



LAW
ENVIRONMENT AND
DEVELOPMENT
JOURNAL

LEAD

ENVIRONMENTAL REGULATION OF OFFSHORE (E&P) WASTE MANAGEMENT IN NIGERIA: HOW EFFECTIVE?

Anwuli Irene Ofuani

ARTICLE

VOLUME
7/2



LEAD Journal (Law, Environment and Development Journal)
is a peer-reviewed academic publication based in New Delhi and London and jointly managed by the
School of Law, School of Oriental and African Studies (SOAS) - University of London
and the International Environmental Law Research Centre (IELRC).

LEAD is published at www.lead-journal.org

ISSN 1746-5893

*The Managing Editor, LEAD Journal, c/o International Environmental Law Research Centre (IELRC), International Environment
House II, 1F, 7 Chemin de Balexert, 1219 Châtelaine-Geneva, Switzerland, Tel/fax: + 41 (0)22 79 72 623, info@lead-journal.org*

ARTICLE

ENVIRONMENTAL REGULATION OF OFFSHORE (E&P) WASTE MANAGEMENT IN NIGERIA: HOW EFFECTIVE?

Anwuli Irene Ofuani*

This document can be cited as
Anwuli Irene Ofuani, 'Environmental Regulation of Offshore (E&P)
Waste Management in Nigeria: How Effective?',
7/2 Law, Environment and Development Journal (2011), p. 79,
available at <http://www.lead-journal.org/content/11079.pdf>

Anwuli Irene Ofuani, Lecturer, Department of Private and Property law, University of Benin,
Benin City, Nigeria, Email: wulis4ever@yahoo.com

Published under a Creative Commons Attribution-NonCommercial-NoDerivs 2.0 License

* LL.B (University of Benin), LL.M (University of Cape Town, South Africa), Lecturer, Department of Private and Property
law, University of Benin, Benin City, Nigeria.

TABLE OF CONTENTS

1. Introduction	81
2. Overview of Offshore E&P Waste Management in Nigeria	82
2.1 Regulation of Produced Water	82
2.2 Regulation of Drilling Mud/ Fluids and Drill Cuttings	84
2.3 Regulation of Produced Sand	85
2.4 Regulation of Displacement Water	86
2.5 Regulation of Deck Drainage	86
3. Comparative Overview: Offshore Waste Management in Other Jurisdictions	87
3.1 United Kingdom	87
3.2 United States of America	91
4. Recommendations	92
5. Conclusion	93

1

INTRODUCTION

In the course of offshore oil and gas exploration and production (hereafter E&P) operations, potentially harmful wastes, which often require conscientious handling and disposal, are generated. These wastes are generally referred to as E&P wastes¹ and are usually contaminated with oil, hydrocarbons, complex chemical compounds and metals of varying toxicity. The management of E&P wastes is necessary in almost all offshore oil and gas operations, from seismic surveys, drilling, field development and production to decommissioning.² Sustainable development of oil and gas resources therefore requires the appropriate management of wastes generated during offshore activities as improper management can result in pollution, environmental damage and potential financial liabilities.³ Accordingly, a good waste management system is necessary to ensure that such wastes are properly managed to minimise their potential to cause harm to the environment. Moreover, such a system requires effective legislative mechanisms to ensure that it is workable.

The Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (hereafter EGASPIN) were issued in 1991 by the Nigerian Department of Petroleum Resources (hereafter DPR) to ensure that oil and gas operators do not degrade the environment in the course of their operations.⁴ EGASPIN was made pursuant to the Petroleum Act 1969⁵ and other oil and gas regulations to establish guidelines, standards and procedures for environmental control of oil and gas operations.⁶ In spite of EGASPIN, the effective management of offshore E&P wastes is one of the problems facing the oil and gas industry in Nigeria. This can be attributed to the fact that most of the laws regulating offshore E&P waste management are inadequate. It can also be because offshore activities are carried out in areas that are not under direct government scrutiny. As a result, several tons of E&P wastes are generated daily and discharged into the surrounding environment at standards below acceptable international limits.⁷ There is potential for excessive pollution and degradation if the problem remains unchecked. Hence, there is a need for more stringent regulation of offshore oil and gas (E&P) waste management in Nigeria. The oil and gas industry in Nigeria therefore illustrates the challenges of harmonising environmental policies and socio-economic development in order to attain sustainable development.⁸

This paper examines the effectiveness of the provisions of EGASPIN in terms of offshore E&P waste management in Nigeria. It begins with an analysis of the legal requirements for the discharge (emission) and disposal of different types of E&P

1 E&P wastes are any unavoidable materials resulting from an up-stream operation for which there is no economic demand or value and which must be disposed of. Thus, offshore E&P wastes are undesired substances produced from offshore exploration, production and other related activities which ought to be disposed of or discarded. They include drilling fluids/mud; drilling cuttings; produced water; produced sand; storage displacement water; deck drainage; bilge water; well treatment, work-over and completion fluids; hydrostatic test water; and associated wastes. See H. Bashat, *Managing Waste in Exploration and Production Activities of the Petroleum Industry* (Paper presented at the 4th International Conference & Exhibition for Environmental Technologies, Cairo, Egypt, 30 September- 02 October 2003).

2 See 'Waste Management', available at www.absoluteastronomy.com/topics/Waste_management.

3 See Bashat, note 1 above. See also Rich Haut, 'Waste Management Technology', July 2006, available at www.pe.tamu.edu/gpri-new/home/EvironDrilling/ED-TWG/EDTWG-WasteTechAssessDraft7-06.pdf.

4 Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN), revised edition 2002, issued by the Department of Petroleum Resources (DPR).

5 Cap. P10, LFN 2004.

6 *Id.*, Part I, Articles 2 & 3.

7 M.J. Ayotamuno et al., 'Effluent Quality and Wastes from Petroleum Drilling Operations in the Niger Delta, Nigeria', 13/2 *Journal of Environmental Management and Health* 207, 208 (2002).

8 Emeseh Engobo, 'The Limitations of Law in Promoting Synergy Between Environment and Development Policies in Developing Countries: A Case Study of the Petroleum Industry in Nigeria' at 7, available at http://userpage.fu-berlin.de/ffu/akumwelt/bc2004/download/emeseh_f.pdf.

wastes. It focuses on the regulation of produced water, drilling fluids/mud, drilling cuttings, produced sand, storage displacement water and deck drainage. This is followed by a comparative analysis of standards for the management of offshore E&P wastes in other jurisdictions with the United Kingdom (hereafter the UK) as the main comparator. The paper concludes with the recommendation that the provisions of EGASPIN should be revised to facilitate effective management of offshore E&P wastes in Nigeria as it is not in line with contemporary international standards.

2 OVERVIEW OF OFFSHORE E&P WASTE MANAGEMENT IN NIGERIA

The regulation of offshore oil and gas activities in Nigeria is within the legislative competence of the federal government because mines and minerals, including oil fields, oil mining, geological surveys and natural gas are listed in the exclusive legislative list of the Nigerian Constitution.⁹ Although several environmental laws deal with waste management and pollution abatement, they are generally outdated, limited in scope or not directly applicable to offshore oil and gas activities. For instance, the National Environmental Standards and Regulations Enforcement Agency Act 2007 (hereafter NESREA Act) empowers NESREA, amongst other things, to enforce compliance with regulations on the handling and disposal of hazardous chemicals and waste except in the oil and gas sector.¹⁰ As a result, the NESREA Act, which is the foremost environmental legislation in Nigeria, excludes the oil and gas industry from its scope of application. In addition, the Harmful Waste (Special Criminal Provisions, etc) Act 2004

makes it a crime to dispose of any harmful waste in any land or territorial waters, contiguous zone, exclusive economic zone (EEZ) or inland waterways of Nigeria but makes no mention of offshore waters.¹¹ Furthermore, the National Effluent Limitation Regulations of 1991 contains effluent limitations for the discharge of E&P wastes into inland waters and so it is not applicable to the offshore oil and gas industry.¹² Consequently, the offshore oil and gas waste management regime is inert as there is currently no specific law regulating offshore E&P waste management in Nigeria. Nonetheless, EGASPIN contains effluent limitations, standards and procedures for evaluation and monitoring of the discharge of different types of E&P wastes into the environment.¹³ DPR is responsible for administering and ensuring compliance with the provisions of EGASPIN. The standards and requirements in EGASPIN for the regulation E&P wastes are examined hereunder.

2.1 Regulation of Produced Water

Produced water is water brought to the surface during routine production operations or injected seawater which is used to increase the pressure in oil wells and maximise oil and gas recovery.¹⁴ It includes formation water, condensed water, brine, injection water and other technological wastes which usually consist of oil, natural hydrocarbons, inorganic salts and technological chemicals.¹⁵ The discharge of produced water accounts for the greater portion of wastes arising from offshore oil and gas E&P operations.¹⁶

⁹ Item 39, Part 1, Second Schedule to the 1999 Constitution of the Federal Republic of Nigeria, Cap. C34, LFN 2004.

¹⁰ See National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007, Federal Republic of Nigeria Official Gazette No.92 of 31 July, 2007, Vol.94, A635-655, Section 7. See also Sections 7 (h), (j), (k) & (l); 8 (k) & (s) and 24 (3) which exclude the oil and gas sector from the provisions of the Act.

¹¹ Harmful Waste (Special Criminal Provisions, etc) Act, 2004, Cap. H1, LFN 2004.

¹² See Schedule 3, Regulation 4, National Effluent Limitation Regulations of 1991.

¹³ See the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN), note 4 above, Part I.

¹⁴ See '2000 Environmental Protection and Offshore Oil' 1, at 21-22, available at <http://ebookbrowse.com/2000-environmental-protection-and-offshore-oil-pdf-d147754430>.

¹⁵ Stanislav Patin, 'Waste Discharges During Offshore Oil and Gas Activity', available at <http://www.offshore-environment.com/discharges.html>.

¹⁶ Lin Zhao et al., 'A Risk Assessment Model for Produced Water Discharge From Offshore Petroleum Platforms- Development and Validation' 56/11 *Marine Pollution Bulletin* 1890 (2008).

A permit is required under EGASPIN for the discharge of produced water and all existing point sources of produced water have to be registered with the Director of Petroleum Resources (hereafter Director).¹⁷ A written approval of the Director must also be obtained before making any changes to any operation or process which may change or cause a material increase or decrease in the quantity and quality of the produced water discharged.¹⁸ The discharge of produced water in Nigeria without a permit is prohibited and is an offence punishable by fine, imprisonment and/or revocation of permit or petroleum licence.¹⁹ Operators are therefore held accountable for the discharge of produced water without a permit. The requirements for obtaining a permit and approval are fundamental to restrict the discharge of produced water. It is in line with international practices because countries like Norway, Denmark, the United States of America and the UK also require permits for the discharge of produced water. However, certain activities such as unplanned discharge of produced water (requiring contingency permits) and the transfer of produced water to another field for treatment and subsequent re-injection (requiring transfer permits) are not covered by permits or approvals under EGASPIN. Permits for unplanned discharge of produced water and the transfer of produced water are provided for in other jurisdictions such as the UK,²⁰ and should

be included within the purview of EGASPIN to ensure effective control of the discharge of produced water during the various stages of oil and gas production.

The effluent limitation for the discharge of produced water into offshore water bodies is 40mg/l of oil and grease content.²¹ Non-compliance with this limit is backed by sanctions. Thus, operators who exceed this limit or fail to adhere to the limit would be guilty of an offence.²² Although this is the standard in many countries, it is submitted that Nigeria should join the league of innovative countries that have increased their limits for the discharge of produced water. For instance, the effluent limitation for the discharge of produced water in Australia, Denmark, Norway, and the UK is 30mg/l.²³ It is therefore desirable for this 30mg/l standard to be incorporated into EGASPIN.

There are also requirements for sampling, analysis and monitoring of the discharge of produced water. Sampling and analysis of the discharged produced water must be undertaken once a week and reported monthly to the Director to ensure compliance with the effluent limitation.²⁴ The Director must also be informed weekly of situations of significant non-compliance with the effluent limitation.²⁵ Offshore oil and gas operators must also complete a chemical analysis of produced water and monitor the volume, rate, method and frequency of discharge of produced

17 See the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN), note 4 above, Part III, Article 3.2.1.

18 *Id.*, Article 3.2.3.

19 *Id.*, part III and part IX, Articles 4.6.2.3 & 4.7. Article 4.6.2.3 provides that when the effluent quality of discharges is exceeded by twenty per cent of the allowed daily/monthly average concentration per parameter, a fine of ₦5,000.00 for every 50m³ of water discharged is imposed. In addition, upon conviction, an imprisonment for a term not exceeding two years shall apply for a first offender. Article 4.7 provides that any person, body corporate or operator of a vessel or facility, who persistently violates the provisions of these guidelines and standards, shall have his lease, licence and/or permit revoked.

20 In the United Kingdom, a contingency oil discharge permit may also be required to cover the possibility of unplanned produced water discharges under the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005 (OPPC Regulations). A licence is also required under section 5 of the Food and Environment Protection Act 1985 for the transfer of produced water to another field for re-injection.

21 See the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN), note 4 above, note 17 above, Part III, Article 3.8.2.

22 *Id.*, Part IX, Articles 4.6.2.3 & 4.7.

23 OSPAR Recommendation 2001/1 for the Management of Produced Water from Offshore Installations, available at http://www.ospar.org/v_measures/browse.asp?menu=01110305610124_000001_000000.

See also Section 8.2.2 of the Guidance Notes on the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005, available at <https://www.og.decc.gov.uk/environment/OPPCGuidance.doc>.

24 See the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN), note 4 above, Part III, Article 3.8.3.

25 *Id.*

water.²⁶ Although these requirements are commendable, they depend on the goodwill of offshore operators for compliance. There is no guarantee that the operators will provide accurate reports on the results of sampling and monitoring. If sampling and monitoring is not carried out properly or not carried out at all, the purpose of the requirements would be undermined. DPR should therefore designate officials specifically for monitoring the discharge of produced water and other E&P wastes. Moreover, there are no defined parameters for carrying out sampling and analysis of produced water. DPR should therefore set out parameters for determining what comprises non-compliance as well as a clearly defined system for sampling and analysis of produced water.

2.2 Regulation of Drilling Mud/ Fluids and Drill Cuttings

Drilling mud/fluids are substances that are used to control temperature and pressure in drilled boreholes, to cool and lubricate the drill bit and to remove drill cuttings from boreholes.²⁷ Drill cuttings are small fragments of subsurface rock of varying size and texture which break and become integrated in drilling fluids/mud during drilling operations.²⁸ Drilling fluids/mud could be oil-based mud/fluids (OBMs), synthetic-based mud/fluid (SBMs), or water-based mud/fluids (WBMs).²⁹ Of the three types of drilling fluids/mud, WBMs are likely to cause limited environmental damage than

other types of drilling fluids/mud while OBMs are more toxic than the others.³⁰ It is therefore advisable that WBMs are used for offshore E&P operations to minimise damage to the environment.³¹

An environmental permit from DPR is required before any drilling operation can commence in Nigeria.³² Accordingly, an environmental permit is required for the use and discharge of drilling fluids/mud. The application for an environmental permit must include the treatment and disposal programmes for drilling fluid/mud and drill cuttings as well as detailed information and an approval letter for the mud system to be used.³³ A formal application for the use of OBMs must also be made to DPR and must be justified on geological, safety and/or economic grounds.³⁴ The permitting requirement reflects the practice in many countries and is essential for controlling the discharge of drill cuttings and drilling fluid/mud into the offshore environment. It is helpful because the discharge of drill cuttings and fluids/mud without a permit is prohibited and is an offence.³⁵ So, it serves as a deterrent because operators will not want to be held liable for the discharge of drilling fluid/mud and risk revocation of their drilling licences. However, the transfer of drill cuttings to another field for treatment and re-injection is not covered by a permit under EGASPIN and needs to be addressed by DPR.

The discharge of spent oil based drilling mud/fluids and whole fluids/mud into offshore waters is prohibited. However, the discharge of whole drilling mud/fluids, spent drilling mud/fluids, OBMs or SBMs and drill cuttings is permitted in offshore areas 12 nautical miles away from the shoreline and of depth not less than 200 feet provided the specified effluent limitations are satisfied.³⁶ The discharge of cuttings contaminated with WBMs into offshore

26 *Id.*, Articles 4.1.1 & 4.1.2 and table III-2. See also G.U. Agha et al., 'The Development of Environmental Guidelines and Standards for the Petroleum Industry in Nigeria: A Systematic Approach and Future Challenges' (Paper Presented at the Society of Petroleum Engineers International Conference on Health, Safety and Environment in Oil and Gas Exploration and production at Calgary, Alberta, Canada, 29-31 march 2004).

27 Sandra Kloff and Clive Wicks, 'Environmental Management of Offshore Oil Development and Maritime Oil Transport' (2004) 1 at 27, available at http://cmsdata.iucn.org/downloads/offshore_oil_eng.pdf.

28 Gaurina-Medimuree Nediljika et al., 'Offshore Drilling and Environmental Protection', available at http://bib.irb.hr/datoteka/274894.lanakOFFSHORE_DRILLING_AND_ENVIRONMENTAL_PROTECTION.doc. See also '2000 Environmental Protection and Offshore Oil, note 14 above at 21.

29 *Id.*

30 *Id.* See also 'Operational Discharges of Oil', available at <http://oils.gpa.unep.org/facts/operational.htm>.

31 *Id.*

32 See the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN), note 4 above, Part II, Article 3.2.1.

33 *Id.*, Article 3.2.1.2.

34 *Id.*, Article 2.0, Appendix II-1.

35 *Id.*, Part IX.

36 *Id.*, Part II, Article 3.4.1.1.

waters without treatment is permitted provided the discharge does not contain free oil as determined by a visual sheen on the receiving water surface.³⁷ Special approval must be sought and granted by the Director when such discharge is into vulnerable areas or close to the shore.³⁸ The discharge of cuttings contaminated with oil from low toxic mineral OBM system into offshore waters is also prohibited unless treated to residual oil content less than 10g/kg, that is, one per cent of oil-on-cuttings.³⁹ In addition, the discharge of cuttings contaminated with oil from synthetic/pseudo oil based mud systems into offshore waters is prohibited unless treated to a residual oil content of less than 50g/kg, that is, five per cent of oil-on-cuttings. Cuttings contaminated with esters may be discharged in offshore waters only when the residual oil content is less than 100g/kg, that is, ten per cent of ester-on-cuttings.⁴⁰

The discharge limitation for cuttings contaminated with WBMs is in line with the discharge standards of countries like the UK and Norway. However, the discharge limitation for OBMs and SBMs is low and needs to be increased in line with international practice. For instance, in Denmark, India, Norway and the UK, the discharge of oil phase fluids (OPF) which includes SBMs is prohibited unless treated to one per cent of OPF contamination by dry weight.⁴¹ In fact, such discharge should only be authorised in exceptional circumstances like in the UK and other countries that are party to the Convention for the Protection of the Marine Environment of the North-East Atlantic 1992 (hereafter OSPAR Convention). Measures such as screening and assessment in compliance with best available technique or best environmental practice should also be adopted for the management of cuttings piles in offshore waters of Nigeria. It is therefore desirable for DPR to set the limitation for OBMs and SBMs to reflect the trend in other countries.

37 *Id.*, Article 3.5.6.1.

38 *Id.*

39 *Id.*

40 *Id.*

41 S.T. Wait and S. Sharma, 'The Discharge of Synthetic Based Mud Cuttings Offshore - A Legislative Comparison Between India and Other Parts of the World', (2009), available at <http://www.petrotechsociety.org/elibrary/2009.php>.

There is also a mandatory monitoring obligation for operators to sample and analyse mud systems and/or base oil to determine whether they contain toxic and hazardous substances.⁴² Operators are also required to observe the volume, rate, method and frequency of the discharge of fluids/cuttings.⁴³ A final well report containing the types, composition and quantity of mud/mud additives used, volume of drilling fluids discharged and the volume of drill cuttings produced and discharged must also be submitted to the Director.⁴⁴ These requirements are however dependent on the goodwill of offshore operators to effectively undertake such obligations. It is anyone's guess whether they will conform to the requirements without supervision from DPR. Therefore, the DPR has to play a more active role in monitoring and ensuring that the requirements are carried out effectively. There is also an additional requirement that the point of discharge of the cuttings of oil and water based mud must be properly designated on installations to enable DPR inspectors to identify, inspect and monitor the points of discharge and undertake sample analysis where necessary.⁴⁵ It is however submitted that the point of discharge should also be included in the environmental permit for the purpose of clarity.

2.3 Regulation of Produced Sand

Produced sand is sand extracted with oil in varying degrees during drilling and it is a potential source of oil pollution.⁴⁶ It includes slurred particles of sand used in hydraulic fracturing, accumulated formation sands and scale particles generated during production.⁴⁷ It also includes desander discharge from produced water treating systems.⁴⁸

42 See the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN), note 4 above, Part II, Article 3.3.

43 *Id.*, Article 3.8.1.1 and table 11-8.

44 *Id.*, Article 3.8.1.

45 *Id.*, Article 3.5.6.2.

46 See Patin, note 15 above.

47 'Proposed Reissuance of the NPDES General Permit for the Western Portion of the Outer Continental Shelf of the Gulf of Mexico (GMG290000)', available at www.epa.gov/EPA-IMPACT/2006/December/Day-21/i21890.htm.

48 *Id.*

There is no clear permitting obligation for the discharge of produced sand in EGASPIN. It merely states that the discharge of produced sand must be through methods that do not endanger human life and living organisms and cause significant pollution to ground and surface waters.⁴⁹ The approved methods for disposing of produced sand as provided in EGASPIN are recycling, incineration, solidification, land farming and land filling. Any other method(s) acceptable to the Director can be used after obtaining an approval.⁵⁰ However, it is not clear whether produced sand can be discharged into offshore waters or must be strictly disposed of by the aforementioned methods. DPR should therefore clarify this issue by providing clear and precise standard for the discharge of produced sand into offshore waters.

The discharge of produced sand containing low specific activity (LSA) or naturally occurring radioactive materials (NORM) is subject to an approval granted by the Director.⁵¹ This provision conforms to international standards as many countries require authorisation for the discharge of substances containing LSA/NORM.⁵² Although the discharge of produced sands containing LSA/NORM into inland waters and near shore waters is prohibited unless treated to the satisfaction of the Director, no mention is made of discharge into offshore waters.⁵³ Consequently it is unclear what treatment to the Director's satisfaction entails or whether the discharge of produced sands containing LSA/NORM into offshore waters is prohibited. Moreover, even though there are sampling and monitoring obligations for the discharge of produced sand in EGASPIN, there is no requirement for the maintenance of records and notification for non-compliance with the effluent limitation. It is therefore submitted that these requirements should

be included in EGASPIN for effective control of the discharge of produced sand in Nigeria.

2.4 Regulation of Displacement Water

Storage displacement water is water that is pumped in and out of storage chambers during oil production and off-loading operations.⁵⁴ It is usually contaminated with oil and other chemicals.⁵⁵ There is no provision in EGASPIN regulating the discharge of storage displacement water. This is unsatisfactory as displacement water is a source of marine pollution especially if contaminated with high concentration of oil and chemicals. It is therefore imperative for an effluent limitation to be established to regulate the discharge of displacement water. The effluent limitation for the discharge of displacement water in OSPAR member countries is 40mg/l.⁵⁶ This standard can be incorporated into EGASPIN to control the discharge of displacement water.

2.5 Regulation of Deck Drainage

Deck drainage is water that reaches the deck of offshore installations through precipitation, sea spray, rainwater or from routine operations such as wash down and fire drills.⁵⁷ It may be contaminated with oil and grease that lands on the deck of offshore installations. It is also known as platform drainage or machinery space drainage.

Although EGASPIN provides for mandatory monitoring requirements for the discharge of deck drainage, it contains no provision for the effluent limitation for the discharge of deck drainage. It only provides that deck drainage may be collected and treated separately for oil removal by gravity

49 See the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN), note 4 above, Part II, Article 3.6.4.1.

50 *Id.*

51 *Id.*, Article 3.6.4.2.

52 One such country is the UK which requires authorisation under its Radioactive Substances Act 1993 for the discharge of produced sands containing LSA/NORM.

53 See the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN), note 4 above, Article 2.0, Appendix II-1.

54 The National Energy Board (Canada), The Offshore Waste Treatment Guidelines (OWTG), December 2010 at 12, available at http://www.cnsopb.ns.ca/pdfs/owtg_redraft.pdf.

55 *Id.*

56 PARCOM Recommendation 86/1 of a 40mg/l emission standard for platforms, available at www.ospar.org/documents/dbase/decrecs/recommendations/pr86-01e.doc. This is the standard in the United Kingdom and Norway.

57 See OWTG, note 54 above at 8.

separation or handled by the produced water treatment system before discharge. So it is not clear whether mere treatment is required before the discharge of deck drainage into offshore waters. However, Nigeria is a party to the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (hereafter MARPOL 73/78). The effluent limitation of oil in water and oily mixtures for machinery space drainage (deck drainage) from offshore installations under MARPOL 73/78 is 15ppm.⁵⁸ This is the international standard for the discharge of deck drainage. However, Nigeria has not implemented the provisions of MARPOL 73/78 into its laws and so the limitation is not applicable in Nigeria. It is therefore necessary to incorporate this standard into EGASPIN to enable the regulation of deck drainage.

Although there is a provision in EGASPIN for inspection by authorised inspectors to ensure compliance, there is no provision for the issuance of enforcement notices or prohibition notices in situations where the provisions of EGASPIN have been contravened. It is therefore necessary that these notices be included in EGASPIN for better environmental regulation like in the UK and South Africa.⁵⁹ There is also a requirement in EGASPIN for the submission of a waste release inventory to the Director at the end of each year for an account of the total release of all effluents (wastes) discharged onsite from offshore installations.⁶⁰ This is similar to the requirement for the maintenance of record books to keep track of the amount of E&P wastes discharged from offshore installations in the UK. It

however depends on the goodwill of the operators to give an accurate account of the total amount/quantity of wastes discharged from their installations. Thus, accurate reports may not be given especially in situations of non compliance with effluent limitations for wastes. It is submitted that inspectors examine the inventory during routine monthly visits to offshore installations to ensure accuracy of the reports.

3 COMPARATIVE OVERVIEW: OFFSHORE WASTE MANAGEMENT IN OTHER JURISDICTIONS

3.1 United Kingdom

Like Nigeria, the regulation of offshore oil and gas activities in the United Kingdom is the responsibility of the Parliament since offshore oil and gas matters are reserved matters.⁶¹ However, regulation up to the three mile offshore limit is devolved to the national governments of Scotland, Wales and Northern Ireland.⁶² In contrast to the Nigerian offshore oil and gas regulatory regime, the UK regime is dynamic and constantly developing because the laws are regularly amended to address new environmental concerns.⁶³ Environmental regulation of the UK offshore oil and gas industry has become wider in scope and tougher in

58 Revised Annex I of MARPOL 73/78, Regulation 15, available at http://www.amsa.gov.au/Marine_Environment_Protection/Revision_of_Annexes_I_and_II_of_MARPOL/117-52.pdf.

59 See EGASPIN, note 17 above, Part IX, Article 4.1. An inspector may require permits, licences, certificates, other documents and equipment to be produced for examination without a warrant; enter and search oil and gas facilities on suspicion that an offence has been committed; perform tests and take samples and arrest persons suspected of committing an offence. However, the power of inspection is discretionary as illustrated by the use of the word 'may' in the guidelines.

60 *Id.*, Part II, Article 3.8.1.3 and Part III, Article 4.1.3.

61 Reserved matters are the matters dealt with by the United Kingdom Parliament to the exclusion of the national governments of Scotland, Wales and Northern Ireland. See 'Definition of Reserved Powers', available at <http://dictionary.babylon.com/reserved%20powers>.

62 S. Boyes, L. Warren and M. Elliott, 'Regulatory Responsibilities and Enforcement Mechanisms Relevant to Marine Nature Conservation in the UK', Report to the Joint Nature Conservation Committee (JNCC) of 11 July 2003, available at www.jncc.gov.uk/PDF/enforcement.pdf.

63 The OPPC Regulations have been amended with its most recent amendment in 2011. Likewise, the NPDES requirements are constantly updated by EPA so as to meet the goals and requirements of the CWA.

implementation.⁶⁴ The industry is closely controlled by legislation and operators are also increasingly being held accountable for their operations through environmental principles such as the precautionary principle, the polluter pays principles and producer responsibility.⁶⁵ Consequently, companies exploring and developing the UK's oil and gas resources are subject to a balanced regime of environmental regulation from national, European and international laws.⁶⁶ The United Kingdom Offshore Operators Association (hereafter UKOOA) has also produced some voluntary codes and guidelines and negotiated agreements with appropriate government agencies to facilitate the regulation of the offshore oil and gas activities.⁶⁷

The UK laws regulating offshore oil and gas activities contain standards and procedures for different types of offshore E&P wastes and are ultimately geared towards protecting the marine environment. They include the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005;⁶⁸ Offshore Chemical Regulations 2002;⁶⁹ Food and Environment Protection Act 1985 (as amended);⁷⁰ Merchant Shipping (Prevention of Oil Pollution) Regulations 1996;⁷¹ and the OSPAR

Convention.⁷² The Department of Energy and Climate Change (hereafter DECC) is in charge of administering and ensuring compliance with the UK oil and gas laws.

The discharge of produced water in the UK is mainly regulated by the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005 (hereafter OPPC Regulations). The OPPC Regulations prohibit the discharge of oil into the sea unless a permit has been issued for such discharge.⁷³ A 'life' permit is required under the OPPC Regulations for overboard discharge into the sea and re-injection of produced water.⁷⁴ The effluent limitation under the OPPC Regulations for the discharge of produced water into offshore water bodies in the UK is 30 mg/l.⁷⁵ A licence is also required in the UK for the transfer or export of produced water to another field for re-injection,⁷⁶ as well as a contingency oil discharge permit for unplanned produced water injection or re-injection discharges.⁷⁷ However, a licence is not required for the transfer of produced water to another installation for separation, subsequent treatment and re-injection because such activities are exempted.⁷⁸ There are also

64 Edward Salter and John Ford, 'Holistic Environmental Assessment and Offshore Oil Field Exploration and Production', 42/1 *Marine Pollution Bulletin* 45 (2001).

65 *Id.*

66 Edward Salter and John Ford, 'Environmental Pollution Challenges and Associated Planning and Management Issues Facing Offshore Oil and Gas Field Development in the UK', 43/2 *Journal of Environmental Planning and Management* 253, 256- 257 (2000).

67 UNEP Offshore Oil and Gas Environment Forum, *Environmental Regulations in United Kingdom Offshore Oil and Gas Industry*, 2001, available at <http://www.oilandgasforum.net/management/regulation/ukprof.htm>.

68 The Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations, 2005 (OPPC Regulations), available at <http://www.opsi.gov.uk/si/si2005/20052055.htm>.

69 The Offshore Chemicals Regulations, 2002, available at <http://www.opsi.gov.uk/si/si2002/20021355.htm>.

70 Food and Environment Protection Act 1985 (c. 48), available at http://www.opsi.gov.uk/RevisedStatutes/Acts/ukpga/1985/cukpga_19850048_en_1.

71 The Merchant Shipping (Prevention of Oil Pollution) Regulations, 1996 (POOP Regulations), available at http://www.opsi.gov.uk/si/si1996/Uksi_19962154_en_1.htm.

72 Convention for the Protection of the Marine Environment of the North-East Atlantic, 1992, (1993) 32 *Int. Leg. Mat.* 1072.

73 See the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005, note 68 above, Regulation 3.

74 See Guidance notes on the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005 (as amended 2011) (hereafter Guidance Notes on the OPPC Regulations), Section 7.2, available at <http://og.decc.gov.uk/assets/og/environment/oppc-guide.pdf>. A life permit is a permit 'issued for the life of an offshore installation, that is, for as long as it is involved in offshore activities for the duration of the activity to be covered by the permit'. The schedules attached to a 'life' permit can either be valid indefinitely, or time limited for specific discharge activities. 'Life' permits are subject to a formal review as stipulated in the permit schedule. The minimum review period is once in three years.

75 *Id.*, Section 8.2.2.

76 Section 5 of the Food and Environment Protection Act 1985. See also Annex A, Section A1. 2.4, Guidance Notes on the OPPC Regulations.

77 See Guidance notes on the OPPC Regulations, note 74 above, Annex A, section A1.2.4.

78 See 'Produced Water Discharge and Reinjection', available at http://www.oilandgasukenvironmentallegislation.co.uk/Contents/Topic_Files/Offshore/Produced_water.htm.

monitoring and reporting requirements for the discharge of produced water in the UK. For instance, operators in the UK are required to carry out monthly reporting via the UKOOA/DECC environmental emissions monitoring system (EEMS) database, for environmental monitoring and for maintaining records of operations under the OPPC Regulations.⁷⁹

The use, discharge and re-injection of drilling fluids/mud and drill cuttings in the UK is mainly regulated by the Offshore Chemical Regulations 2002 (hereafter OCR).⁸⁰ A term permit is required for the use, discharge and re-injection of drilling fluids/mud (OBMs and SBMs) under the OCR.⁸¹ The permit must be in place before commencement of operations. Application for use and discharge of chemicals must be made using a Petroleum Operations Notice (PON) 15B form,⁸² even where there will be no overboard discharge.⁸³ The discharge or re-injection of cuttings contaminated with oil also requires a permit under the OPPC Regulations⁸⁴ while the transfer of drill cuttings to another field for re-injection requires a licence under the Food and Environment Protection Act 1985. Formal consent is not needed for re-injection of OBM/SBM cuttings onsite but DECC's approval must be obtained.⁸⁵ The discharge of OBM, SBM

and diesel-oil-based drilling fluids is prohibited and any discharge would be in breach of the permit. However, the discharge of treated cuttings at a concentration greater than one per cent OBM contamination by dry weight is allowed.⁸⁶ The discharge of cuttings contaminated with WBM into offshore waters is permitted for ocean discharge in the OSPAR countries and so is allowed in the UK.⁸⁷ There are also reporting and sampling/monitoring requirements for the discharge of drilling mud/fluids under the OCR.⁸⁸

The discharge of produced sand and scale contaminated with oil is mainly regulated by the OPPC Regulations. The discharge of produced sand and scale can either be covered by a 'life' permit or a 'term' permit.⁸⁹ Where an installation already has a life permit, the discharge of produced sand and scale can be covered within the permit or otherwise a term permit would be appropriate.⁹⁰ The direct discharge of water used to fluidise or wash the sand/scale will also require an oil discharge permit under the OPPC Regulations.⁹¹ The discharge of sand/scale containing low specific activity or naturally occurring radioactive materials in the UK also requires authorisation under the Radioactive Substances Act 1993.⁹² The performance standards for the discharge of produced sand/scale in the UK is specific to each case and as agreed by DECC. There is also a requirement for the maintenance of records,

79 See Sections 8.3.3, 8.3.4, 8.2.9 and 8.3.1, guidance notes on the OPPC Regulations for more details. The monthly report is to be submitted by the 16th of every month for each preceding calendar month.

80 The Offshore Chemicals Regulations, 2002 (OCR), available at <http://www.opsi.gov.uk/si/si2002/20021355.htm#3>.

81 *Id.*, Regulation 3 (1). A 'term' permit is issued for discharges that occur during the duration of a specific operation or for activities that are not undertaken on a regular basis.

82 A PON15B is a multipurpose electronic form which serves as an application for a term permit for the use and discharge of chemicals during the drilling and completion under OCR as well as consent application for other consents such as the EIA Direction under the EIA Regulations (1999).

83 'OBM and SBM Use and Discharge', available at http://www.ukooaenvironmentallegislation.co.uk/contents/Topic_Files/Offshore/OBM_SBM%20Consent.htm.

84 'Re-injection of Mud and Cuttings', available at http://www.ukooaenvironmentallegislation.co.uk/contents/Topic_Files/Offshore/Re-injection.htm.

85 *Id.*

86 See OBM and SBM use and discharge, note 83 above.

87 Jerry M. Neff, 'Estimation of Bioavailability of Metals from Drilling Mud Barite', 4/2 *Integrated Environmental Assessment and Management* 184 (2008).

88 See Offshore Chemicals Regulations, note 80 above, Regulation 5 (2). See Guidance Notes on the Offshore Chemicals Regulations 2002 (As Amended 2011), Sections 11.1-11.5 and 12.1-12.3, available at <http://og.decc.gov.uk/assets/og/environment/ocr-guide.pdf>.

89 Guidance Notes on the OPPC Regulations, note 74 above, annex A, Section A1.6.3.

90 'Summary of OPPC permit requirements', available at http://www.ukooaenvironmentallegislation.co.uk/contents/topic_files/offshore/OPPC_Summary_Table.htm.

91 Guidance Notes on the OPPC Regulations, note 74 above, annex A, Section A1.6.2.

92 *Id.*, annex A, A1.6.4.

notification and reporting of the discharge of produced sand.⁹³

The key legislation regulating the discharge of displacement water in the UK is the OPPC Regulations. A 'life' permit is required for the discharge of displacement water. The permit covers all routine oil to sea discharges or re-injection of displacement water.⁹⁴ Under the OPPC Regulations, the monthly average concentration of dispersed oil in displacement water must not exceed 40 mg/l and the maximum concentration of dispersed oil must not exceed 100 mg/l at any time.⁹⁵ Monitoring/sampling, reporting and maintenance of records of displacement water discharges is also required under the OPPC Regulations and will be specified in the permit schedule.⁹⁶ For instance, DECC must be notified if the monthly average concentration of dispersed oil in displacement water discharged by an installation exceeds 40 mg/l.⁹⁷

The Merchant Shipping (Prevention of Oil Pollution) Regulations 1996 (hereafter POOP Regulations) regulate the discharge of oily drainage water in the UK.⁹⁸ However, the POOP Regulations do not apply to hazardous and non-hazardous drainage, that is, oily drainage resulting from oil and gas operations because such drainage is covered by

the OPPC Regulations.⁹⁹ The POOP Regulations and their amendments give effect to MARPOL 73/78 in the UK and are applicable to offshore installations.¹⁰⁰ The effluent limitation of oil in water and oily mixtures for machinery space drainage from offshore installations in the UK is 15 ppm.¹⁰¹ In addition, the offshore installation must have the appropriate machinery required under the POOP Regulations and keep a record of all operations involving oil or oily mixture discharges.¹⁰² A United Kingdom Oil Pollution Prevention Certificate (UKOPP) or International Oil Pollution Prevention Certificate (IOPP Certificate) (in the case of foreign flagship units) is required for the discharge of oily machinery space drainage water.¹⁰³ A temporary exemption from the requirement to obtain a UKOPP Certificate may be granted under an informal agreement with the Maritime and Coastguard Agency pending a more formal and final arrangement.¹⁰⁴ The exemption is based on the grounds of cost and technical difficulties and that a small amount of machinery space drainage water is being discharged.¹⁰⁵ The drainage system of every offshore installation must be surveyed before a UKOPP Certificate or IOPP Certificate is issued to it for the first time. The certificate is subject to renewal every five years subject to a re-survey.¹⁰⁶ There is also a requirement under the POOP Regulations for the maintenance of an oil record

93 *Id.* See the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005, note 68 above, regulation 4. See also 'Produced Sand and Scale', available at http://www.oilandgasukenvironmentallegislation.co.uk/Contents/topic_files/offshore/produced_sand.htm. The records must be reported to DECC on an annual basis (for life OPPC permits) or at the end of operation (for term permits). If the monthly average concentration of dispersed oil discharged on sand/scale exceeds the limit specified in the OPPC permit schedule, DECC must be notified within 2 working days of submission of the monthly returns via the OPPC non-compliance notification form. DECC must also be notified via the PON1 form if oil contaminated sand/scale is accidentally spilt into the sea without a permit or outside the period authorised.

94 *Id.*, Annex A, Section A1.3.

95 See 'Displacement Water', available at http://www.ukooaenvironmentallegislation.co.uk/contents/Topic_Files/Offshore/Displacement_water.htm.

96 *Id.*

97 *Id.*

98 See POOP Regulations, note 71 above.

99 'Drainage- Machinery Space', available at http://www.ukooaenvironmentallegislation.co.uk/contents/Topic_Files/Offshore/Oily_water.htm.

100 See POOP Regulations, note 71 above, Regulation 32 (1). The requirements applicable to ships of 400 tons gross tonnage and above also apply to offshore installations under the Regulations.

101 *Id.*, Regulation 32 (2). The POOP Regulations were amended by the Merchant Shipping (Prevention of Oil Pollution) (Amendment) Regulations 1997. The 1997 Regulations replaced the words 'platform drainage' with 'machinery space drainage'. See also Salter and Ford, note 66 above at 262 and Rough *Offshore* Facilities Environmental Statement, 2007 at 6, available at <https://og.decc.gov.uk/assets/og/environment/ospar-2007/centricasl-ems.pdf>.

102 *Id.*, Regulations 14, 25 (1) & (2) and 32.

103 *Id.*, Regulation 7. See also Drainage - Machinery Space, note 99 above.

104 See Drainage - Machinery Space', note 99 above.

105 *Id.*

106 See POOP Regulations, note 71 above, Regulation 4(1).

book to record all oily discharges.¹⁰⁷ Inspections may also be undertaken to examine the oil record book or verify that there is a valid IOPP Certificate or UKOPP Certificate for the offshore installation.¹⁰⁸

3.2 United States of America

The regulation of offshore oil and gas activities in the United States of America (USA) is generally the responsibility of the federal government. However, regulation of the lands and resources three nautical miles from the shore is devolved to coastal states.¹⁰⁹ The regulation of the offshore oil and gas industry in USA has broadened in scope and stringency with the underlying environmental principle being the best available treatment technology economically achievable.¹¹⁰ The law regulating the discharge and disposal of offshore E&P wastes in USA is the Clean Water Act 1977 (hereafter CWA).¹¹¹ The United States Environmental Protection Agency (hereafter EPA) is responsible for administering the CWA. The CWA requires that all discharges of pollutants (including E&P wastes) to surface waters such as streams, rivers, lakes, bays, and oceans must be authorised by a permit issued under the National Pollutant Discharge Elimination System (NPDES) program.¹¹² The EPA in furtherance of its authority

to implement the NPDES program developed and codified effluent limitation guidelines (hereafter ELGs) that establish technology-based limits for E&P wastes.¹¹³

A permit is required for the discharge of produced water in USA. Although offshore oil and gas facilities are allowed to discharge produced waters to the sea, the ELGs limit oil and grease in offshore produced water discharges to 29 mg/L monthly average and 42 mg/L daily maximum.¹¹⁴ Oil and gas operators may also inject produced water in USA offshore areas upon application to the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) and each application is **considered** on a case-by-case basis.¹¹⁵ Offshore facilities are also responsible for taking the necessary steps to demonstrate compliance with NPDES permit limits through sampling, recordkeeping, reporting, and preparation of best management practices plans or spill prevention plans.¹¹⁶

The discharge of non-aqueous (oil based) drilling fluids is prohibited into offshore waters in USA.¹¹⁷ The discharge of WBMs and associated drill cuttings are prohibited within three miles from the shore by the BAT and New Source Performance Standards (NSPS). The discharge of WBMs and associated drill cuttings, beyond three miles from the shore are allowed subject to certain numeric effluent limits and toxicity tests.¹¹⁸ Discharges of water-based

107 *Id.*, Regulation 10 (1).

108 *Id.*, Regulations 10 (6) and 34.

109 In 1947, the United States Supreme Court in *United States v. California*, 332 U.S. 19 (1947) determined that the Federal government, rather than coastal states, had paramount rights over the nation's coastal waters and resources. This set the stage for the Submerged Lands Act of 1953 which granted coastal states ownership of the lands and resources out to three nautical miles from shore.

110 See 'Produced Water Management Practices and Applicable Regulations', available at www.netl.doe.gov/technologies/pwmis/regs/federal/epa/index.html.

111 Federal Water Pollution Control Act as amended by the Clean Water Act of 1977, 33 U.S.C. § 1251 et seq.

112 See Clean Water Act, 1977 (CWA), Section 402. See also Scott Wilson, 'USEPA's Produced Water Permitting Requirements', available at www.touchoilandgas.com/usepa-produced-water-permitting-a7136-1.html; J.A. Veil et al., 'A White Paper Describing Produced Water From Production of Crude Oil, Natural Gas and Coal Bed Methane', available at www.evs.anl.gov/pub/doc/ProducedWatersWP0401.pdf.

113 40 Code of Federal Regulations (CFR), Part 435, available at http://ecfr.gpoaccess.gov/cgi/t/text/textidx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr435_main_02.tpl.

114 *Id.*

115 See 30 Code of Federal Regulations (CFR), Part 250.300(b) (2). Operators may inject produced water that originates on the Outer Continental Shelf (OCS) into injection wells as such injection is covered by the E&P exemption under the *Resource Conservation and Recovery Act (RCRA)*, 1976.

116 *Id.*

117 See 40 Code of Federal Regulations, note 113 above, Part 435.

118 *Id.* See also Regulating Petroleum Industry Wastewater Discharges in the United States and Norway- EPA Information Sheet of January 2011, available at http://www.epa.gov/region10/pdf/permits/ocs/information_sheet_regulating_petroileum_industry_discharges_US-Norway_Jan2011_.pdf.

drilling fluids and cuttings or cuttings associated with non-aqueous drilling fluids into offshore waters are limited to concentrations that pass Suspended Particulate Phase (hereafter SPP) toxicity test on aquatic organisms.¹¹⁹ Such discharge must meet a minimum toxicity requirement of 96-hour LC50 of the SPP toxicity test must be three per cent by volume (> 30,000 parts per million).¹²⁰ The discharge of WBM's contaminated with oil and diesel oil is also prohibited as determined by the static sheen test.¹²¹ The discharge of drilling fluids to which barite has been added is prohibited if such barite contains mercury in excess of 1.0 mg/kg (dry weight) or cadmium in excess of 3.0 mg/kg (dry weight).

In accordance with the CWA, the discharge of produced sand into offshore waters is prohibited by the effluent limitations representing the best available technology economically achievable.

With regard to deck drainage, there shall be no discharge of free oil as determined by the presence of film, sheen or discoloration on surface of receiving water (visual sheen test).¹²² Deck drainage contaminated with oil and grease must be processed through a oil/water separator prior to discharge.¹²³

Although the UK offshore waste management regime is subject to a myriad of laws and the CWA regulates the discharge of offshore wastes in USA, both jurisdictions have stringent procedures and mechanisms in their laws for effectively managing offshore E&P wastes. The Nigerian system could equally be subject to such stringent mechanisms, procedures and standards. It is submitted that Nigeria should emulate the regulatory system in the USA

where a single law regulates the discharge of different E&P wastes to avoid fragmentation of responsibilities and laws which is a problem in Nigeria.

4 RECOMMENDATIONS

DPR must be commended for issuing EGASPIN and for its efforts at controlling pollution from the oil and gas industry. Although EGASPIN has some commendable provisions, the regulation of offshore (E&P) wastes management in Nigeria still not at par with the standard in many countries. The current effluent limitation in EGASPIN for the discharge of produced water into offshore water bodies in Nigeria is low. Hence, the effluent limitation should be revised from 40mg/l to 30mg/l in line with the standard in countries like the UK, Australia, Canada, Denmark and Norway. Activities such as unplanned discharges of produced water and the transfer of produced water which are not covered under EGASPIN should be made subject to a permit under EGASPIN as is done in the UK and USA. In addition, the transfer of drill cuttings to another field for treatment and re-injection should also be included in permitting requirements under EGASPIN. The discharge standard for SBMs, that is, treatment to residual oil content of less than 50g/kg or five per cent of oil-on-cuttings, should also be revised and authorised only in exceptional circumstances like in the UK and other OSPAR countries. Measures such as the screening and BAT/BEP assessment should also be adopted for the management of cuttings piles in offshore waters of Nigeria like in the UK and other OSPAR countries. Permitting conditions should also be established for the discharge of produced sand under EGASPIN. The lack of effluent limitation for the discharge of displacement water and deck drainage also needs to be addressed by DPR. Accordingly, effluent limitations should be set to regulate the discharge of displacement water and deck drainage in Nigeria. An effluent limitation of 40mg/l should therefore be established in EGASPIN for the discharge of displacement water in line with the standard in the UK and other OSPAR countries. Similarly, an

119 *Id.* The SPP toxicity test is an acute toxicity measurement used to determine levels of pollutant concentrations which can kill a certain percentage of organisms exposed to the suspended particulate phase of the drilling fluids and cuttings. The toxicity limit is expressed as a concentration of the SPP from a sample of drilling fluid that would kill 50 per cent of marine organisms exposed to that concentration of the SPP, i.e., the lethal concentration, or LC50, of the discharge.

120 *Id.*

121 *Id.*

122 *Id.*

123 See EPA Information Sheet, note 118 above.

effluent limitation of 15ppm should be set out in EGASPIN for the discharge of deck drainage in line with the international standard set by MARPOL 73/78.

Evidently, DPR has to adopt measures to ensure the adequate regulation of offshore oil and gas (E&P) waste management. It is therefore recommended that an offshore oil and gas E&P waste management law with adequate provisions regulating the different E&P wastes should be developed in Nigeria. It is also imperative that while a law is being developed, the provisions of EGASPIN are amended to reflect areas that are lacking or inadequate. In addition, DPR should revise EGASPIN to make it less technical, more simple and explicable to laypersons and professionals alike as it is currently too technical and cumbersome to read. A cue could be taken from the UK which has guidance notes and explanatory notes that explain most of its regulations in simple language.

DPR should also undertake not just short term monitoring of offshore facilities generating wastes but also long term monitoring and surveillance to ensure that operators comply with the provisions of EGASPIN. Consequently, the government should ensure that DPR is provided with funding, state-of-the-art equipment and trained personnel to enable it to carry out its monitoring and inspection functions. All offshore oil and gas E&P activities should also be subjected to environmental impact statement and environmental impact assessment at every stage of exploration and production in order to facilitate the proper management of wastes generated.¹²⁴

Environmental NGOs play a vital role in creating awareness on environmental issues and influencing policies aimed at protecting the environment.¹²⁵ As such, there is need for a strong NGO presence in Nigeria as it could assist in the enforcement of

EGASPIN. This is necessary as NGOs have become important environmental watch-dogs worldwide and have assisted in deterring oil and gas operators who might otherwise violate the law.¹²⁶ For instance, in the UK, Greenpeace Limited succeeded in a judicial review action against the Secretary of State for Trade and Industry for the application of the Conservation (Natural Habitats, &c.) Regulations, 1994¹²⁷ to offshore areas and subsequently influenced the enactment of the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001.¹²⁸ The presence of dynamic NGO action is needed in Nigeria to pressurise the government to introduce more stringent measures and influence the enactment of legislation for offshore oil and gas activities. All political obstacles that may hinder NGOs and the public from participating in oil and gas environmental decision-making and implementation in Nigeria must be removed.

Lastly, there is lack of data on the amount of wastes generated or the number of offshore facilities in Nigeria. Hence there is need for better and efficient data collection and analysis to facilitate record keeping and information dissemination.

5 CONCLUSION

The offshore oil and gas industry has been immensely beneficial to the Nigerian economy. However, it is evident that the regulatory regime

¹²⁴ See Enogbo, note 7 above at 20.

¹²⁵ A. Chitra, 'Role of NGO's in Protecting Environment And Health' in Martin J. Bunch et al. eds., *Proceedings of the Third International Conference on Environment and Health* 105,106 (Chennai: Department of Geography, University of Madras and Faculty of Environmental Studies, York University, 2003).

¹²⁶ Yusuf Tayo Akeem, 'The Status of Environmental Governance in the Nigerian Oil and Gas Industry', available at www.nigeriansinamerica.com/articles/3608/1/The-Status-of-Environmental-Governance-in-the-Nigerian-Oil-and-Gas-Industry/Page1.html.

¹²⁷ The Conservation (Natural Habitats, &c.) Regulations 1994 implements the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

¹²⁸ *R v Secretary of State for Trade and Industry ex parte Greenpeace Ltd*, (QBD) CO/1336/1999, 5 November 1999, unreported.

for offshore oil and gas (E&P) activities is inadequate and in need of amendment. It is therefore pertinent for DPR to address the inadequacies in EGASPIN to ensure effective offshore (E&P) waste management. Indeed, a law must be developed to regulate the discharge and disposal of offshore (E&P) wastes so as to prevent environmental degradation and protect habitats and species located in areas where offshore E&P activities take place. In order to achieve this goal, the Nigerian government must shun its lackadaisical attitude and be more proactive in the enactment and amendment of oil and gas laws. Over the years, the Nigerian government has expressed little or no concern in enacting laws to control the adverse effects of offshore oil and gas activities. In fact the priority of the Nigerian government has been the achievement of economic growth rather than environmental regulation of oil and gas activities. Over the past 20 years, no law with appropriate environmental standards for regulating the offshore oil and gas industry has been enacted. Even where the laws are amended, it takes the government a considerable amount of time to make such amendments. For instance, EGASPIN is meant to be revised every five years but it took DPR 11 years to revise it and since then it has not been revised.¹²⁹ Perhaps the government is waiting for another 11 years to revise it. This is rather disheartening because Nigeria is a major oil producer and generates tons of wastes that contribute immensely to its environmental problems. As such, the government ought to be proactive in its environmental regulation of offshore oil and gas activities so as to ensure the protection of the environment.

¹²⁹EGASPIN was initially drafted in 1981, issued in 1991 and since 1991 it has been revised once in 2002.

*LEAD Journal (Law, Environment and Development Journal) is jointly managed by the
School of Law, School of Oriental and African Studies (SOAS) - University of London
<http://www.soas.ac.uk/law>
and the International Environmental Law Research Centre (IELRC)
<http://www.ielrc.org>*

