrective
Action.

89. The Risk-Based Corrective Action ('RBCA') approach shall be used to remediate oil-polluted sites in accordance with the procedures for adopting standard application of RBCA as prescribed by the Agency in *Appendix III-3* to these Regulations.

Oil Spill
Equipment
Audit and
Annual
Activation
of Drills.

90.—(1) Owners or operators of Facilities with potentials for oil spills and oily waste discharges shall regularly conduct oil spill response and fire fighting equipment audit.

(2) The Agency shall carry out annually OSCP or SPCCP activation drills or exercise to determine Facilities preparedness to handle potential oil spill risk and thereafter provide the owner or operator of the Facility with an assessment report.

(3) Further to the provisions of paragraphs (1) and (2) of this regulation, the Agency shall, as considered appropriate, conduct periodic inspections of Facilities to ensure adequate stockpile of oil spill response equipment, safety checks and carry out general inspection of the environment in which the Facility is located.

91. Owners or operators of Facilities shall provide appropriate safety measures to safeguard workers and Facilities inspection team from injury that may occur as result of oil spill or oily waste discharges, including other operational accidents or incidents.

Safety of
Workers and
Facility
Inspection
Teams.

92. Owners or operators of Facilities under this Part shall provide for the integrity of Facilities by ensuring that materials used for the construction of the Facilities meet standard specifications, in addition to ensuring that alarms, pressure valves and devices including other safeguards are installed in the Facilities.

Standard
Materials to
be used for
Construction
of Facilities
and Safety
Devices to
be provided
for.

93. Owners or operators of Facilities that fail to comply with any of the Regulations contained under this Part shall, in addition to the specific obligations imposed on them, including the obligation to carry out necessary clean up operation of the areas of impact and to furnish reports to the Agency, be liable for the payment of an amount of not less than Five Hundred Thousand Naira (N500,000.00) to the Agency for the account of the Government of the Federation for each day the violation continues.

Penalties.

PART VII—ENVIRONMENTAL MANAGEMENT FOR OIL AND GAS TRANSPORTATION

94.—(1) The processes and activities involved in oil and gas transportation and problems of oil spillage and discharges oily wastes connected with the transportation processes are contained in *Appendix 1-7* to these Regulations.

Description
of
Operations.

(2) The Regulations contained under this Part prescribe uniform best practices for the prevention, control and monitoring of oil spills and oil waste discharges in connection with oil and gas transportation.

(3) In this Part, oil and gas transportation facilities include fixed, mobile or portable facilities, such as oil and gas pipelines, loading systems, storage tanks, equipment for pumping, barges, rail-wagons, flow-lines, boats, SBMs, floating hoses, ships, tankers and loading vessels (hereinafter in this Part referred to as the 'Facility' or 'Facilities').

**Spill
Prevention
Control and
Counter
Measures
Plan.**

95. Owners or operators of Facilities shall prepare Spill Prevention Control and Counter Measures Plan ('SPCCP') in accordance with specification contained in *Appendix II-1* to these Regulations.

**Agency to
Approve
SPCCP Prior
to
Operation.**

96.—(1) A Facility shall not carry out any operation unless the SPCCP has been approved by the Agency and implemented by the operator.

(2) A completed copy of the SPCCP shall be maintained at the Facility at all times during operations.

**Effective
Environmental
Management
Practices.**

97. Owners or operators of Facilities shall ensure that roles, responsibilities and authorities of personnel to operate Facilities are well defined, documented and communicated for effective environmental management practices.

**Changes in
Facility to
Require
Amendments
to SPCCP.**

98. Whenever there is a change in the design, operation or maintenance of a Facility, which materially or physically affects the potential for the discharge of oil or oily wastes, into or upon land, flood plains, swamp, upland valleys, reservoir and or navigable waters of Nigeria, owners or operators of the Facility shall amend the SPCCP in accordance with the requirements of these Regulations or guidelines issued by the Agency from time to time.

**Preparation
for and
Prevention
of Oil Spills.**

99.—(1) Owners or operators of Facilities of fixed, mobile or portable configuration shall take steps to prevent, prepare for or respond to oil spills or oily wastes discharges that occur in the course of transportation.

(2) In meeting the requirement of paragraph (1) of this regulation, owners or operators of Facilities shall provide necessary accessories and equipment as prescribed by the Agency in *Appendix III-2* to these Regulations.

**Discharge of
Effluent
Treated
Wastes, Oily
Waste, etc.
Prohibited.**

100. Owners or operators of the Facilities shall not discharge effluent treated wastes, ballast water, oily wastes, oily or organic sludge, and storm water, surface drainage, containing oil into or upon land, flood plains, swamp, upland valleys, reservoirs and navigable waters of Nigeria.

**Report of
Oil Spill or
Discharge.**

101.—(1) Any leakage, spill or discharge of oil or oily wastes shall be recorded and reported to the Agency within 24 hours.

(2) The oil spill or oily wastes discharge report shall be made in an 'Oil Spill Report Form' as prescribed in *Appendix II-2* to these Regulations and in such details as the Agency may specify in guidelines issued from time to time.

102.—(1) A Joint Investigation Team ('JIT') comprising of the owner or operator of the Facility responsible for the oil spill or discharge, representatives of the community, the State Government and the Agency, shall be constituted within 24 hours of oil spill notification to visit the location of the discharge of oil or oily wastes and investigate the cause and extent of the spillage.

Investigation into the Cause and Extent of Oil Spill or Discharge etc.

(2) A report of the findings of the JIT shall be written on the prescribed JIV Form contained in *Appendix II-3* to these Regulations.

103.—(1) Where a leakage, seepage, discharge or spillage of oil or waste oil has occurred, the spilled oil or oily waste shall be removed or cleaned up, by the owner or operator of the Facility from which the oil or oily waste is discharged, using the best practicable available technology depending on the sensitivity of the environment.

Clean Up Operations to be Approved by the Agency.

(2) The Agency shall approve the clean up method adopted by owners and operators of the Facility and monitor the clean-up process.

104. In the event of leakage, seepage, discharge or spillage due to rupture, corrosion, third party interference, tanker collision or accident or malfunction of equipment resulting in the discharge of oil or oily waste into or upon land, flood plains, swamp, upland valleys, reservoirs and navigable waters of Nigeria, the operator of the Facility shall immediately activate the company's SPCCP and commence appropriate control, clean-up and monitoring measures to track the oil or material movement or spread of fire to prevent potential negative impact to nearby communities.

Tracking of Movement of Discharged Oil or Spillage, etc to Prevent Negative impact on Surrounding Communities.

105.—(1) Wastes from oil and gas transportation activities consisting of cleaning water, effluents, ballast water, oily waste, oily or organic sludge, storm water and surface drainage, containing oil shall be treated to achieve oil removal efficiency satisfactory to the Agency.

Treatment of Oily Wastes, etc to achieve Oil Removal Efficiency.

(2) Oil recovered from the treatment shall be recycled or disposed in the manner prescribed in *Appendix III-4* to these Regulations.

106. Ballast water sludge, cleaning water, storm water, surface drainage, oily contaminated solid wastes and treated water shall be monitored in accordance with the specifications contained in Tables I and 2 of regulation 31 of these Regulations and analyzed to determine the oil content using the laboratory analysis procedures contained in *Appendix II-4* to these Regulations.

Monitoring of Oil contents of Oily Wastes.

107. Ballast water, oil contaminated solid wastes, sludge, storm water, surface drainage and treated effluent waters shall be appropriately stored using the best available technology to prevent the risk of oil spill or pollution of the environment before treatment or disposal.

Storage, etc of Oily Wastes Prior to Disposal.

Liability of
Owners or
Operators
Oil and Gas
Transportation
Facilities for
the
Discharge of
Oil or Oily
Waste, etc.

108. Owners or operators of Facilities from which oil or oily wastes are discharged into or upon land, flood plains, swamp, upland valleys, reservoirs and navigable waters of Nigeria, are liable for specific damages resulting from the discharged oil and the removal costs incurred in a manner consistent with the National Oil Spill Contingency Plan.

Clean-Up
Operations
using Risk-
Based
Corrective
Action
approach
and
Submission
of Post
Remediation
Report.

109.—(1) The owners or operators of Facilities shall clean up the impacted site using the Risk-Based Corrective Action (RBCA) approach and shall in addition submit a Post Remediation Report to the Agency on the prescribed Form in *Appendix II-6* to these Regulations.

(2) *Appendix III-3* to these Regulations sets out the procedures for adoption and application of RBCA approved by the Agency for remediation of oil-polluted environment.

Audit of
Facilities and
Equipment.

110. Owners or operators of Facilities with potentials for oil spills or oily waste discharges shall, regularly conduct annual audit of their Facilities to determine preparedness to handle potential oil spill risks and submit reports to the Agency in such details and intervals as the Agency may prescribe by guidelines.

Safety of
Workers and
Facility
Inspection
Team.

111. Owners or operators of Facilities shall provide appropriate safety measures using the best available materials as prescribed in international codes of practice to safeguard workers and Facility inspection teams from injury due to oil spill and oily waste discharges or malfunction of equipment.

Standard
Materials to
be used for
Construction
of Facilities
and
Provision of
Safety
Devices.

112. To ensure the integrity of crude oil or products conveyed in pipelines, operators or owners of Facilities shall ensure that materials used for the construction of the Facilities meet the prescribed international standard with provision made for the installation of alarms, pressure valves and other such devices which are common and standard features of Facilities in the oil and gas transportation sector.

Penalties.

113. Owners or operators of Facilities that fail to comply with any of the Regulations contained under this Part shall, in addition to the specific obligation imposed, including obligation to carry out necessary clean-up operation of the areas of impact and to furnish reports to the Agency, be liable for the payment of an amount of not less than Five Hundred Thousand Naira (N500,000.00) to the Agency for the account of the Government of the Federation for each day the violation continues.

**PART VIII—ENVIRONMENTAL MANAGEMENT FOR OIL AND GAS DEPOTS
OR TANK FARMS**

114.—(1) Description of activities on the operations oil and gas depots and tank farms and the operational problems associated with their operations are contained in *Appendix 1-8* to these Regulations. Description
of
Operation.

(2) The Regulations contained under this Part are aimed at prescribing uniform best environmental management for the prevention, control and monitoring of oil spills and oily waste discharges from oil and gas depots or tank farms.

(3) In this Part, oil and gas depots or tank farms include fixed facilities, such as oil and gas storage tanks and associated facilities such as loading systems, loading trucks, loading arms, equipment for pumping, tankers, barges, Overhead or Underground Storage Tanks (USTs), pipelines (hereinafter in this Part, referred to as the 'Facility' or 'Facilities').

115. Owners or operators of Facilities under this Part shall prepare and have in written form a Spill Prevention Control and Counter Measures Plan ('SPCCP') or Oil Spill Contingency Plan ('OSCP') in accordance with the specifications contained in Appendices II-1 and III-1 to these Regulations. Spill
Prevention
Control and
Counter
Measures
Plan or Oil
Spill
Contingency
Plan.

116.—(1) The SPCCP or OSCP for a Facility shall not operate unless the SPCCP or OSCP has been approved by the Agency and implemented by the operator. Agency to
Approve
SPCCP or
OSCP.

(2) A copy of the SPCCP or OSCP shall be maintained at Facilities at all times during operation.

117. Owners or operators of Facilities shall ensure that roles, responsibilities and authorities of personnel responsible for operating the Facilities are well defined, documented and communicated for effective environmental management practices. Effective
Environmental
Management
Practices.

118. Whenever there is a change in a Facility design, or maintenance schedule, which materially or physically affects the potential or to cause the discharge of oil or oily wastes or waste oil into or upon land, flood plains, swamp, upland valleys, reservoir and navigable waters of Nigeria, owners or operators of the Facilities shall amend the SPCCP or OSCP in accordance with the provision of these Regulations and guidelines issued by the Agency from time to time. Changes to
Facility to
Require
Amendments
of SPCCP or
OSCP.

Preparation
for and
Prevention
of Oil Spills.

119.—(1) Owners or operators of Facilities shall take steps to prevent, prepare for or respond to oil spills or oily wastes discharges that may occur in their operational area.

(2) In meeting the requirements of paragraph (1) of this regulation, owners or operators of Facilities shall provide bund walls, stress concrete tanks, double-walled metal tanks, cathodic-protected lined pipes, booms and absorbents, control pressure valves, regulators and other relevant control materials and devices

Oil Leakage,
Spillage or
Oily
Discharge to
be Reported
to the
Agency.

120.—(1) Any leakage, spillage or discharge of oil or oily wastes from a Facility shall be recorded and reported to the Agency within 24 hours of occurrence.

(2) The report on the oil spill or oily wastes discharge shall be furnished to the Agency on the 'Oil Spill Report Form' on the forms contained in *Appendix II-2* to these Regulations.

Investigation
into Cause
and Extent
of Spillage.

121.—(1) A Joint Investigation Team ('JIT') comprising the owner or operator of the Facility responsible for the spillage, a representative of the community, State Government representative and the Agency, shall be constituted within 24 hours of oil spill notification to visit and investigate the cause and extent of the spillage.

(2) A report of the findings shall be written as prescribed in the JIV Form contained in *Appendix II-3* to these Regulations.

Clean-up
operations
using
Methods
Approved
by the
Agency.

122.—(1) Where a leakage, seepage, discharge or spillage of oil or waste oil has occurred, the spilled oil or waste oil shall be removed and cleaned up by the owner or operator of the Facility from which the oil or oily waste is discharged, using the best practicable technology depending on the sensitivity of the environment.

(2) The clean-up method adopted by owner or operator of the Facility shall be approved by the Agency and the clean up process shall be monitored by the Agency.

Tracking of
Oil
Movement
or Oily
Waste
Discharge to
Prevent
Danger to
Surrounding
Communities.

123. In the case of leakage, seepage, discharge or spillage due to rupture, corrosion, third party interference, tanker collision or accident or malfunction of equipment resulting in the discharge of oil or oily waste into or upon land, flood plains, swamp, upland valleys, reservoirs and navigable waters of Nigeria, the operator of the Facility shall immediately activate the company's SPCCP or OSCP and commence appropriate control, clean-up and monitoring measures to track the oil or material movement or spread of fire to prevent potential harmful and negative impact on nearby infrastructure and human settlement.

- 124.** Owners or operators of Facilities shall not discharge any treated effluent wastes, drainage oily water or sludge, oily wastes, oily or organic sludge, containing oil, into or upon land, flood plains, swamp, upland valleys, reservoirs and navigable waters of Nigeria.
- 125.—**(1) Wastes from Facility consisting of cleaning water, effluents, oily wastes, oily or organic sludge, storm water and surface drainage, containing oil shall be treated to achieve oil removal efficiency satisfactory to the Agency and in accordance with specifications provided by the Agency.
- (2) The oil recovered from the treatment shall be recycled.
- (3) Table III-1 of Regulation 31 of these Regulations contains the acceptable levels of treatment for each category of wastes prescribed by the Agency.
- 126.** Oily sludge, cleaning water, storm water, surface drainage, oily contaminated solid wastes and treated effluent water, shall be monitored in accordance with the specifications contained in Table II-2 of Regulation 32 of these Regulations and analyzed to determine the oil content using the laboratory analysis procedures set out in *Appendix II-4* to these Regulations.
- 127.—**(1) Oil contaminated solid wastes, sludge, storm water, surface drainage and treated effluent waters, shall be appropriately stored and transported to an integral depot Facility for treatment by the best available technology to prevent the risk of oil spill or pollution of the environment
- (2) *Appendix III-4* to these Regulations contains the disposal plan for oil spills and oily contaminated wastes or materials.
- 128.** Owners or operators of Facility from which oil spills or oily wastes are discharged into or upon land, flood plains, swamp, upland valleys, reservoirs and navigable waters of Nigeria, are liable for specific damages resulting from the discharged oil, and the removal costs incurred in a manner consistent with the National Oil Spill Contingency Plan.
- 129.—**(1) Owners or operators of Facilities shall, in carrying out any clearing up or clean-up of the polluted areas, use the Risk-Based Corrective Action (RBCA) approach and submit a mandatory Post Remediation Report to the Agency in the form and substance contained *Appendix II-6* to these Regulations.
- (2) The procedures for the adoption and application of RBCA for remediation of polluted environment, approved by the Agency, are contained in *Appendix III-3* to these Regulations.

Discharge of
Effluent
Wastes,
Oily Waste,
etc
Prohibited.

Treatment
of Oily
Waste to
Achieve Oil
Removal
Efficiency.

Monitoring
of Oily
Wastes to
Determine
Content.

Storage of
Oily Wastes
for
Transportation
or
Treatment
Purposes.

Liability of
Owners or
Operators
for Oil
Spills or
Discharge of
Oily Waste.

Clean-Up
Operations
and
Submission
of Post
Remediation
Report.

**Equipment
Audit and
Annual Drill
Exercise.**

130.—(1) Owners or operators of Facilities with potentials for oil spills or oily waste discharges, shall regularly conduct oil spill response and fire fighting equipment audit and carry out drill exercises annually to ensure preparedness to handle potential oil spill risks.

(2) Owners or operators of Facilities shall furnish reports to the Agency on the audit and drill exercise carried out in such form and details the Agency may require.

**Safety of
Workers and
Inspection
Team.**

131. Owners or operators of Facilities shall provide appropriate safety measures to safeguard workers and Facility inspection teams from harm due to oil spill and oily waste discharges and of equipment malfunctioning.

Penalties.

132. Operators or owners of Facilities that fail to comply with any of the Regulations under this Part shall, in addition to the specific obligations imposed in this Part, including the obligation to clean up and furnish reports to the Agency, pay an amount of not less than Five Hundred Thousand Naira to the Agency for the account of the Government of the Federation for each day the contravention continues.

**PART IX—ENVIRONMENTAL MANAGEMENT FOR RETAIL OUTLETS
AND ASSOCIATED FACILITIES**

**Description
of
Operation.**

133.—(1) The operations of retail outlets and associated facilities operations and problems of oil spills and oily discharges during operations are contained in *Appendix 1-8* to these Regulations.

(2) The Regulations contained under this Part, prescribe uniform best environmental management for the prevention, control and monitoring of oil spills and oily waste discharges in the course of retail outlets and associated facilities' operations.

(3) In this Part, retail outlets and associated activities include oil and gas storage or pumping systems, petroleum product loading or dispensing trucks, hoses, equipment for dispensing products, cars, jerry cans, surface or underground storage tanks, pipelines mechanic workshop or car wash (hereinafter in this Part referred to as the 'Facility' or 'Facilities').

**Preparation
of Spill
Prevention
Control and
Counter
Measures
Plan.**

134. Owners or operators of Facilities shall prepare a Spill Prevention Control and Counter Measures Plan ('SPCCP') in writing as prescribed by the Agency in the form contained in *Appendix II-1* to these Regulations.

135.—(1) The SPCCP for the Facilities shall apply at all times and a Facility shall not operate unless the SPCCP has been approved by the Agency and implemented by the operator.

Agency to
Approve
SPCCP.

(2) A copy of the SPCCP shall be maintained at the Facility at all times during operations.

136. Owners or operators of Facilities under this Part, including mechanic workshops or car wash, USTs, loading or dispensing arms, shall ensure that roles, responsibilities and authorities of personnel responsible for carrying out the operations of the Facilities are well defined, documented and communicated for effective environmental management.

Effective
Environmental
Management
Practices.

137. Whenever there is a change in the design, construction, operation or maintenance schedule of a Facility, which physically or materially affects the potential to cause the discharge of oil or oily wastes into or upon land, flood plains, swamp, upland valleys, reservoirs and navigable waters of Nigeria, owners or operators of such Facilities shall amend the SPCCP as set out in *Appendix III-1* to these Regulations.

Changes in
Facility to
Require
Amendments
to SPCCP.

138.—(1) Owners or operators of Facilities under this Part, including mechanic workshops or car wash, shall take steps to prevent and respond to oil spills or oily wastes discharges that occur in their operational areas.

Preventive
Measures
for Oil Spills
and Oily
Wastes.

(2) In meeting the requirements of paragraph (1) of this regulation, owners and operators of the Facilities shall ensure that Underground Storage Tanks (USTs) are lined with impermeable materials, spacious enough to contain products without allowing an overflow or seepage and also ensure that the tanks are double-walled.

(3) USTs shall be routinely monitored by the Agency to ascertain the integrity of in-built cathodic protection systems.

139.—(1) Any leakage, spillage or discharge of oil or oily wastes from Facilities under this Part shall be recorded and reported to the Agency within 24 hours.

Oil Spillage
or Oily
Discharge to
be Reported
the Agency.

(2) The report shall be furnished to the Agency in the 'Oil Spill Report Form' contained in *Appendix II-2* and providing such details as the Agency may from time to time prescribe in guidelines.

140.—(1) A Joint Investigation Team ('JIT') comprising of the owner or operator of Facility shall be constituted within 24 hours of spill notification to visit and investigate the cause and extent of the spillage.

Investigation
into the
Cause and
Extent of a
Spillage.

(2) A report of the findings of the JIT shall be written on the JIT Report Form as contained in *Appendix II-3* to these Regulations.

Clean-Up
Operations
using
Methods
Approved
by the
Agency.

141.—(1) Where a leakage, seepage, discharge or spillage of oil or waste oil has occurred, the spilled oil or waste oil shall be removed or cleaned up by the owners or operators of the Facilities using the Best Available Technology (BAT) approved by the Agency depending on the sensitivity of the environment:

(2) The Agency shall also monitor the clean-up process.

Construction
of New
Underground
Storage
Tanks
(USTs) in
Nigeria to
be approved
by the
Agency.

142.—(1) Owners or operators of Facilities under this Part shall seek approval from the Agency on the design specifications for the construction of all new USTs in the country.

(2) Existing USTs are to be monitored to ensure conformity with the approved design specifications as soon as such Facilities are due for integrity test.

Tracking of
Oil
Movement
or Oily
Waste
Discharges
to Prevent
Danger to
Surrounding
Communities

143. In the case of leakage, seepage, discharge or spillage due to rupture, corrosion, third party interference, truck collision or accident or malfunction of equipment resulting in the discharge of oil or oily waste into or upon land, flood plains, swamp, upland valleys, reservoirs and navigable waters of Nigeria, the operator of the Facility shall immediately activate the company's SPCCP and commence appropriate control, clean-up and monitoring measures, to track the oil or material movement or spread of fire to prevent potential impact on nearby infrastructure and human settlement.

Discharge of
Treated
Effluent
Wastes,
Drainage
Oily Water,
etc.
Prohibited.

144.—(1) Owners or operators of Facilities shall not discharge treated effluent wastes, drainage oily water or sludge, oily wastes, oily or organic sludge, containing oil into or upon land, flood plains, swamp, upland valleys, reservoirs and navigable waters of Nigeria.

(2) The acceptable levels of treatment and disposal for each category of wastes are as prescribed in Table 1-1 of Regulation 31 and *Appendix III-4* to these Regulations.

Treatment of
Oily Wastes
to Achieve
Oil Removal
Efficiency.

145.—(1) Wastes from Facilities under this Part consisting of cleaning water, effluents, oily wastes, oily or organic sludge, and storm water, surface drainage, containing oil shall be treated to achieve oil removal efficiency satisfactory to the Agency and in accordance with specifications prescribed by the Agency.

(2) Oil recovered from the treatment shall be recycled.

(3) Oily sludge, cleaning water, storm water, surface drainage, oily contaminated solid wastes and treated waste water, shall be analyzed to determine the oil content using the laboratory analysis procedures provided in *Appendix II-4* to these Regulations.

146. Oil contaminated solid wastes, sludge, storm water, surface drainage and treated waste waters, shall be appropriately stored and transported to a properly constructed integral depot facility for treatment using the best available technology to prevent the risk of oil spill and negative impact on the environment before disposal.

Storage of Oil Contaminated Solid Wastes, etc for purposes of Treatment and Disposal.

147. Owners or operators of Facilities from which oil spills or oily wastes are discharged into or upon land, flood plains, swamp, upland valleys, reservoirs and navigable waters of Nigeria, are liable for specific damages resulting from the discharged oil, and the removal costs incurred in a manner consistent with the National Oil Spill Contingency Plan.

Liability of Owners or Operators of Facilities for Oil Spills and Oily Discharge.

148.—(1) Owners or operators of Facilities shall clean up the polluted area using the Risk-Based Corrective Action ('RBCA') approach and shall submit a mandatory Post Remediation Report to the Agency.

Clean Up Operations using the Risk-Based Corrective Action Approach.

(2) The procedures for adoption and application of RBCA for remediation of impacted locations, as approved by the Agency, are contained in *Appendix III-3* to these Regulations.

149.—(1) Owners or operators of Facility with potentials for oil spills or oily waste discharges shall regularly conduct oil spill response and fire fighting equipment audit.

Equipment Audit and Annual Drill Exercise.

(2) The Agency shall carry out annually OSCP or SPCCP activation drills or exercise to determine Facilities preparedness to handle potential oil spill risk and thereafter provide the owner or operator of the Facility with an assessment report.

(3) Further to the provisions of paragraphs (1) and (2) of this regulation, the Agency shall, as considered appropriate, conduct periodic inspections of Facilities to ensure adequate stockpile of oil spill response equipment, safety checks and carry out general inspection of the environment in which the Facility is located.

150. Owners or operators of Facilities shall provide appropriate safety measures to safeguard workers and Facility inspection team, from harm due to oil spill and oily waste discharges and malfunctioning of equipment.

Safety of Workers and Inspection Team.

151. Owners or operators of oil and gas retail outlets who fail to comply with the Regulations contained under this Part shall, in addition to the specific obligations and responsibilities imposed under this Part, including the obligation

Penalties.

to clean up and furnish report to the Agency, be liable to pay an amount of not less than Five Hundred Thousand Naira (₦500,000.00) to the Agency for account of the Government of the Federation for each day the contravention continues.

PART X — MISCELLANEOUS PROVISIONS

Amendments,
etc.

152. The Agency may, from time to time, amend the provisions of these Regulations by notice in the *Official Gazette*.

Issuance of
Guidelines
by Agency.

153. The Agency may issue guidelines to provide clarifications as may be required on the provisions of these Regulations.

Interpretation.

154. In these Regulations—

“*Act*” means the National Oil Spill Detection and Response Agency Act 2006 ;

“*Facility Inspection*” includes audit of oil spill response equipment, safety checks and general inspection of the environment within which the facility is located ;

“*Government of the Federation*” include the Federal, States, and Local Governments of the Federal Republic of Nigeria ;

“*guidelines*” include any instruction or administrative clarification as may be issued from time to time for the proper implementation of the provision of these Regulations ;

“*Minister*” means the Minister charged with the responsibility for matters pertaining to the environment.

“*Oil Spill Drill*” means a practice of what to do in an oil spill emergency which may not necessarily involve the deployment of equipment or personnel ;

“*Oil Spill Exercise*” means an activity designed to achieve a particular result in an oil spill emergency, involving deployment of either personnel, equipment or both.

Citation.

155. These Regulations may be cited as the Oil Spill and Oily Waste Management Regulations, 2011.

APPENDIX 1-1

REGULATORY AND LEGAL FRAMEWORK

1.0. The petroleum sector of the Nigerian economy consists of interdependent activities, which include exploration, production, transportation, refining and marketing. Whereas the sector, no doubt, provides the engine for significant economic growth through contributions to national revenue, virtually all the activities in this sector are not only prone to pollution of the host environment but have also readily provoked social discord.

1.1. Of particular importance and concern are the discharges of oil and oily waste from oil and gas activities. And in the effort to curb pollution of land and water resources, governments all over the world have enacted national laws, regulations, guidelines and standards to control and manage the operations of the Petroleum Sector to achieve sustainable development.

1.2. In Nigeria, environmental guidelines and standards have been established by appropriate authorities to regulate the operations in the Petroleum Sector. However, with increasing oil and gas activities in the new horizons of the deep and ultra-deep offshore areas, the Inland Basins of Chad, and Anambra, coupled with the proliferation of surface and underground petroleum storage tanks in the downstream sector as well as the restructuring of the Petroleum Sector; it becomes imperative to review and update the existing environmental regulations for the petroleum sector, to make them conform with the new challenges

1.3. Existing regulations for Oil Spill and Oily Waste management are constantly being reviewed to reflect new advances in technology and better understanding of the interaction between anthropogenic activities and the environment.

A. *Legal Framework*

1.0. The preparation of Regulations for oil spill and oily waste Management in the Nigerian petroleum sector is enabled by the Act No. 15 of 2006 establishing the National Oil Spill Detection and Response Agency (NOSDRA). Section 26 of the NOSDRA establishment Act, 2006, mandated the Agency, upon the approval of the governing board, to make regulations that are necessary or expedient for giving full effect to the provisions of the Act and for the due administration of its provisions.

1.1. Authority for the development and implementation of the earlier regulations was derived from National and International Laws, Conventions and Protocols. These are :

- * Petroleum Act No. 51, 1969

- * The Oil Terminal Dues Act No. 9, 1969
- * Oil in Navigable Waters Act No. 34, 1968
- * Oil Pipeline Act, 1956
- * Federal Environmental Protection Agency Act No. 58, 1988 (Repealed 2007)
- * Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (London Convention) 1976
- * International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL), 1954
- * International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), 1990
- * Environmental Impact Assessment Act, 1992
- * Harmful Wastes (Special Criminal Provisions, etc) Act, 1988

APPENDIX 1-2

EXPLORATION, PRODUCTION AND DEVELOPMENT

1.0. Activities in the Exploration and Development sub-sector of the petroleum industry include seismic survey, drilling and well completion, which may be carried out on dry land, swamp, shallow coastal waters and estuaries, including shallow off-shore and deep or ultra deep off-shore waters.

2.0. Exploration.

1.1. Seismic survey uses sound waves to locate and map sub-surface structure to determine the potential for oil or gas accumulation which can be accomplished through the use of dynamite on land now being replaced by vibrators to create sound waves. At sea, powerful air and water guns are the main energy sources. On land, the sound waves are detected by an array of geophones, while in water, they are captured in hydrophones.

1.2. Wells are drilled into substructures where petroleum is trapped to determine the nature and extent of potential hydrocarbon reservoirs. Exploratory and appraisal drilling is performed with a rotary drill bits outfitted to a mobile rig, designed to operate either on land, swamp, coastal waters or deep or ultra deep off-shore waters.

1.3. The drilling rig is equipped with four main sub-systems of equipment to bore the hole viz, power, hoisting, rotating and circulating. These are in addition to supporting facilities for the work crew.

1.4. Drilling of holes is accomplished by the use of three types of drilling fluids-water based fluid (WBF), oil based fluid (OBF), and synthetic based fluid (SBF).

The fluids are constantly circulating medium of communication to the surface of down-hole conditions thus providing warnings of impending kicks and formation leaks or fractures (lost-circulation).

1.5. Mud is a mixture of clays, chemicals and WBF, OBF or SBF, all carefully formulated for optimum performance in a given well. Basic mud compounds include bentonite (clays), barium sulphate (barite) and lime or caustic soda for pH control. Also added are materials to enhance lubrication and emulsification.

2.0. Development.

2.1. Development of a reservoir shown to contain hydrocarbon from exploratory drilling involves the drilling of a large number of holes, 6 to 30, usually in a fixed pattern from a platform, which could be fixed or mobile. Recent advances in technology have made it possible to drill horizontal as well as vertical wells to increase reservoir drainage.

C. SOURCES OF OIL SPILL AND OILY WASTES

1.0. SEISMIC ACTIVITIES

1.1. Oil spill and oily wastes discharges could occur from refueling and maintenance of engines of seismic survey trucks on land or seismic survey vessels on water with the potential volumes expected to be minor.

2.0. EXPLORATION, PRODUCTION AND DEVELOPMENT OPERATIONS.

2.1. General

2.1.1. Exploration, production and development operations are prone to oil spills and oily wastes discharges. These could result from a well blow-out, discharge of drilling muds or fluids, drill cuttings, deck drainage and well treatment fluids.

2.2. DRILLING MUD SYSTEMS

2.2.1. These are suspensions of solids and dissolved materials in water, oil or synthetic fluid base that are used to maintain hydrostatic pressure control in the well bore, lubricate the drill bit, remove drill cuttings from well bore and stabilize the walls of the well bore during drilling or work-over operations. Three types of mud systems are in use in Nigeria; water based mud (WBM), oil based mud (OBM), and synthetic based mud (SBM).

2.2.2. Water based mud consists of natural clays and additives (organic and inorganic) to achieve proper density, viscosity and lubrication characteristics. From pollution standpoint, ferrochrome lignosulphate (chromium pollution) and lead compounds are of major concern.

2.2.3. Oil based mud contains oxidized asphalt, organic acids, alkali, stabilizing agents and low toxic oil (<10%). Clay solids and weighting agents can also be added. Also used are mud emulsions consisting of oil-in water or water-in oil varieties.

2.2.4 Synthetic Drilling Mud Systems include five (5) generic types, which are used to deliver not only optimal performance in more challenging drilling conditions, but also best environmental performance in terms of toxicity, biodegradability and bio-accumulation potentials. These are :

- * Acetyl
- * Internal Olefins (IO)
- * Ester Based Fluids (EBF)
- * Linear Alpha Olefins (LAO)
- * Poly Alpha Olefins (PAO)

2.3. DRILL CUTTINGS

2.3.1. Drill cuttings consist of various rocks, particles and liquids released from geological formations in the well bore. TABLE II – 1 of this *Appendix* shows the estimated volumes of drill cuttings produced and drilling mud required in a typical drilling operation.

TABLE II-1 : ESTIMATED VOLUMES OF CUTTINGS PRODUCED AND REQUIRED Mud

<i>Drilling Interval (m)</i>	<i>Hole Size (cm)</i>	<i>Volume of Cuttings Produced (bbl)</i>	<i>Weight of Cuttings Produced (MT)</i>	<i>Mud Used</i>	<i>Weight of Components (MT)</i>
0.35	61	600	223	Fresh water/ Bentonite mud	106
305-1372	56	1,700	631	- do -	136
1372-3350	38	1,500	557	+chrome free Lignosulphate	228
3350-4054	23	190	71	- do -	41
<i>Total</i>	-	3,900	1,482	- do -	511

2.3.2. When brought to the surface, drill cuttings are usually contaminated with drilling fluid (mud), and are shaken on sieves to regain the fluid. However, some fluid still remains on the cuttings even after additional washing

procedures. The recovered fluid is recycled to be used again and the cuttings with some residual fluid may be discharged to seabed or taken ashore for treatment or re-injected into appropriate wells and reservoir.

2.4. OIL SPILLAGE

2.4.1. Oil spillage may result from exploration, production and development operations. When it occurs, large volumes of oil are released into the environment especially if caused by a well blow-out.

2.4.2. Deck drainage which results from precipitation runoff contains oil from miscellaneous leakages and spills from drilling equipment and wash-down of drill ship or platform.

3.0. POTENTIAL WASTE STREAMS IN EXPLORATION AND DEVELOPMENT

3.1. Identified waste streams in Exploration and Development activities include-drill cuttings, drilling fluids, deck drainage, well test, treatment fluids, oily debris, sanitary wastes and oil spills.

APPENDIX 1-3

PRODUCTION OPERATION AND SOURCES OF OIL SPILLS AND OILY WASTES

1. PRODUCTION OPERATION

1.0. After a well is drilled and established to be productive, the mobile unit is then replaced by a fixed installation.

1.2. Hydrocarbon fluids move to the surface through tubing contained within the cased borehole. Energy to lift fluids can be provided by natural formation pressures or various induced mechanical means. The most commonly used is fluid injection method by forcing gas into oil stream, which reduces hydrostatic fluids density of oil trapped in the reservoir for a lift to the surface through pumps.

1.3. Pressurized hydrocarbons occur as oil, natural gas and salt water (brine). The mixture is separated on the surface into individual components at various process stages, which also contains suspended or dissolved solids.

1.4. A reduction on pressure above the liquid phase ensures the release of gas which is often dissolved in oil. This is so because oil from high pressure well can only be free of gas at several stages of decomposition. Oil and brine which occur sometimes in emulsion due to vigorous mixing or natural occurrence is propelled to surface by use of moderate heat, chemical addition, electric charge, or quiescence settling. A bored gas well produces dry gas and also varied quantities of light hydrocarbons called gas liquid or condensate.

1.5. Produced gas and oil can be fed into gas pipelines or used as crude oil for export and refinery or petrochemical inputs respectively.

2. SOURCES OF OIL SPILLS AND OILY WASTES

2.1. The discharges from production operations include oily effluents and accidental oil spills.

2.2. Liquid or Aqueous wastes may occur from leakage at producing and abandoned wells, manifolds, SPMS/SBM, rupture, piping or storage facilities (tank overflow), corrosion, accidental spills, produced formation water, deck drainage, etc.

2.3. Oily wastes can be generated during routine maintenance, third party interference, equipment malfunction and from workmen or cleaning of facilities or accommodation drainage, which are primarily polluted with oil and grease.

2.4. Waste streams in Production Operations include-produced formation water, oily waste water, oil spills and oiled absorbents.

APPENDIX 1-4

TERMINAL OPERATIONS

1.0. Terminal activities involve the storage, dehydration, fiscalisation and dispensing of crude oil for export or local use in refineries and petrochemical industries. These require the installation and operation of facilities such as storage tank, piping system, pumping equipment, and dehydration equipment including water treatment equipments, loading and metering systems.

2.0. For best environmental management operations, regulations and guidelines are established for the prevention, control and monitoring of oil spills and oily wastes discharges.

B. DESCRIPTION OF OPERATIONS

1.0. STORAGE AND PUMPING

1.1. Cylindrical, vertical or horizontal steel tanks with fixed or floating roof steel tanks are designed and used for the storage of crude oil, some of which have the capability of storing crude oil as much as 600,000 barrels.

1.2. The terminal tanks are equipped with the main loading pumps powered by diesel or gas turbines and gas combustion engines (booster pumps), with connecting pipelines from land, swamps and offshore. Network of pipelines convey crude oil to platforms Berth Operating Platform (BOP), from where the lines continue to underwater manifolds. Submarine hoses link the manifolds to SPMS/SBM, where tankers of loading capacity of about 320,000 tones can be loaded.

2.0. DEHYDRATION

2.1. Dehydration processes take place in oil or water separating chambers or devices for expulsion of produced formation water from crude oil required for export or processing or refining so as to keep it dry. Total water drainage capacity per tank farm or terminal can be as high as 150,000 barrels per day.

C. SOURCES OF OIL SPILLS AND OILY WASTES

1.0. OILY SUBSTANCES OR LIQUID WASTES

1.1. The following are sources of oily water or substances from terminal operations.

- o Oil spill-leakages from pipe, hose burst, malfunction or faulty equipment, corrosion, maintenance operation etc.
- o Discharges from treatment facilities of oily brine formation water.
- o Storm water run-off.
- o Vessels for ballast, bilge and cleaning waste.
- o Discharge of refined products from service vessel.

2.0. SOLID WASTE

2.1. Significant sludge from clean-up tanks and water heaters, garbage, spent oil, grits, dirt, etc could be produced.

3.0. TYPES OF WASTE STREAM IN TERMINAL OPERATIONS

3.1. The potential waste streams in terminal operations include formation water, sludge, garbage, spent oil, grits, dirt, oily storm water run-off, refined products, oiled debris and liquid wastes, sanitary sewage.

APPENDIX 1-5

REFINING OPERATIONS

1.0. The petroleum refining processes consist of separation of crude oil molecular constituents, molecular cracking and rebuilding including solvent finishing and in the refining processes of crude oil, gaseous, liquid and solid effluents are discharged into the environment.

B. DESCRIPTION OF REFINING OPERATIONS

2.0. Petroleum Refining can be grouped into topping, fuel oil, gasoline, lube oil and petrochemical operations.

2.1. The fuel oil or gasoline refineries involve crude desalting, topping or skimming (atmospheric pressure distillation), and crude distillation which separate the feed into straight run fractions, with the ultimate production of fuel oil and gasoline.

2.2. Other processing units include light end treating and recovery, hydro-treaters for crude distillation cuts, naphtha upgrading, thermal cracking and sulphur recovery. Crude oil and products are stored in above ground storage tanks.

2.3. The lube oil refinery operations consist of the vacuum distillation of raw lube oil fractions at two separate units to produce asphalt and heavy lube oil (bright stock). The de-asphalted lube oil is further treated at several units for improved quality of the lube oil stocks which are blended to produce various lube oil products.

3.0. Refineries in Nigeria: (Four (4) Petrochemical Plants operate in Nigeria-one in Kaduna, two in Ekpan-Warri and one at Eleme-Port Harcourt respectively. See (Table 1-2).

3.1. The Kaduna Plant uses UOP technology, which involves purification of straight run kerosene by de-sulphurization and denitrification, extraction or dehydrogenation of normal paraffin into Linear Olefins, which are alkylated for detergent production. It is a 30,000 metric ton capacity plant.

3.2. The Carbon Black Plant in Warri is of 18,000 metric ton per year capacity, and is designed on the Philip's Petroleum Oil furnace technology design, where decant oil fed through fluid catalytic cracking unit is used to produce grades of hard carbon black.

3.3. Alkylate will be produced using catalytic HF Alkylation of Iso-butane with butane in the Philips HF Alkylation's process.

3.4. Also, at the Warri Plant, Polypropylene (co-polymers and homo-polymers) are produced by catalytic polymerization of purified propylene feed utilizing the EL Paso process.

3.5. At the Eleme Petrochemical Plant, other refining operations include the Gas Conversion and Processing Plant, Ethylene Processing Plant, etc.

TABLE V-1 : REFINERIES IN NIGERIA

<i>Refinery</i>	<i>Daily Refining Capacity</i>	<i>Category</i>
Port Harcourt (old)	60,000 Bbls/stream day	Fuel oil/Gasoline
Port Harcourt (New)	150,000 Bbls/stream day	Fuel oil/Gasoline
Warri (Ekpan)	125,000 Bbls/stream day	Fuel oil/Gasoline
Kaduna	110,000 Bbls/stream day	Fuel oil/Gasoline and Lube oil with Wax moulding Tin/Drum manufacturing and sulphur making units.

C. SOURCES OF OIL SPILLS AND OILY WASTES IN REFINING OPERATIONS

4.0. Oil spills and oily wastes are derived from three sources in the refinery and petrochemical operations viz: fuel oil or gasoline, lube oil and petrochemical processes.

4.1. FUEL OIL OR GASOLINE AND LUBE OIL REFINING PROCESSES

4.1.1. Free oil, grease and oily wastes are derived from processing areas, oily water effluents, storm water or run-offs and solid wastes. Others in this category are cleaning water, ship's ballast, spent oil, storage tank failures and contaminated process water.

4.1.2. Solid Wastes contaminated with fuel oil and gasoline products include refuse, silt from drainage channels, solids from maintenance and cleaning operations, sludge from treatment facilities or storage tanks, scraps and entrained solids in the crude or product as sludge.

4.2. PETROCHEMICAL REFINERY

4.2.1. The major sources of oil spillage and oily wastes discharges into the environment include process water, accidental spillages, piping leakages, cleaning water, storage tank failures and storm water run-off.

4.2.2. Other sources of oily wastes are Carbon Black Reactor, Dryer, Bag Filter, Ash Sludge, Homo co-polymer Reactor Extrusion and Off-spec products.

4.3. POTENTIAL WASTE STREAMS IN PETROLEUM REFINING AND PETROCHEMICALS INDUSTRIES

4.3.1. These include free oil, process water, grease, storm water run-off, effluents, storage tank sludge, solid wastes-refuse, silt, scraps.

APPENDIX 1-6

BLENDING PLANT

1.0. Blending Plants are where petroleum products such as petrol engine oil, diesel engine oil, hydraulic oil, grease, etc are manufactured with attendant environmental pollution, which should be managed and controlled.

1.1. The authority to prescribe regulations and uniform environmental management practices for the prevention, control and monitoring of associated oil spills and oily wastes in Blending Plant operations is derived from the National Oil Spill Detection and Response Agency (Establishment) Act No. 15 of 2006.

B. DESCRIPTION OF OPERATIONS

2.0. The operational processes of Blending Plants consist of storage of base stocks in storage tanks, mixing or blending of base oil of different categories and additives to produce the finished products usually petrol or diesel engine oil, transmission or grease oil, hydraulic oil, storage and packaging of finished products through tanks, drums, cans and bulk loading.

C. SOURCES OF OIL SPILLS AND OILY WASTES IN BLENDING PLANTS

3.0. The sources of wastes in blending plants include liquid wastes such as run-off at filling points, leaks and spillages due to equipment failures or corrosion, process water, storm water and solid wastes occurring as base oil or sludge from storage tanks, metallic, glass or plastic and paper containers, oil or water separators.

Pipeline spills are as a result of corrosion due to age of equipment, loose joints and burst pipes.

3.1. TYPES OF WASTES FROM BLENDING PLANTS

3.1.1 These include base oil or sludge, metallic materials, glass, plastic and paper containers, grease, process storm water and run-off liquid wastes, etc.

APPENDIX 1-7

OIL AND GAS TRANSPORTATION

The transportation of oil and gas is achieved through pipelines, ships, coastal barges, road tankers, rail-wagons, etc. The potential and associated adverse effect of oil spills and oily wastes from the various transportation operations on the environment, no doubt have had their economic and social implications.

3.2. To minimize the resultant negative impacts of oil spillages and oily wastes pollution from this sector in Nigeria, the identified causes must be controlled, thus necessitating these Regulations and Guidelines.

3.3. Discharges of crude oil or petroleum products could arise from overflow of storage tanks during products reception, leakages from loading arms, pumps and malfunctioning, inefficient oil separators.

4.0. TANK FAILURE

4.1. Oil spill and Oily Waste discharges could occur as a result of differential settlement and corrosion due to age of tank, design errors or water at tank bottom.

5.0. SURFACE DRAINAGES

5.1. Run-off from storage or loading area into surface drainages could contain petroleum products from miscellaneous spills and oil leakages from facilities, such as loading arms and bays, generator houses and pumps.

5.2. TYPES OF WASTES FROM THE DEPOTS AND TANK FARMS

Common wastes are crude oil, petroleum products, lube oil, oily liquid effluents, solid wastes and contaminated soil and sand.

APPENDIX 1-8

RETAIL OUTLETS (FILLING STATIONS)

1.0. Retail Outlets are facilities for dispensing petroleum products to end users. The facilities consist of dispensers, pumps, surface and underground storage tanks.

1.1. All regulations and guidelines on oil and oily wastes discharges at the retail outlets are governed by the National Oil Spill Detection and Response Agency (Establishment) Act No. 15 of 2006.

B. DESCRIPTION OF OPERATIONS

2.0. Discharge of petroleum products from trucks or vehicles, dispensing of products through pumps, automobile service, car wash, mini-marts and supermarkets are the basic operations in a retail outlet.

C. SOURCES OF OIL SPILLS AND OILY WASTES

3.0. DISPENSING ACTIVITIES

3.1. Overflow or overfilling of vehicles or boats fuel tanks, etc give rise to spills

4.0. AUTOMOBILE SERVICES.

4.1. Servicing of automobile engines could impact on the environment with oil spills or oily wastes due to drained engine oil (used engine oil) and washing of engine parts at a retail outlet.

5.C. STORAGE TANKS

5.1. Leakages, seepages and spills occur due to corrosion of underground storage tanks (USTs) as a result of age of materials, equipment or facilities, design error, use of sub-standard construction materials or water at the bottom of the storage tanks.

6.0. DRAINAGE CHANNEL

6.1. Run-off in surface drainages could contain discharged oil or oily wastes consisting of engine oil and oil leakages from dispensing area or car wash.

6.2. Types of Wastes from Retail Outlets

These include spilled products, drained spent engine oil from automobiles and power generating units, run-off and oily waste water.

APPENDIX 11-1

STANDARDS FOR SPILL PREVENTION CONTROL AND COUNTER MEASURES PLAN (SPCCP)

A. BACKGROUND

1.0. The Spill Prevention Control and Counter Measure Plans (SPCCP) are carefully thought-out plan prepared in accordance with the best available current technology practices for the prevention, control and management of facilities capable of causing oil discharges in minor, medium or major quantity upon land or navigable waters of Nigeria.

1.2. Existing regulations to control oil spill and oily wastes discharges have been reviewed to accommodate increasing oil and gas activities in the onshore, offshore or deep offshore horizons.

1.3. The following enactments and Regulations provide the legal basis for the standards and parameters contained in the SPCCP—

- **Oil Pipeline Act 1965**
- **International Convention for the Prevention of Pollution of the Sea by Oil, 1954 amended 1978**
- **Oil in Navigable Waters Act 1968**
- **Petroleum Act 1969, Section 8 (i) b (iii)**
- **Petroleum (Drilling and Production) Regulations 1969**
- **Petroleum Refining Regulations 43 (3), 1974**
- **NOSDRA Act No. 15 of 2006, etc.**

B. APPROPRIATE METHODS APPROVED BY THE AGENCY

1.0. The complete SPCCP shall contain the requirements stipulated in the following sections to ensure the inclusion of appropriate safeguards and technology by owners or operators of oil facilities in order to prevent leakages, seepage, spillages and discharge of oil and oily wastes in and or upon land or navigable waters of Nigeria.

1.2. All facilities which have the potential to cause oil spills and oily waste accumulation in or upon land, and navigable waters of Nigeria due to tank overflow, rupture, seepage, spillage or leakages shall have any one of the following appropriate containment plan or structure constructed to prevent oil flowing into or upon adjacent land or navigable water course :

- * Bund-wall
- * Spill diversion and retention ponds
- * Booms or other barriers
- * Absorbent materials
- * Drip Pans
- * Sumps and collection systems, etc.

1.3. Where the practical measures in Article 1.2 of this Appendix are unrealizable, an Oil Spill Contingency Plan (OSCP) shall, at the appropriate level, be prepared and made functional.

1.4. Onshore Facility drainage systems shall be provided with manual operated valves or ejectors as flopper types are not suitable for spill prevention or control operation. The valves shall be of open and closed design.

1.5. Facility drainage system shall be designed to return excess oil to the Facility beside being able to retain oil including preventing oil discharge into or upon land or navigable water course in event of equipment failure.

1.6. Bulk storage tanks shall be constructed with good quality materials with appropriate coating and cathodic protection to prevent leakage, seepage and corrosion including surrounding the tank with impervious material to contain any spilled oil. In onshore facilities, storage tanks shall have alternative confinement system for spills such as retention pit or catchment basin.

1.7. Runoffs from storm water drainage or effluent discharge shall pass through treatment system chambers to remove the oil before discharge and the chambers shall have installed sealed closed valves, which shall be regularly checked.

1.8. Underground Storage Tanks (USTs), shall have protective coatings, cathodic protection or any other material compatible with the soil condition, which shall be regularly checked.

1.9. Semi buried storage Facility shall be discouraged as it is prone to rapid corrosion of the part submerged due to earth and air interface.

1.10. Surface and above ground storage facilities and their foundations shall be regularly subjected to routine checks, hydrostatic testing, visual

inspection or thickness testing to detect material defects and prevent oil spillage and comparative records kept.

1.11. Internal heating coils leak control shall be regularly checked for contamination or have it by-passed using a skimmer or settling tank or install external heating systems to keep it free from contaminants.

1.12. Storage tanks shall be installed with either of the following to check spillage, leaks or material defect:

- * High Liquid Level Alarm**
- * Cut-off devices**
- * Coded signal between tank gauge and pumping station**
- * Digital Computers, Tele Pulse or Direct Vision Gauges**
- * Liquid Level Sensing (LLS) devices**

All these shall be regularly monitored against defects to prevent oil spills.

1.13. Effluent disposal systems shall be observed regularly for possible system upsets and leaks from defective visible sources, which should be promptly corrected against loss of oil from tank seams, gaskets, rivets or loss bolts.

1.14. Owners or operators of Mobile or Portable oil Storage Facilities shall ensure that no spill reaches any water course by providing devices or catchment basins big enough to contain 110% of the facilities largest tank storage capacity and shall be located in an area free from periodic flooding and washout.

1.15. Owners or operators of Facility transfers, pumping and in-plant processes shall ensure the following oil spill, leak or pollution preventive measures are in place :

(i) Cathodic protection, coating and protective wrapping for all buried pipe installations.

(ii) Routine inspection of surface pipe installation, control valves, pumps, bolts, signs of material corrosion or deterioration.

(iii) Caps and Blank-flange and mark placed as origin of pipelines not in use or standby for terminal connection.

(iv) Pipe support must pass the ASTM and API material tests to ensure minimum abrasion and corrosion including allowance for material expansion and contraction.

(v) Pressure testing for installed pipes.

(vi) Automobiles must have the minimum entry permit to oil Facility area and shall obey strictly, 'no entry' or 'restriction prohibited' signs.

1.16. Mobile or portable oil storage automobiles owners' or operators shall observe the following rules during operations :

(i) Loading and off-loading points shall have drainage systems which empties into a retention pit designed to hold maximum single spill from a truck without overflow of product.

(ii) The loading area shall be fitted with departure manual lighting signal device for trucks to prevent accidental spill that may arise due to drivers' over-zealousness.

(iii) Vehicles shall be scrutinized for signs of leakage after loading before being permitted to depart with product.

1.17. Accumulated oil in runoff or storm water drainage shall be collected for recycle and the effluent treated to acceptable limit before disposal to land or water course.

1.18. Field drainage facilities shall be regularly inspected and spilled oil appropriately recovered and removed.

1.19. Brine water disposal facilities shall be regularly inspected to detect possible system failure that could lead to spillage following sudden change in temperature.

1.20. Production facilities shall have a program of flow-line maintenance to prevent oil spills or oily wastes discharges which shall include periodic examinations, corrosion protection, flow-line replacement and adequate records for individual facilities.

1.21. Casing and Blowout Prevention (BOP) assembly shall be installed before drilling or work-over operations to control any wellhead pressure that may be encountered.

Offshore Operations

1.22. Oil drainage collection equipment such as where Article 1.2 of this Appendix cannot be made to apply, shall be regularly emptied to prevent an overflow and the content taken to secured place for treatment and discharge.

1.23. A regular scheduled preventive maintenance inspection and testing program shall be held for facilities using sump system, sump or drain to assure reliable operation of the liquid removal system and pump start-up devices.

1.24. In areas where separators and treaters are equipped with pump valves, it shall be extended to flare lines if the separator is near-shore, while equipping it with a high liquid level sensor to prevent oil discharge from producing wells.

1.25. Atmospheric storage or surge tanks shall be equipped with high liquid level sensor to prevent overflow and oil spill.

1.26. High pressure tanks shall be installed with pressure sensing devices fitted with alarm system or flow control to prevent oil spill.

1.27. An inspection and maintenance manual shall be provided by owners or operators in the industry for all operations liable to cause oil spill, leak or discharge such as terminal, wellhead, depots, pipelines and flow-lines, platform, manifolds, trunk-lines, treatment plants, retail outlets, separation equipments, non-transportation-related auxiliary equipment and facilities, dispensing pumps, retention pit or basins.

1.28. The manual shall have detailed explanation and description of individual Facility components of oil prevention activation methods or controls instructions including other methods of operation for all categories of workers in a Facility.

1.29. Extraordinary well control measures shall be provided for emergency conditions including fire, loss of control or abnormal occurrence that could lead to spillage.

1.30. The degree of control system redundancy shall be varied with hazard exposure and probable consequences of failure. Surface shut-in systems shall be installed with fail close valves.

1.31. Manifolds shall be equipped with individual check valves on flow-lines.

1.32. Sub-marine pipelines appurtenant to facilities shall be adequately protected against environmental stress and other human activities such as fishing.

1.33. A Facility owner or operator shall ensure that sub-marine pipelines are regularly inspected on scheduled periodic basis.

INSPECTION AND RECORDS

1.34. As part of the SPCC Plan, owner or operator of each Facility shall develop separate three (3) years inspection procedure manual with record of required scheduled inspections and signed by appropriate supervisor or NOSDRA inspector.

SECURITY

1.35. Owners or operators shall ensure that all facilities have adequate exclusion zones based on risk assessment are fully fenced and entrance gate provided and manned by security personnel.

1.36. All facilities shall be properly secured with locks and cross-checked when not in operation.

1.37. All oil pumps with starter control shall be securely locked in the "OFF" position and shall be restricted to only authorized personnel on duty.

1.38. Caps and Blank-flanges shall adequately secure all loading and offloading connections of oil pipelines not in use or standby service including pipelines that are emptied of liquid content either by draining or inert gas pressure.

1.39. Facilities shall be adequately lighted-up at night for discovery of probable oil leaks or spills and equally prevent third party interference.

PERSONNEL TRAINING AND SPILL PREVENTION PROCEDURE

1.40. Owners or operators of oil facilities shall provide adequate and regular training for their personnel in the area of operation and maintenance of equipment to prevent oil spills including knowing applicable pollution control laws, rules and regulations.

1.41. Each applicable Facility shall have spill prevention supervisor who reports directly to line management.

1.42. Owners or operators of oil facilities shall conduct periodic drills to assure adequate understanding and activation of the SPCCP for its facilities.

1.43. Facilities with accommodation shall have routine weekly periodic briefing sessions on spill prevention and control. Emphasis shall be on known spill events or failures, equipment malfunction or malfunctioning components and recently developed precautionary measures.

APPENDIX 11-2

OIL SPILL RESPONSE FORMS

APPENDIX 11 - 4

PROCEDURES FOR LABORATORY ANALYSES OF OIL SPILLS, OILY WASTES AND OILY CONTAMINATED SOILS

1.0. Owners or Operators of oil and gas exploration and production, petroleum refining, transportation, and marketing facilities in Nigeria shall ensure that laboratory analysis of oil spills and oily wastes samples obtained from their operational area or associated facilities are carried out using the guidelines and Best Available Technology (BAT) as recommended by the Agency.

2.0. SAMPLE COLLECTION AND PRESERVATION

At the polluted site, samples collected must be properly labeled with indelible marker pen giving details of sample type and sampling points. The recommended techniques and preservation of samples collection from oil spill sites is as stated in *Appendix II - 3*.

To minimize error, measurements must be replicated, while sample tools and containers are to be pre-sterilized, pre-treated and samples in transit preserved in ice-cooled chest at $<4^{\circ}\text{C}$ and transported to an approved laboratory for analyses of key physico-chemical parameters.

It is required that the collected samples for laboratory analysis shall be categorized and labeled thus :

- (i) Oily Waste and Effluent
- (ii) Spilled Oil
- (iii) Oil Contaminated Soil

3.0. KEY INDICATOR PARAMETERS

The physico-chemical analysis shall concentrate on key indicator parameters as shown below.

TABLE II-3 : KEY PARAMETERS FOR LABORATORY ANALYSES

<i>Type</i>	<i>Key Parameters</i>
Oil Wastes/Effluent	pH, COD, BOD 5, Oil & Grease, TPH, PAH, BTEX, Trace Metals, TSS
Spilled Oil	pH, TOC, Oil & Grease, TPH, PAH, BTEX, Trace Metals
Oil Contaminated Soils	pH, TOC, Oil & Grease, TPH, PAH, BTEX, Heavy Metals

4.0. Recommended Analytical Method

The methods for analyses of the key physico-chemical parameters shall be as provided in the Table 11 – 4 below.

1.	pH	ASTM D 1293B; APHA 460, 424; Electrometric API-RP 45 EPA method
2.	Chemical Oxygen Demand, COD	ASTM D 1252, APHA 508, Dichromate
3.	BOD 5	APHA 507, APA 5 D method
4.	Total Suspended Solids (TSS)	ASTM D 1868, APHA 208 D
5.	Total Oil Content	ASTM D 2579
6.	Sulphide (H_2S)	APHA 228 A, 428 D, ASTM B 1233, API-RP 45
7.	Oil and Grease	OCMA-200, Range 0 – 100ppm
8.	Total Petroleum Hydrocarbon (TPH)	GC
9.	Poly-nuclear Aromatic	

	Hydrocarbons (PAH)	GC
10.	BTEX	GC
11.	Iron, Fe	ASTM D 106 C; AP- RP45; EPA (AAS) and APHA(301A) (AAS method)
12.	Copper, Cu	ASTM D 1688D, API-RP45; EPA (AAS) and APHA(301A) (AAS method)
13.	Lead, Pb	ASTM D 3559, API-RP45; EPA (AAS) and APHA(301A) (AAS method)
14.	Mercury, Hg	ASTM D 3229, API-RP45; EPA (AAS) and APHA(301A) (AAS method)
15.	Chromium, Cr ⁶⁺	ASTM D 2972, API-RP45; EPA (AAS) and APHA(301A) (AAS method)
16.	Cadmium, Cd	ASTM D 2576D & 3557D, API-RP45; EPA (AAS) and APHA(301A) (AAS method)
17.	Nickel, Ni	ASTM D 1886C, API-RP45; EPA (AAS) and APHA(301A) (AAS method)
18.	Vanadium, V	AAS method, API-RP45, APA (AAS) and APHA 110C

Where the source of oil spill is in contention, samples shall be collected by the Agency from the polluted site(s) and also from the facilities of the contending parties for finger-printing in an approved laboratory, using the procedures and methods prescribed in these regulations and guidelines.

5.0. REQUIREMENTS OF SAMPLE COLLECTION FOR LABORATORY ANALYSIS

A. This prescribed procedure shall provide general guidelines for sampling, storage, analyses and laboratory safety for quality control and assurance.

B. STANDARDS FOR SAMPLE COLLECTION AND ANALYSES

1.0. Samples shall be taken from impacted sites for laboratory analysis

1.1. A control sample shall be taken away from activity area. Such sample shall be a representation of the existing condition prior to pollution.

1.2. In order to prevent contamination, samples shall be preserved prior to analysis.

C. SAMPLING EXERCISE

1.0. The most critical factors necessary for sampling exercise include geo-referencing of sampling points and the integrity of the collected samples prior to laboratory analysis.

D. SAMPLING POINTS

Sampling points shall include the following:

- Effluent or contaminated substance at discharge point.
- Lower end of effluent channel to allow for thorough mixing.
- At a convenient point prior to any treatment where representative sampling can be obtained.
- At least 500 meters upstream and downstream of the receiving medium.

E. SAMPLE CONTAINERS

1.0. The containers shall be of chemically resistant glass or collapsible plastic polythene, which shall be thoroughly cleansed to remove all extraneous surface dirt. The glass stoppers and plastic caps shall be thoroughly washed and should be tight-fitted to prevent leakage and entry of contaminants.

1.1. Before collection of samples, the container shall be rinsed thoroughly with the substance to be collected.

F. LABELING

1.0. Sample containers shall be properly labeled to show the sample number, location, temperature, date and time of collection.

G.. IN-SITU MEASUREMENT

1.0. The basic in-situ tests in the activity area shall include the pH, ambient temperature of the sample, rate of flow of the fluid in the equipment, type and quantity of preservative which shall be signed by the sampler.

H. CONTAINER SHIPMENT AND LABELING

- The sample container shall be large enough to accommodate the volumetric expansion capacity of the liquid when filled.
- The shipment container shall have compartments for separate sample containers to avoid mix-up and lined with foil or corrugated paper and the containers shall be held in place with elastic bands or spring clips.
- The addresses of the consignee and consignor shall be plainly printed on two sides of the shipment container with an attached label or card marked 'fragile', 'corrosive', 'flammable' or 'hazardous', etc. to indicate the nature of the substance being shipped.

I. TYPES OF SAMPLING

1.0. Some basic sampling methods include the following :

(i) *Grab sampling* - This shall involve the collection of sediment samples from the bottom of the sea, rivers or lakes, etc.

(ii) *Composite sampling* - This shall consist of portions collected at specific sites or a combination of sites and at different intervals.

(iii) *Continual practice* - This type provides a continuous flowing sample from one or more sampling sites suitable for on-stream analysis.

J. PRESERVATION

1.0. This shall be used in order to reduce or retard the following :

- Biological action
- Hydrolysis of chemical compounds and complexes
- Volatile nature of compounds

K. CHAIN OF CUSTODY RECORD

1.0. Records shall be kept for all samples and such records shall indicate type of sample, location, date, time of collection, name of the sampler, sample custodian, handler and method of analysis, before transfer to a laboratory for requisite analysis.

APPENDIX 11-5

PROVISIONS FOR THE CONTAINMENT, RECOVERY AND CLEANUP OF OIL SPILLS AND OILY WASTES SITES

1.0. Owners or operators of facilities in marine environment shall act swiftly to check the spread of oil spills or oily waste discharges by deploying appropriate equipment and materials such as booms, skimmers, absorbents, saver vessels, aircrafts, dispersants, pumps, hoses, fenders and signal lamps, etc.

1.1. Owners or operators of spiller facilities in inland waters and wetlands shall completely contain the oil spill or oily wastes through mechanical or manual recovery and this shall also require the cleanup of impacted site.

1.2. Owners or Operators of facilities capable of negatively impacting the environment shall :

- maintain dedicated and efficient personnel, as well as establish up-to-date line of communication ;
- have in stock booms large enough to encircle a loading ocean-going vessel (Tanker) ;
- maintain appropriate containment equipment with capacity to contain the largest oil spill or oily wastes from its facilities ; and

- possess appropriate and properly maintained earth moving equipment, absorbents, pumps, hoses and pick-up devices, etc.

1.3 . Owners or operators of spiller facilities on land or ditches shall prevent the spread of oil or oily waste and ensure the protection of nearby marine and water courses as priority.

1.4. Booms shall be deployed to safeguard threatened shorelines or sensitive shores from being polluted using the National Environmental Sensitivity Index (ESI) Maps as a guide.

1.5. Owners or operators of spiller facilities shall consider the sensitivity of the impacted sites when choosing cleanup methods. These methods shall include: gentle flushing, ditch excavation, manual recovery, etc.

1.6. Owners or Operators of facilities capable of impacting on the environment shall maintain an effective and efficient network system with specific internal alerting procedure on emergency situations as approved by the Agency.

1.7. Owners or operators of spiller facilities shall comply with standard procedures for the reuse, incineration, controlled burning (in pits), land farming and sanitary land-filling of recovered oil spills and oily wastes.

1.8. Owners or Operators of facilities which generate oily contaminated wastes shall have them stored in leak-proof containers, pits or high density polyethylene (HDPE) before adopting any of the standard procedures in Article 1.7 above.

1.9. Owners or operators of spiller facilities shall have the cost of clean-up and un-recovered oil, etc. documented and submitted to the Agency.

1.10. Owners or Operators of spiller facilities shall strictly comply with the requirements of the Agency's Oil Spill Report Format.

1.11. Any obstruction by an individual or group of individuals in the oil spill containment, recovery, clean-up and remediation exercise, shall attract a penalty not less than N500,000.00 (Five Hundred Thousand Naira).

POST REMEDIATION REPORT FORM

To,
NOSDRA Operational Area

From,
Owner or Operator of Facility

Date.....

1. Date/Time/Location of Site Remediated
 2. Date Remediation commenced
 3. Duration of Remediation
 4. Type of chemical/equipment/containment method
(a)(b)(c)
 5. Estimated progress of remediation in percentage.....
 6. Estimated Area of Remediation Site
 7. Extent of damage (in %) to:
(a) Land.....(b) Water.....(c) Human Resource.....
 8. Estimated cost of remediation on
(a) Daily Facility output
(b) Repairs
(c) Land use
(d) Man Hour Lost
 9. Adopted Remediation Option
(a) Stabilization/Solidification
(b) Chemical Treatment
(c) Biological Treatment
(d) Thermal Treatment
 10. Specify follow-up action
 11. Reporting Officers' Signature
- Name Designation

*Oil shall be deemed to mean both crude and refined petroleum products.

APPENDIX III—1

PROCEDURES FOR THE PREPARATION OF OIL SPILL CONTINGENCY PLAN

1.0. An Oil Spill Contingency Plan is a pre-determined action document prepared for oil spill containment and response with the approval of the regulating authority.

1.1. Authority for Contingency Planning was derived from National and International Laws, Conventions and Protocols, which are :

- **Petroleum Act 1969, Section 8 (I) b (III)**
- **Petroleum(Drilling and Production)Regulations 1969**
- **Petroleum Refining Regulations 43 (3), 1974**
- **Oil Pipeline Ordinance Cap 145, 1956; Regulations 17 (3)**
- **Oil Pipeline Act amended 1965**
- **International Convention for Prevention of Pollution of the Sea by Oil, 1954 amended 1962**
- **Oil in Navigable Waters Act 1968**
- **Convention on Continental Shelf and high Seas (Geneva 1958)**
- **Oil Pollution Preparedness Response and Co-operation (OPRC90)**

1.2. Three levels of Contingency Planning currently exist in Nigeria viz Tier I, Tier II and Tier III. By definition, Tier I is for minor spill, Tier II is the oil company's Co-operative Plan for medium spill, while Tier III is the National Plan against major or disastrous oil spills.

The classification is as follows :

Tier I Minor Spill	0-25 barrels to inland waters 0-250 barrels to land or coastal or offshore waters
Tier II Medium Spill	25-250 barrels to inland waters 250-2500 barrels to land or coastal or offshore waters
Tier III Major Spill	Above 250 barrels to inland waters Above 2500 barrels to land or coastal or offshore waters

B. CONTENTS OF OIL SPILL CONTINGENCY PLAN

1.0. The Oil Spill Contingency Plan should be comprehensive and cover all Three Tiers of response. The OSCP should also include the following but not limited to :

- **Policy and commitment statement which gives detail of operators or owners Environmental Management Plan on the Prevention, Conservation, Safety and Protection of the ecosystem.**

- **Aims and Objectives of setting-up the Plan, which is basically on the environmental protection, preparedness, good record keeping of spillage and spill information dissemination.**

Every Oil and Gas Operator shall have an Oil Spill Contingency plan (OSCP) in accordance with the Petroleum Act 1969. The (OSCP) is a documented response plan to be followed in the event of an oil spill. Every operator is mandated to submit a copy of its OSCP annually to NOSDRA. A joint annual activation exercise shall be conducted by NOSDRA at the Operator's Facility.

The objectives of the OSCP are :

- **Ensure timely, co-ordinated and effective response to threat of spillage of oil to marine and land based resources.**
- **Protect human health and safety by implementing a rapid response to minimize long term environmental damage and social dislocation.**
- **Minimizing the spread of oil spilled in the environment**
- **Recovering the spilled oil.**
- **Protecting sensitive ecology and habitat from the spill impact.**
- **Cleaning oil impacted sites.**

Choosing spill management strategies which are efficient and adequate and do not damage the environment.

- **Identification of facilities, potential sources and volume of spill-risk exposure level.**
- **Response Strategy, including ESI maps**
- **Organizational structure**
- **Manning, Equipment and Material stock level**
- **Communication and Miscellaneous**

Procedures for containment, recovery, clean-up and Remediation

1.1. Description of facilities and area of operations is mandatory for all owners or operators in the Industry, which can be achieved by the following :

- **Type of operations**
- **Identification of potential sources of spills from facilities**
- **Predict oil spill movement and determine potential containment sites**
- **Determine appropriate equipment and materials for deployment in worse case scenario and the potential deficiencies**
- **Predict sensitive area that require absolute protection and prepare a detail**

- colour coded environmental sensitivity index, ESI maps of operators activity areas
- Produce detailed coded ESI maps of specific points that need more attention
- A follow-up comprehensive report with emphasis on the physical, ecological, operational, health and socioeconomic concerns in the identified sensitivity area.

1.2. Organization and Responsibilities shall be reflected in a detailed flow-chart, which shall be placed at all of its operational facilities.

1.3. Oil Spill Response could be in-house, on-site comprehensive approach or co-operatives, where :

(i) owner or operator is required to have trained in-house combat response team in its employment ;

(ii) in a situation where owners or operators activities are not localized, all personnel involved in day to day Facility operations are trained on the rudiments of spill control or combat and removal spill prior to the arrival of its commissioned personnel ;

(iii) with a memorandum of understanding among the players in the industry, oil spill control co-operatives can be formed to combat oil spills from member facilities, which might render an operator's combat preparedness inadequate due to its magnitude for effectiveness and swiftness that is required with contemporary available technology, which that member cannot shoulder alone.

2.0. EQUIPMENT STOCKPILING

2.1. Stockpiling of equipment will depend on whether the operation is on-shore or off-shore. However, the following shall normally be required in the chain of custody of combat equipment of operators as contained in Appendix III-2.

Any mutual agreement between individual operators and Clean Nigeria Associates (CNA) with respect to equipment stockpile shall be clearly stated with evidence in the OSCP of the company.

Clean Nigeria Associates (CNA) shall upgrade its equipments stock pile.

3.0. PROCEDURES FOR CONTAINMENT AND CLEAN-UP

3.1. This shall depend on the sensitivity of the area or location of spill.

(i) marine occurrence requires swift and effective spill containment to check the spread.

(ii) For inland waters and wetland, complete containment and mechanical or manual recovery and clean-up of spill may be required.

(iii) For off-shore waters, containment and mechanical recovery is the option for spill clean-up.

(iv) On land, ditches shall be required to prevent spread as priority shall be placed on the protection of marine and water courses if the spill is close to it.

(v) Booms should be deployed to safeguard threatened shorelines or shore area from being contaminated on careful evaluation of the socioeconomic sensitivity, oil behaviour in the area and area type.

(vi) Clean-ups for wetland or mangroves shall include gentle flushing, ditch excavation and manual recovery.

(vii) The schedule for clean-up shall be determined by the requirements of Oil Spill Report Forms.

4.0. COMMUNICATION

4.1. Owners or Operators of oil facilities shall have an effective communication network linking all its facilities with specific internal alerting procedure in case of spill emergency including approved reporting procedure to appropriate authorities.

5.0. MANAGEMENT AND DISPOSAL OF RECOVERED SPILT OIL AND OILY WASTES

5.1. The Agency recommended methods shall be by reuse, incineration, controlled burning (in pits), land farming and sanitary land-filling as approved by it.

5.2. Contaminated wastes shall be stored in a leak-proof container or pit or High Density Poly-ethylene (HDPE) before adopting any of the approved disposal methods by the appropriate authority.

5.3. The owner or operator of the spiller Facility shall have a documented cost of clean-up exercise submitted to the Agency including the cost of unrecovered oil.

C. REMEDIATION AND REHABILITATION EXERCISE

1.0. The remediation and rehabilitation programme for the impacted site shall be included to achieve the following :

1. For all waters, there shall be no visible sheen after the first 30 days of spill detection no matter the spread.

2. There shall be no record of oily stain in swamp area after 45 days of occurrence.

3. The target allowable limit of spills on land or sediment is at a minimum of 50mg/kg of oil content.

1.1. Remediation Plan shall include monitoring, and Post Spill Impact Assessment of the impacted site(s).

1.2. The chemicals used for clean-up shall be approved by the Agency before use. The three conditions that shall be met for the chemicals are its effectiveness, toxicity and biodegradability.

1.3. The following information shall be submitted to the Agency for permission to use oil spill chemicals for clean-up

- 1. Spill Data Report Sheet**
- 2. Information on available dispersants and dispersing equipment**
 - **Efficiency under existing conditions**
 - **Surface area of slick, which can be treated**
 - **Schedule of dispersant operation.**
- 3. Humans and utility at risk.**

1.4. Where an operator or owner cleans up spill that did not originate from its Facility, such operator or owner shall be paid all the expenses incurred. Following the clean-up, finger printing investigation shall be conducted to determine the spiller who shall be held liable to reimburse the cleaner the cost of the clean up.

1.5. It shall mandatory for owners or operators to carry out finger-printing of its crude oil, field by field and the results submitted to the Agency.

1.6. Owners or operators of spiller Facility shall have in place trained combat team on spillage prevention, control, clean-up and rehabilitation.

1.6. The operator shall organize drills and desktop review exercises of its contingency plans annually.

APPENDIX III-2

STOCKPILE OF SPILL RESPONSE EQUIPMENT AND MATERIALS

1.0. Owners or Operators of facilities which may cause oil spills or oily wastes discharge into the environment shall stockpile a minimum of the under-listed equipment and materials at all times for effective combat deployment for Tier I spills or for a first line of defense for Tier II or III spills.

- o **Dedicated transport facilities**
- o **Booms enough to encircle any maritime tanker loading**
- o **Maintain appropriate containment equipment enough to contain largest spill from operators Facility**
- o **Earth moving equipment**

- o NOSDRA approved chemical dispersant
- o Skimmers and Other Pick-up Devices
- o Specialized Shoreline Clean-up Equipment
- o Specialized Vessels and Others
- o Aircraft or Helicopters and specialized vessels
- o Dispersants
- o Forklifts
- o Hoses
- o Lightening Equipment
- o Communications and Auxiliary Equipment
- o Others;
- o Emergency Safety Equipment
- o First Aid Kits
- o Personal Protection Equipment
- o Portable Monitors for VOCs
- o GPS
- o Lightening Equipment
- o Anemometer, etc.

APPENDIX III-3

RISK BASED CORRECTIVE ACTION (RBCA)

REMEDATION PRINCIPLE

1.0. Risk Based Corrective Action is a logical and scientific-based framework for determining the extent and urgency of corrective action plan for impacted site(s). It integrates risk and exposure assessment practices with site assessment activities and remedial measure selection to ensure that the chosen action is cost-effective and protective of human health and the environment.

1.1. Prior to initiating an application for RBCA process, operators shall consult the Agency to review the requirements of the proposed remediation plan based on RBCA principle.

1.2. The RBCA report shall, at a maximum, include the following :

- (i) Executive summary ;
- (ii) Site description ;
- (iii) Summary of the use and site ownership ;
- (iv) Potential and past incidence locations ;
- (v) Summary of current and completed site activities ;
- (vi) Description of regional hydrological conditions ;
- (vii) Description of site-specific hydrological condition ;

- (viii) Summary of beneficial use ;
- (ix) Summary and discussion of the risk assessment viz hazard identification, dose response assessment, exposure assessment and risk ;
- (x) Characterization including the methods and assumption used to calculate the RBSL or SSTL or both ;
- (xi) Summary of the Tier evaluation ;
- (xii) Summary of the analytical data and the appropriate RBSL or SSTL used ;
- (xiii) Summary of ecological assessment ;
- (xiv) Location map ;
- (xv) Land-use map showing groundwater supply wells ;
- (xvi) Relief map showing structures, above ground storage tanks (GST), USTs, conduit utilities, suspected or confirmed sources and so forth.
- (xvii) Site photos if available ;
- (xviii) Groundwater elevation map ;
- (xix) Geological cross-section(s) ; and
- (xx) Dissolved plume map(s).

1.3. Strict quality assurance and control (QA/QC) procedures shall be instituted by operators to assure the integrity of data for the RBCA process.

1.4. Upon completion of the RBCA process, operators shall establish a monitoring programme, which shall demonstrate the effectiveness of implemented remedial action measures or to confirm that current conditions persist or will improve with time.

1.5. When all instituted remedial programmes have been suitably met, with no foreseen institutional control to ensure compliance, then no further action shall be necessary.

3.0. RBCA PLANNING

3.1. The Planning of RBCA uses the Tier concept approach such as Tier 1, Tier 2 and Tier 3 for risk-based corrective actions; each tier requiring detailed information in reaching less or more conservative assumptions in the level of risk estimates.

The tier approach provides the advantage that the cost of assessment is proportionate to the level of risk posed by the contamination.

3.2. Tier 1 approach requires information on site conditions and the nature of assessed contaminants, which is prioritized on the basis of urgency for corrective action, based on the information collected from historical records.

visual inspection and site assessment. Other conditions necessary are degree of threat to human health, obvious environmental impacts, the presence of potentially impacted sensitive receptors eg workers, residence, land-use and potential receptors pathways. The site conditions are then compared with referenced generic risk-based screening levels (RBSLs). If the site contamination exceeds those screening levels, the analysis moves to a second stage, Tier 2.

3.3. Tier 2 approach is :

- Additional specific site information or data.
- Site-specific target levels (SSTLs).
- Points of compliance.
- Site concentration levels (SCLs).

Unacceptable risks are presented by those substances whose site concentration levels exceed its SSTLs. The tier 2 SSTLs are derived using the same equation for RBSLs except that site specific parameters are used.

3.3. Tier 3 allows SSTLs to be determined for both direct and indirect pathways using site specific parameters. The approach requires additional site assessment, probabilistic evaluations, sophisticated chemical transport and fate modeling.

APPENDIX III-4

DISPOSAL PLAN FOR OIL SPILLS AND OILY CONTAMINATED WASTES OF MATERIALS

1.0. It is mandatory to dispose of unwanted recovered oil spills and oily contaminated wastes in an acceptable manner as approved by the Agency

1.1. Owners or Operators of Spiller facilities shall dispose of unwanted recovered oil by incineration, controlled burning (in lined pits), land farming and sanitary land-filling.

1.2. Where the owners or operators of spiller facilities intend to engage in land excavation for disposal activities, it shall provide the Agency with the following information :

(a) Methods adopted to prevent leaching, contamination of ground and surface water resources.

(b) Site characteristics, type of soil and proposal to determine owner's or operator's capabilities to handle the oil to be disposed.

(c) Groundwater level and direction to ensure that groundwater shall not be easily contaminated.

1.3. The Agency recommended oily waste disposal method shall include but not limited to—

- (a) Resource recovery
- (b) Land farming
- (c) Controlled burning in lined pits
- (d) Sanitary land filling.

APPENDIX 111-5

ACRONYMS ABBREVIATIONS AND DEFINITIONS

WBF	Water Based Fluid
WBM	Water Based Mud
OBF	Oil Based Fluid
OBM	Oil Based Mud
SBF	Synthetic Based Fluid
IO	Internal Olefins
EBF	Ester Based Fluid
LAO	Linear Alpha Olefins
PAO	Poly Alpha Olefins
NOSDRA	National Oil Spill Detection and Response Agency
MARPOL	Marine Pollution
OILPOL	Oil Pollution
OPRC	Oil Pollution Preparedness Response and Co-operation
USTs	Underground Storage Tanks
ASTs	Above Storage Tanks
FMEnv	Federal Ministry of Environment
SPCCP	Spill Prevention and Counter Measure Plan
JIT	Joint Investigation Team
JIV	Joint Investigation Visit
FEPA	Federal Environmental Protection Agency
TDU	Thermal Deception Unit
CNA	Clean Nigeria Associates
NOSCP	National Oil Spill Contingency Plan
SBM	Single Buoy Mooring
SPMS	Single Point Mooring System
OSCP	Oil Spill Contingency Plan
FPSO	Floating Production Storage and Off-take
FPS	Floating Production and Storage

BOP	Berth Operating Platform
PLEM	—
RBCA	Risk Based Corrective Action
MEA	Mono-ethanolamine
DEA	Di-ethanolamine
DGA	Di-glycolamine
DIPA	Di-isopropanolamine
TEA	Triethanolamine
LNG	Liquified Natural Gas
CB	Carbon Black
LPG	Liquefied Petroleum Gas
GC	Gas Conversion
GC&P	Gas Conversion and Processing
H ₂ S	Hydrogen Sulphide
BTA	Best Technology Available
Tier I Oil Spill Response	
Tier II Oil Spill Response	
Tier III Oil Spill Response	
RBSL	Risk Based Screening Level
SSTL	Site Specific Target Level
QA	Quality Assurance
QC	Quality Control

MADE at Abuja this 26th day of May, 2011.

PETER IDABOR
Director-General and Chief Executive
 National Oil Spill Detection and Response Agency