AN ASSESSMENT OF CONSUMER RIGHTS IN NIGERIA: A CASE STUDY OF THE SACHET WATER INDUSTRY

BY

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BEING A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF LAWS - LLM

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DECLARATION

I declare that the work in this dissertation entitled "An Assessment of Consumer rights in Nigeria: A case study of the water industry" has been carried out by me in the Department of Public Law, Faculty of Law, Ahmadu Bello University, Zaria. The information derived from the literature has been duly acknowledged in the text and the list of references provided. No part of this dissertation was previously presented for another degree or diploma in this or any other institution.

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CERTIFICATION

This dissertation entitled AN ASSESSMENT OF CONSUMER RIGHTS IN NIGERIA: A CASE STUDY OF THE WATER INDUSTRY by Isaiah Omadane EDEGBO meets the regulations governing the award of the degree of Master of Laws - LL.M of the Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This LL.M Dissertation is dedicated to God, to my father Mr. Simon Wada Edegbo, my Mother Mrs. Monica Edegbo and my sisters - Urane Blessing Edegbo, Ileatu Dorathy Edegbo and Atule Edegbo.

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ABBREVIATIONS

AC	-	Appeal Cases
Ag.	-	Acting
Anor	-	Another
ATWAP	-	Association of Table Water Producers
C.C.R	-	Consumer Confidence Report
CAMON	-	Consumer Affairs Movement of Nigeria
Cap	-	Chapter
CCHCJ	-	Certified Copy of the High Court Judgments
CJ	-	Chief Judge
CJN	-	Chief Justice of Nigeria
Co.	-	Company
CWA	-	Clean Water Act
EPA	-	United States Environmental Protection Agency
EU	-	European Union
FDAC	-	Federal Department of Food Drug Administration and Control
FG	-	Federal Government of Nigeria
GMP	-	Good Manufacturing Practice
GRAS	-	Generally Regarded as Safe
HACCP	-	Hazard Analysis and Critical Control Point
Inc	-	Incorporated
ISO	-	International Standard Organization
J	-	Judge
JCA	-	Justice of the Court of Appeal
LFN	-	Laws of the Federation of Nigeria

LGA	-	Local Government Area
Ltd	-	Limited Liability Company
MCL	-	Maximum Contaminants Level
MDAs	-	Minister Department and Agencies
MCLG	-	Maximum Contaminants Level Goals
MDAs	-	Ministries, Departments and Agencies
MDG	-	Millennium Development Goals
MICR	-	Magnetic Ink Card Reader
NAFDAC	-	National Agency for Food and Drug Administration and Control
NASRDA	-	National Space Research and Development Agency
NBC	-	Nigerian Bottling Company
NCDRC	-	National Consumer Disputes Redressal Commission (India)
NCLR	-	Nigerian Commercial Law Reports
NCWR	-	National Council on Water Resources
NDLEA	-	National Drug Law Enforcement Agency
NEEDS	-	National Economic Empowerment and Development Strategy
NGO	-	Non-Governmental Organisations
NHMRC	-	National Health and Medical Research Council
Nig	-	Nigeria
NIS	-	Nigerian Industrial Standards
NPC	-	National Planning Commission
NSCQR	-	Nigerian Supreme Court Quarterly Report
NSDQW	-	National Standard for Drinking Water Quality
NWLR	-	Nigerian Weekly Law Reports
P	-	Page

PI	-	Package Insert
Plc	-	Public Limited Liability Company
Pp	-	Pages
Pt	-	Part
PVC	-	Poly Vinyl Chloride
SDWA	-	Safe Drinking Water Act
SON	-	Standards Organisation of Nigeria
SOP	-	Standard Operational Procedure
SSS	-	State Security Service
UNECE	-	United Nation Economic Commission for Europe
US	-	United States
USA	-	United States of America
UV	-	Ultra Violet
WASH	-	Water Sanitation and Health
WHA	-	World Health Assembly
WHO	-	World Health Organisation

ABSTRACT

The indispensability of safe drinking water to man cannot be over-emphasized. This research has traversed the allowable length and breadth of the applicable laws, regulations, as well as international and national policy frameworks on safe drinking water. It has also examined cases and legal principles that should be applied to instances where consumers' rights to safe drinking water, especially sachet water arise. However, acceptable and affordable as the innovation may seem, its associated downside is the proliferation of contaminated sachet water, the consumption of which has often brought upon the consumers the toll of harm, diseases and malignancies. This situation is compounded by the obvious inability of the regulatory agencies of government to effectively monitor and control this anomaly. More so, is the dilemma of the consumers to know which field of law they can seek their legal redress, either in contract, or in tort, or in the law of crimes, where they may be harmed or injured by the consumption of contaminated, untreated or over-treated sachet water. The lack of sufficient awareness of their rights as well as the regulatory and enforcement mandates of the statutory watchdogs like the National Agency for Food and Drug Administration and Control (NAFDAC),Consumer Protection Council (CPC) and Standards Organisation of Nigeria (SON) puts a bitter icing on the cake of this malaise. The methodology used in this research is doctrinal as it dwelt essentially on the primary sources such as statutes, case law; and secondary sources such as academic publications, regulations, administrative policy documents, and other relevant materials sourced from the internet. The work is summed up with findings to the effect that government regulation in this field is not holistic as to provide the desired protection to consumers. Also, the conservative attitude of the courts that does not easily allow for res ipsa loquitur to be successfully pleaded in product liability cases by the plaintiff, but rather insists on the plaintiff proving the negligence or fault of the manufacturer/defendant was analysed. The work recommends that the National Agency for Food and Drug Administration and Control (NAFDAC) should take advantage of the enforcement provisions of the NAFDAC Act, 2004, in order to restrict the registration of operators of sachet water production and distribution to only qualified, capable and verifiable applicants. NAFDAC should ensure that the labeling and use instruction on sachet water be written with translation into the local language of the area of coverage while the Consumer Protection Council of Nigeria should increase its public enlightenment functions in order to bring to the notice of Nigerians the awareness of its existence and its functions. Also, it is recommended that the Consumer Protection Act should be amended to go beyond a requirement of safety certification by manufacturers, to holding them liable if as a result of no fault of the consumer, harm is caused by the use of such products. It is further recommended that the fines for product failure in the Act be increased significantly to deter malpractice. Finally, it is recommended that Nigerian courts should adopt and apply legal principles like res ipsa loquitur and strict liability that should attenuate the burden of proof of negligence on the consumer in product liability cases, especially in the area of packaged sachet water.

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CHAPTER ONE

GENERAL INTRODUCTION

1.1 Background to the Study

Water is the most essential resource to the survival of man. A reliable supply of clean and safe water is very important to ensuring healthy living amongst the human populace in every community, state or country.

In Nigeria, government – owned public water utilities, such as Water Corporations or Boards, are statutorily charged with the responsibility of supplying water from conventional water treatment plants that use water from impounded reservoir (dams), flowing streams, lakes and deep boreholes. As the country's population grew, the supply of water by the public utilities became inadequate in quality and quantity. Also, many years of inadequate investment in public water supply by the successive Nigerian governments has left safe drinking water insufficient and unreliable, hence, the current adaptive measures of our society to fill the supply gap and alleviate the problems of water inadequacy. Chief amongst these measures is the dependence on sachet water popularly known as "pure water". The manifestation therefore, is the emergence and proliferation of private water enterprises that operate side by side with the government-owned public water utilities.

The services of the category of private water enterprises selling packaged water in bottles were initially adjudged satisfactory and reliable in the past years. They are however, more expensive when compared to that provided by the government and the other category of private enterprises that sell theirs in sachets. However, bottled water producers are patronized by the few elite in the country, while majority of the people (who are usually the low income groups) in the country patronize and drink sachet water because of its cheaper price. Sachet water was introduced in 1990 but its regulation by

the National Agency for Food and Drug Administration and Control (NAFDAC) started in 2002[1].

Access to clean drinking water is a fundamental requirement for human life, as its absence is a grave health concern. According to WHO Report[2], worldwide, over a million deaths per year have been attributed to unsafe water and poor sanitation, with close to 90% of these deaths occurring in children under five years of age. About 2.3 billion people suffer from diseases that are linked to contaminated water and that water-related diseases are a growing human tragedy[3].

According to Akunyili,[4] the provision of water that is not only safe, but tasteless, or odourless and clean in appearance is top priority in any country that cares for good health, and poverty alleviation towards sustainable development. This is against the backdrop of the numerous hazards posed to consumers by the packaging and sale of unwholesome and contaminated sachet water by either unscrupulous or carefree manufacturers and retailers of sachet water who take advantage of the inadequacies of regulation by government.

In Nigeria, the supply or provision of public drinking water is not reliable. As a result, this has adversely affected the good health of Nigerians, most especially during the dry season. Ground water and pipe borne (tap) water which are the major sources of drinking water are said to be unsafe sources of drinking water because findings indicated that ground water sources contain trace elements, dissolved solids and pathogens in excessive quantities that may be dangerous to the health of people. Consequently, most

[1] NAFDAC News, Issue 3, 2012, p. 11

[2] World Health Organisation (WHO) Report, (1996). Fighting Disease, Fostering Development, Geneva, Switzerland. http://www.who.int/whr/99996/en/ (last accessed on 14th March, 2015).

[3] *Ibid*

[4] Akunyili, D.N., (2003), The Role of Pure Water and Bottled Water Manufacturers in Nigeria, Paper presented at the 29th Water Engineering and Development Centre, Abuja.http://novaexplore.com/njeas/wpcontent/uploads/sites/2/2014/01/nova.Jeans-2.6.1.pdf (last accessed on 2nd January, 2014)

of the investigations carried out on groundwater samples from different parts of Nigeria revealed that nearly all of the available sources of water are polluted or contaminated, hence, were unfit for drinking purpose.[5]

The Millennium Development Goals (MDGs)[6], with respect to environmental sustainability, target that by 2015, the number of people without sustainable access to safe drinking water and basic sanitation should be halved. The realisation of the renewed global commitment towards the Millennium Development Goals by 2015 required the development of locally sourced alternative low cost drinking water schemes that will provide sustainable access to safe drinking water in both rural and urban areas in developing countries.[7]

An example of locally developed alternative of safe water provision in Nigeria is the drinking water sold in polythene sachets. In carrying out this business, some small and medium scale enterprises use various production techniques and technologies to purify and package water sourced from springs, boreholes and public water mains and put in sachets that are sealed electrically.

The National Agency for Food and Drug Administration and Control (NAFDAC) is mandated to enforce compliance with internationally defined drinking water guidelines, but regulation of the packaged water industry aimed at good quality assurance has remained a major challenge to the Agency.[8] Although water packaged in sachet is convenient to serve and the price is affordable, there is great concern about its purity. The integrity of the majority of the water packaged in sachets is questionable.

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[5] Ogunbanjo, M. I., (2004), The Geochemical Evaluation of Water Resources in and round Ijebu-Ode Town, South Western Nigeria and it Environmental Implications in Water Resources, *Journal of the Nigerian Association of Hydrogeologists,* p. 20.

[6] Goal No. 7

[7] United Nations Department of Economic and Social Affairs (UNDESA), (2004) Urban Agglomerations, Population Division of the Department of Economic and Social Affairs.

[8] Consumer Affairs Movement of Nigeria (CAMON) (2007) *NAFDAC to ban Sachet Pure Water. 97% Samples Contaminated.* Consumer link 1.1(last accessed 11th November, 2014).

In a recent study[9], to determine the bacteriological quality of drinking water sold in sachets in Lagos, Nigeria, one hundred samples of high and low demand sachet waters obtained from vendors at hot spot locations were assessed using the multiple tube fermentation method based on the Zero tolerance standards stipulated by the regulator (NAFDAC), a 22% non-compliance level was recorded. In another more recent investigation[10], it was stated thus;

> … Presently, consumption of this sampled water in Ijebu North LGA, Ogun State, Nigeria is high and may obviously not lead to immediate poisoning. However, long term effect if there is not enough check may be of major concern. Consequently, close monitoring of heavy metals must be carried out by the regulatory agency (e.g. NAFDAC) in Ijebu North LGA, In view of the possible risks to the health of consumers, particularly in the processing and packing stages of the water.

It is therefore, obvious from the fore-going that despite all the well conceived consumer protection laws, regulations and consumer protection institutions in Nigeria, a significant lot of Nigerians still suffer health hazards as a direct consequence of the consumption of contaminated water. Many manufacturers and sellers of sachet water, who may be either registered or unregistered by NAFDAC, but dubious or careless, pay more attention to their selfish profit maximization motives rather than ensure that their products are pure and safe for the ultimate consumers.

1.2 Statement of Research Problem

There is the problem of ascertaining whether so much of the sachet water in circulation is actually fit for human consumption, because of contamination owing to such factors as unlicensed, unregulated, or licensed, regulated but poorly handled

[9] Dada, A. C., (2009, January), Sachet Water Phenomenon in Nigeria: Assessment of the Potential Health Impacts, *African Journal of Microbiology Research, Academic Journals* Vol. 3(1), pp. 015-021.

[10] David, T. W., Awoh, D. K. and Essa, G. A., (2013, January), Drinking Water (Sachet and Bottled) in Ago- Iwoye and Environs, Ijebu North L.G.A., Ogun State, Nigeria, *Scholarly Journals of Biotechnology Research*, Vol. 2(1), pp. 1-6.

manufacturing and distributive processes which ultimately cause harm or injury to the consuming public.

The National Agency for Food and Drugs Administration and Control (NAFDAC) is primarily responsible for safeguarding the health of the nation and is thereby empowered to regulate the production and distribution of packaged water, which includes sachet water. Also, the Consumer Protection Council of Nigeria (CPC) is responsible for ensuring that safety standards prescribed for products and services generally, are met by manufacturers and service providers. It is also empowered by law to entertain complaints from consumers and enforce remedial and redress measures on their behalf.

The question therefore, is whether or not the regulators, under the current laws have the legal capacity to guarantee that sachet water is manufactured and distributed pure and wholesome to consumers.

1.3 Aim and Objectives of the Research

The aim of this research is to evaluate the relevant extant consumer protection laws, the current institutional and regulatory framework, case law and judicial attitude in product liability in Nigeria, in order to determine whether or not NAFDAC and CPC have sufficient legal capacity to safeguard consumers against the production and distribution of unwholesome sachet water.

In this regard, the objectives of this research are as follows;

i. To examine how the issues that arise from the production and distribution of contaminated sachet water can be settled in law, where harm is caused or is likely to be caused to a consumer.

ii. To examine the extent that the current product liability law is able to provide protection or remedy to an injured consumer of harmful sachet water either in contract or in tort.

iii. To examine the statutory mandates of the regulators i.e. The National Agency for Food and Drug Administration and Control (NAFDAC), the Standards Organization of Nigeria (SON), and the Consumer Protection Council of Nigeria (CPC) and also to appraise their capabilities or otherwise in ensuring adequate protection or remedy to consumers of sachet water in Nigeria.

iv. To proffer solutions to problems identified

1.4 Scope of the Research

This research focuses on issues of consumer protection with regard to the water Industry in Nigeria; with particular emphasis placed on the issue of legal protection for consumers of sachet water. It also appraises the current legal and regulatory regime that governs the product, with a view to proposing innovations and amendments for a significantly enhanced protection for consumers of sachet water.

However, lack of full disclosure by the regulators hindered the extent to which the researcher could have gone in gathering more evidence to support the research.

1.5 Research Methodology

The methodology used in this research is doctrinal. The primary sources of materials for this research are statutes and case law; while the secondary sources are textbooks, regulations, journals, law reports, and internet resources. Administrative policy documents of various agencies such as the Federal Capital Territory (FCT) Water Board, the Standards Organization of Nigeria (SON), and National Agency for Food and

Drug Administration and Control (NAFDAC) are specifically used in chapter four of this work. They also form the basis for the conclusion of this dissertation. All authors and intellectual sources are duly acknowledged.

1.6 Justification of the Research

The innovation of sachet water has, in addition to filling the supply gap in the provision of potable drinking water to a majority of the citizens, also provides thousands of jobs for hitherto unemployed people, especially the youth. This means that the business of sachet water cannot be proscribed by legislation, at least, for now.

Laudable as this development is, the drawback associated with it is that there are so many fake brands of sachet water in the market, which are usually unwholesome for safe human consumption. Some unscrupulous producers package tap water or water fetched from streams in sachets inside their houses and brand them as pure water for buyers who contract a variety of diseases from the consumption, thereby constituting a major health challenge for the society. Consequently, the government and regulatory agencies would fail in safeguarding the health of the nation if the relevant laws and policies are not reviewed to introduce higher integrity to the manufacturing and distributive processes of sachet water in Nigeria.

The outcome of this research will be useful to government and its regulatory institutions such as NAFDAC and CPC by suggesting some necessary reforms to them which can be adopted either through a more holistic application of existing provisions of their laws or through the amendment of their relevant laws and regulations in order to safeguard the Nigerian consumers against the proliferation of unwholesome sachet water.

It will also be useful to legal researchers and law students as it will enrich existing literature on the subject matter of legal protection for consumers of sachet water in Nigeria.

1.7 Literature Review

The context subject of this research is quite novel and so there are no specific previous works on it, except those that focus on consumer protection in food and drugs generally.

Monye, in her book[15] analysed at considerable length, the issues involved in consumer protection in Nigeria, especially in the areas of contractual liability of the seller or manufacturer, negligence in tort, the regulation mandate and enforcement powers of the regulatory bodies such as the Standards Organization of Nigeria (SON), the National Agency for Food and Drug Administration and Control (NAFDAC) and the Consumer Protection Council of Nigeria (CPC). Her summary of the legal position is that, the consumer is fairly protected, at least on paper, noting, however, that there are some areas where protection is either inadequate or none existent. For example in the area relating to exemption clauses, there is no statutory protection, hence case law applies. The Supreme Court has adopted the rule of construction as the applicable rule, meaning that once an offender can show that the exemption clause covers the breach that has arisen, the victim will be left without remedy. This greatly affects the level of consumer protection since consumers in Nigeria are in a weaker bargaining position as compared to the other contracting party.

Another loophole identified by her in the substantive law is the absence of provision for compensation order to a victim of product defect. With the exception of the

[15] Monye, F., (2005) Law of Consumer Protection, Spectrum Law Series, 2nd ed., Ibadan, pp. 46-67; 122-437

Consumer Protection Council Act whose provisions are yet untested, no other existing law makes provisions for a compensation order.

She observed further that the penalties stipulated by some existing statutes are too small to deter offenders. Examples are; (i) the Food and Drugs Act, 1974 which stipulates a maximum penalty of fifty thousand naira for all offences created therein. (ii) The Standards Organization of Nigeria Act, 1971, under which the offence of unlawful use of industrial standard attracts a penalty of one thousand naira only. In addition to these substantive defects, there are other legal principles which abridge judicial discretion, such as privity of contract, caveat emptor and proof of negligence.

Her recommendations therefore, include an enhanced safety consciousness of the manufacturer, establishment of Legal units in the various regulatory agencies to prosecute offenders of their various laws rather than refer those cases to the police, where investigations are hardly conclusive owing to corruption and lack of appreciation of the subject matter and a holistic review of penal provisions in order to make the sentencing more stringent. Also recommended is the need to significantly increase the fines, an amendment of the laws to grant award of compensation to the injured consumer in addition to the criminal penalties of a manufacturer, an enhanced consumer education and the adoption of strict liability in product liability cases.

According to her, there is need for some degree of judicial activism since the issues that often arise in consumer protection cases are novel in character. This being so, in view of the corporate might exhibited in matters relating to proof of negligence in product liability cases, she recommended that a combination of legal principles and factual reality should influence judicial decision in this area; otherwise, the consumer's voice will remain drowned by corporate overwhelming strength.

It is the observation of the researcher that discussion on legal protection for consumers of sachet water in Nigeria is not the primary focus of the learned author. The researcher is of the view that a distinctive work on the legal protection for consumers of sachet water is very necessary in view of the fact that its shelf life is uncertain and the delicate packaging exposes sachet water to greater risk of contamination. This situation is caused by the inability of NAFDAC to clearly identify, accredit and regulate all sachet water production plants in the country.

Kanyip, in his book[16] analysed extensively the subject-matter of negligence as an instrument of consumer protection. He summarised his conclusions as follows: one, liability based on negligence provides inadequate protection to consumers. Two, proof of negligence is difficult or even impossible especially if the product itself is damaged in the accident or made ineffective as by exposure prior to laboratory analysis. Three, the consumer is disadvantaged by his lack of familiarity with the manufacturing or production process especially if the manufacturer made an affirmative showing of proper care as by showing a fool proof production process. Four, defects frequently occur even in the absence of negligence (fault). Lastly, negligence therefore, is an impractical theory of liability for defective products. He therefore, recommended strict liability as an alternative basis of liability in product liability cases.

According to him, under a strict liability regime, the best risk bearer theory postulates that if the consumer is the best risk bearer then he should shoulder the accident costs. Thus, the peculiarity of an allergic plaintiff would work against him since it lies with him to avoid the resultant injury as by discontinuing the use of the product in question. The strict liability theory is not one of absolute liability. It admits of circumstances where the producer or manufacturer can go scot free. The researcher, while

[16] Kanyip, B.B., (2005) Consumer Protection in Nigeria; Law, Theory and Policy, Rekon Books Limited, Abuja, pp. 11-79; 279-377

agreeing with the views of the learned author in respect of consumer protection generally, intends to write on the subject matter of sachet water because it was not the focus of the author.

Malemi,[17] in his book discussed product liability and consumer protection by re-enacting the definition of a "Consumer" as defined by the Consumer Protection Council Act,[18] as "an individual, who purchases, uses, maintains or disposes of products or services." He also defined the term "Product" to include all types of goods and chattels, such as food, drinks, industrial chemicals, cars, clothes, kiosks, lifts, tinned fish, machinery, hair-dye and so forth. According to him, it is not necessary that the product must reach the consumer in the same sealed package or container with which the producer dispatched it.

A producer remains liable, if it is shown that the product reached the consumer subject to its inherent defect. The mere availability of opportunity for intermediate examination of the product does not relieve the manufacturer of liability. He only escapes liability, if there is reasonable probability that a test sufficient to reveal any defect in the product would be carried out. He will also escape liability where the product carries a sufficient warning that it should not be used without prior-examination or check. Therefore, he should ensure that any label or instructions necessary for proper use is accompanying the product, and it is attached to a visible part of the product and such instructions are sufficiently clear for the product to be safely handled or used.

The learned author went further to explain the flexibility of the subject of negligence as it extends the duty of care situation to professionals, for instance, Accountants and Auditors, Architects, Bankers, Engineers, Legal practitioners and Medical practitioners. However, he did not discuss the liability of manufacturers of

[17] Malemi, E., (2008) Law of Tort, Princetown Publishing Company Lagos, pp. 267-269
[18] Cap. C. 25 (LFN) 2004. Sec.32

sachet water to the consumers of their product where they are negligent as well as the mechanisms of redress and remedies available to them. This is so because his emphasis is on the general topic of negligence in tort.

Odion, J.O., and Okojie, E., in their article *"Burden of proof in product liability law in Nigeria: A case for the Application of res ipsa loquitur"*[19] expressed the view that current trends in the manufacturing process and the sophisticated process that goes with the production and supply of goods warrant that the manufacturer be fixed with a high standard of care to his ultimate consumer. To them, one way of sustaining this standard is to fix on him the burden of disproving negligence in the course of the manufacture of his goods.

Their justification is anchored on the following; authorities;

i. In the old English case of *Grant vs Australian Knitting Mills,*[20] the appellant contracted dermatitis of an external origin as a result of wearing a woolen garment which when purchased from the retailers was in a defective condition owing to the presence of excess sulphites. The Privy Council held that these facts established a duty to take care as between the manufacturer and the plaintiff for breach of which the manufacturer was held liable in tort.

The presumption of negligence by the Court shifted the onus of proof to the defendant to establish safe manufacturing process that could explain the sudden presence of noxious sulphite in the under pants. In the words of Lord Wright:

> The presence of deleterious chemical in the pants due to the negligence of the manufacturer was a hidden and latent defect, just as much were the remains of the snail in the bottle (donoghue's case). It could not be detected by any examination that could reasonably be made--- the garments were made by the manufacturer for the purpose of being

[19] Ahmadu Bello University Journal of Commercial Law (2003-2005), Vol.2 No. 2 . pp. 32- 43.
[20] (1936) A.C. 85

> exactly as they were worn in fact by the appellant. It was not contemplated that they should first be washed.[21]

ii. In *Vacwell Engineering Co. Ltd. vs Buds Chemicals Ltd,*[22] the defendants were found to be negligent both in their underlying research into hazardous products and in failing to carry out proper research within the literature available to them. This conclusion was reached in spite of the fact that they referred to four modern books including standard works on the industrial use of chemicals.

iii. In *Mason vs Williams & Williams,*[23] the court observed thus;

> I appreciate that I am faced with another problem as was indicated in the case of *Donoghue vs Stevenson* that *res ipsa loquitur* does not apply and the court has to be satisfied and therefore, the plaintiff has got to prove that there was negligence on the part of the manufacturers. Of course, that cannot be proved normally by saying that on such and such date, such a workman did this, that or the other… what the plaintiff says here is, this is your chisel, you made it, and I used it as you made it and you never relied on any intermediate examination, therefore, I have discharged the onus of proof by saying that this problem must have happened through some act in the manufacturer of this chisel in your factory.[24]

Having referred to the above logical antecedents, the writers of the article in review wondered how well the decisions in *Okonkwo vs Guiness Nig. Ltd*[26] and *Ebelamu vs Guinness Nig Ltd*[27] can be rationalised.

In Okonkwo's case, the plaintiff accompanied his friend to a hotel owned by the defendant. They bought some drinks manufactured by the 1st defendant, which was later discovered to contain deleterious substances like roots, leaves, bark of tree, etc. the plaintiff who was injured was however denied remedy by the court on the grounds that he did not establish that the foreign materials in the bottle left the factory of the 1st

[21] (1936) A.C. 85
[22] (1971) 1 QB. 88
[23] (1955) 1 All ER. 808
[24] *Ibid*
[26] (1980) PIR 583
[27] (1983) FNLR 42

defendant. This curious decision appeared to have set the stage for similar cases which have in essence denied remedy to the consumer on his failure to discharge this burden of proof. Prominent among them is *Ebelamu vs Guinness Nig. Ltd.,(supra)* where the plaintiff allegedly became ill after drinking one of the defendant's products. There were sediments in the bottle. The plaintiff sued for negligence, pleading *res ipsa loquitur*, by reason of the presence of the sediments in the bottle of the defendant's product complained of. The defendant contended amongst others that it had fool proof system and that the algae sediment was not poisonous. The court held that the defendant used the process demanded by general practice in beer making and that the defendant's conduct met the standard required of them by the law to establish due and reasonable care not to bring harm to others with its products.

The authors submitted with due respect that the decisions in the above Nigerian cases were unduly restrictive of the scope of negligence in product liability law. Arguing further, they raised the questions whether the courts were suggesting that the presence of these deleterious substances in the bottle did not raise a presumption of negligence or whether the plaintiffs' failure to prove the impossibility of intermediate interference was a prime factor in the court's judgment. To them, it must be agreed that the moment the courts consider the issue of possible interference more seriously than the manufacturer's actual control of the manufacturing process, it would amount to putting the cart before the horse. It equally places an unduly high standard of proof on the consumer.

According to these writers, it should be reasoned that since the manufacturing process is outside the knowledge of the plaintiff, the courts ought to have applied *res ipsa loquitur* as the plaintiff need not specifically plead it as a means of proof nor give evidence in the alternative. Proof in civil cases is based on balance of probabilities,

therefore, if the burden of proof placed on the plaintiff is so high as to suggest a standard of proof beyond reasonable doubt (as in criminal cases), there is bound to be a problem.

Consequently, English authorities[29] have realised this problem, and have held the presence of any defect to be evidence of negligence on the part of the defendant no matter how perfect his manufacturing process is and it is equally difficult for the plaintiff to point out who is negligent in the chain of production. It should be noted, that the basis for the courts not holding the defendants liable in the Nigerian cases reviewed by the learned authors is the defendants' proof of the fool proof production process in their manufacturing, as well as the huge burden on the plaintiff to prove the contrary.

In addition to the brilliant contributions of the above authors, the researcher intends to extend their views to the sachet water segment of consumption.

Maccido and Akume, in their article[30] focused on the subject-matter of product liability as an aspect of consumer protection which deals with the liability of manufacturers, wholesalers or retailers of products for injuries resulting from dangerous or defective products.[31] They defined the term "product" to mean any tangible article, property or components thereof produced or distributed for sale that is used for personal, family or household purposes, and not for business – hence products that are subject to the product liability law range from food, drugs, electronics, medical devices and implants, tobacco, cosmetics and other goods. At common law, the sale of a product is viewed as a commercial transaction upon which only the parties to the transaction can sue, but the law has evolved where, today, virtually anyone injured by a defective product can bring an action for damages against any party in the distributive chain of the product, whether it be manufacturer, the wholesaler, or the retailer.

[29] Issue No.5 Product Liability & Staff Encyclopedia 1987 Edition, p. 1162

[30] Maccido, U.A. and Akume, A.A., (2013) An Evaluation of Product Liability Law: Its Benefits and Costs *Nigerian Institute of Advanced Legal Studies Journal of Law and Principles of Consumer Protection,* NIALS Press pp. 124-145

[31] Section 19 of the US Restatement (Third) of Torts: Product Liability, 1998.

According to them, the concept of product liability is still emerging in Nigeria, like in most of the developing nations of the world; therefore their ability to examine the key questions on the subject is severely constrained due to the inarticulate nature of product liability law in Nigeria. There is yet no elaborate or coherent body of "product liability law" as it is United States (US) –US Restatement (Third of Tort); Product Liability, 1998. Nigeria relies on the rules of liability under the sale of goods laws and the rules of liability under the law of negligence.[32] However, liability based on these rules provides inadequate protection to the consumers. The application of Sale of Goods Act is manifestly unjust to the consumer because the consumer's recovery is limited to only a contractual relationship with the seller.[33] The primary liability for defective products under the Sale of Goods Law rests on the seller, who in most cases is a mere retailer while the actual manufacturer is left out on the ground that no privity of contract exists between him and the buyer. Moreover, most of the conditions and warranties provided by the Act are designed to exploit consumers by allowing sellers to limit or exclude their obligations including those implied by law under the contract of sale of goods.

Moreover, the law of negligence does not provide any meaningful protection to consumers. The law places an unwarranted burden of proof on the consumer which makes the guilty manufacturer to escape liability and leave the consumer without remedy.

The writers are of the view that the regulatory agencies, the Standards Organisation of Nigeria (SON), the National Agency for Food and Drug Administration and Control (NAFDAC) and the Consumer Protection Council of Nigeria (CPC) are weak in the discharge of their statutory functions due to imperfect knowledge of the

[32] Sale of Goods Act of 1893, Donoghue vs Stevenson (1932) AC.380
[33] Section 4 of the Kaduna State Sale of Goods Edict, 1990.

regulations, the budgetary constraints, and the fact that they have been captured by the firms that they are responsible for overseeing.[34]

Their conclusion in part, reiterates the relevance of product liability law in Nigeria, since it is part of the laws of most of the countries of the world. Indeed, product liability law derogates from the general concern of the Nigerian constitution for the protection of individual rights and welfare of the citizens. The legislature is empowered by the constitution to make laws on matters such as trade and commerce, including prescribing standards for goods and services offered for sale to the consuming public.[35]

Therefore, product liability law is conceived as a modernised amalgam of law of contract and tort of negligence. It holds manufacturers and retailers accountable to persons victimised by their wrongful conduct. It empowers the injured victim to invoke the law and the apparatus of the government to vindicate their interests. It promotes the notion of equality before the law and reinforces the norm of responsibility. And in so doing all these things, it contributes directly to deterrence and provides welfare-enhancing compensation.

It is clear from the commentary of the learned authors that negligence does not provide the desired protection for consumers, while re-iterating their observation that the regulatory agencies – the Standards Organizations of Nigeria (SON), the National Agency for Food and Drug Administration and Control (NAFDAC) and the Consumer Protection Council of Nigeria (CPC) lack the necessary competence and functionality in the discharge of their statutory mandates.

In view of the fact that sachet water was not the focus of the above work, this research will go further to assess the issues of legal protection for consumers of sachet water in Nigeria.

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[34] See Part I of the Second Schedule to the Constitution of Federal Republic of Nigeria, 1999

[35] Michael, E., "Regulatory Capture". The New Pal grave Dictionary of economics and the Law (Peter Newman Edition). 269.

Badaiki, in his article[36] defines "Consumer Protection" as the legal means to serve consumers' interest against all forms of exploitation and unfair dealings including environmental and health issues by those who supply goods, services and credit facilities in the course of business. He clarified further that it has been understood to mean "the prevention or reduction of wrongs or injuries, and the provision of redress for an individual purchaser, user or disposer of any product and service"[37]

To underscore the aim of consumer protection to achieve consumers' welfare in modern terms, he referred to the United Nations resolution 39/248 of 9th April, 1985 which the UN General Assembly unanimously adopted as Guidelines for Consumer Protection for every member nation. Implicit in these guidelines are government obligations and consumer rights, to wit, the right to basic needs, the right to safety, the right to be informed, the right to be heard, the right to choose, the right to consumer education, the right not to be exploited and the right to a healthy environment.

The researcher intends therefore, to use the conceptual definitions and the United Nation guidelines for consumer protection above as a basis for analysing the peculiar issue of consumer rights as regards manufacture and distribution of sachet water, with the aim of making appropriate recommendations that will enhance legal succour to consumers.

Nyor, in his article[38] addressed the issues of food quality and safety in the light of policy intervention on the part of government. In 2010, the Federal Government of Nigeria, in addition to the establishment of SON, NAFDAC and CPC, launched the

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[36] Badaiki, A.D., (2013) Effect of Privatisation and Commercialisation on Consumer Protection in Nigeria *Nigerian Institute of Advanced Legal Studies Journal of Law and Principles of Consumer Protection,* p.164

[37] Kanyip, B.B., (2005) Consumer Protection in Nigeria; Law, Theory and Policy, 1st ed., Rekon Books Limited, Abuja, p.30

[38] Nyor, J.T., (2014, February) The Role of Regulatory Agencies in Food Quality Control in Nigeria *SCSR Journal of Agribusiness (SCSR-JA)* Vol. 1, Issue 1, pp. 01-05 www.scholarconsult.com, (Last accessed 5th March, 2015).

National Policy of Food Hygiene and Safety as an integral part of the National Policy on Health. The overall goal of this policy is the attainment of high standard of food hygiene and safety practices, which will promote health, control food-borne diseases, minimise and finally eliminate the risk of diseases related to poor food hygiene and safety.

According to him, this policy seeks to ensure standard of food in the areas of production, storage, handling, processing, preservation, trade (importation and exportation), transportation and marketing. It also seeks to improve the quality of health through ensuring that all food consumed in Nigeria, whether imported or exported are wholesome, nutritious, free from contaminants and accessible to the consumers at affordable prices.

In other words, to meet international standards in food quality control, preventive strategy based on thorough analysis of prevailing conditions, which ensures that the objectives of the quality assurance programme are met by the food industry. The Hazard Analysis and Critical Control Point (HACCP) and Total Quality Management embodying these requirements are certified under the International Standard Organization (ISO 90 00: Quality Management and Quality Assurance Standards guidelines for selection and use).

He concluded by restating the Codex Alimentarius Commission[39] guidelines that producers at all stages of production, processing and distribution must be responsible for safety of food and should establish food safety assurance programmes while the government on the other hand plays the primary role of a regulator in the implementation of the food safety assurance system, the hallmark of quality control.

The author having set forth the preventive safety policy of the Nigerian government regarding food hygiene and quality control, has set the tone for this research

[39] http://www.codexalimentarius.net (Last accessed 5th March, 2015).

to apply same to the water industry, especially in the area of sachet water production, processing and distribution. Also, this research will appraise the primary role of the regulators outlined in their enabling statutes and regulations with a view to suggesting necessary amendments or re-emphasing their purposes and how best they could be deployed by the regulators in achieving the objectives of ensuring the production and distribution of safe drinking sachet water.

Asikhia and Oni-Ojo, in their article[40] examined the legal framework of marketing vis-à-vis the regulatory Agencies established by government to regulate commercial transactions in Nigeria and their activities. They also examined the contractual law of Sale of Goods Act, 1893 and found that liability for breach can only by enforced if there is privity of contract between the parties which invariably excludes non-parties to the contract from the burden and benefit attached to the contract. However, while liability in contractual relationship is based on this doctrine, it is not so in the law of tort where liability is based solely on negligence which presupposes the existence of a nexus between the parties.

They opined further that negligence which was meant to be one of simple liability has become a difficult principle in the Nigerian legal system, owing to the huge burden of proof demanded by the courts. The courts usually require the defendants to establish a fool proof system of production. This position according to the authors is too rigid as compared with what obtains in developed countries, with the resultant effect of making product liability laws more favourable to the manufacturers of defective products. They therefore advocated a liberal stance by the Nigerian courts when the issues of negligence are raised by revisiting and relaxing the fool proof production system rule in order to lessen the burden of proof of negligence on the plaintiff.

[40] Asikhia, O. and Oni – Ojo, E.E., (2011, July) An Investigation Into the Legal Framework of Marketing in Nigeria *Australian Journal of Business and Management Research,* Vol. 1, No. 4, pp 08 23.

This research takes into cognisance the recommendations of the authors expressed above and goes further to suggest the adoption of certain rules that will alleviate the burden of proof of negligence as well as more proactive legal strategies the regulators should initiate in order to minimise or stall the incidence of manufacture of unwholesome products by producers.

Bello, Suleiman, and Danjuma, in their article[41] posit that in Nigeria, like other parts of the world, consumer protection is the concept designed to protect consumers from unscrupulous producers and service providers. It denotes the attempt by government to provide regulatory framework to protect and enforce the rights of people who pay for goods and services. The law of consumer protection has a two fold purpose. On the one hand, it protects the interest, rights and safety of end users of products and services; and on the other hand, to the extent that it derives from and relates to contractual transactions, consumer protection can be said to be a means by which private law relationships are regulated. It is in the interest of the public that the nature and deficiencies of products and services be made known to customers, thus the need for public regulation of private transactions. Regulation will have the end result of putting into market, the best possible products.

It is the view of the authors that the enactment of Consumer Protection Law in Nigeria, is only an attempt at consumer protection, stating that the level of consumer awareness in Nigeria is still very low, thus culminating in the near absence of consumerism or action against unwholesome business practices. In their view, the ability to enforce the laws relating to consumer protection will provide the necessary impetus for safeguarding the rights and safety of consumers in Nigeria.

[41] Bello, K.B.; Suleiman, J.B.A.; and Danjuma, I., (2012) Perspectives on Consumerism and Consumer Protection Act in Nigeria, *European Journal of Business and Management Research* Vol. 4, No. 10, pp 74-77

This research adopts the view of the authors of the foregoing article especially as it relates to the low level of awareness of consumers in Nigeria of their rights and of the existence of the regulatory agencies, especially the Consumer Protection Council of Nigeria (CPC). The work evaluates the specific functions of the CPC and makes a strong case for an enhanced public enlightenment and awareness of its roles and responsibilities in resolving the plight of consumers, especially in the context of sachet water.

It is also, the view of Oni-Ojo and Iyiola, in their research paper[42] that in recent years, manufacturers have been making great impact on the standard of living of consumers; however, product harms caused to the consumers through defective products have also increased manufacturers liability in both developed and developing nations of the world. While thousands of product liability cases are filed annually in developed countries, in many developing countries especially in Nigeria the situation is different. They defined defective product to be a product in a state whereby it fails to provide the safety which the consumer expects while according to them, a product is dangerous when it increases the risk of harm to persons and their property.

A salient point in the above commentary is that there is very slow development of Product Liability Law in developing countries, especially in Nigeria. The reasons are that consumers are not aware of their rights to claim against manufacturers and in most of the cases, where they are aware, due to lack of a coherent body of product liability laws, they attempt to claim under the law of contract where the privity rule excludes third parties from the benefits of the action. Where the consumers also attempt to claim in the tort of negligence, the burden of proof is usually heavy, because of the courts' inclination towards the defendants' proof of a fool proof production process.

[42] Oni-Ojo, E.E. and Iyiola, O., (2014, April) Legal Implication of Manufacturers' Negligence and its effects on Consumers: A study of West Nigeria, *Global Scholars Journal of Marketing,* Vol. 1, No. 1, pp 1-7

The analyses above did not capture the specific legal interest of consumers of sachet water because it was not the focal point of the research. Therefore, this research would fill that gap.

1.8 Organisational Layout

This research work is made of five chapters.

Chapter one focuses on general introduction and preliminary issues like background to the research, statement of research problem, aim and objectives of the research, scope of the research, research methodology, justification of the research, literature review, and organizational layout.

Chapter two examines the standards for safe drinking water, which involves, global perspectives to water safety, Millennium Development Goals and timelines for safe drinking water supply in Nigeria, World Health Organization (WHO) water and health quality strategy, Nigerian standard for drinking water quality, NAFDAC regulations for packaged water, evidence of sachet water contamination in Nigeria, and the impact of contaminated water on the health of consumers.

Chapter three dwells on regulatory framework on consumer protection on packaged water in Nigeria. This involves introduction, the National Agency for Food and Drug Administration and Control (NAFDAC), the Standards Organization of Nigerian (SON), the Consumer Protection Council of Nigeria (CPC), and bottlenecks to enforcement and implementation.

Chapter four discusses Consumer Protection and Product liability in Nigeria. This includes introduction, consumer rights, application of *res ipsa loquitur* in product liability cases in Nigeria, relevance of Trade Marks Act provisions to the interest of the consumer, protection in the law of contract, privity of contract in consumer production, protection under criminal provisions of NAFDAC and CPC Acts, due care and prudence of the

consumer, and the burden of proof of negligence on an injured consumer of contaminated sachet water.

Chapter five concludes the research work with a view to providing the summary, findings and recommendations.

CHAPTER TWO
STANDARDS FOR SAFE DRINKING WATER

2.1 Introduction

Safe drinking water is a universal resource, and as such, it is characterised by global significance and interest. Therefore, the laws and policies for its regulation and control draw from international standards and quality parameters set by some developed countries and international institutions like the United States, Canada, Australia, the European Union, and the World Health Organisation.

This chapter evaluates all these along with the Nigerian policy called the Nigerian Standard for Drinking Water Quality, and the NAFDAC Regulations for packaged water with a view to ascertaining what is responsible for the proliferation of contaminated sachet water in Nigeria.

2.2 Global Perspectives to Water Safety

Many developed countries specify standards to be applied in their own jurisdictions. In Europe, these include the European Drinking Water Directives and in the United States of America (USA), the United States Environmental Protection Agency (EPA) which establishes standards as required by the Safe Drinking Water Act, 1974. For countries without a legislative or administrative framework for such standards, the World Health Organization publishes guidelines on the standards that should be achieved[1]. China adopted its own drinking water standard: GB3838-2002 (type II), enacted by the Ministry of Environmental Protection in 2002[2]. Where drinking water quality standards

[1] WHO: Guidelines for Drinking Water Quality, (2011) Forth Edition World Health Organization http://www.who. Int/gdwq/en (last accessed 30th March, 2015).

[2] China Department for Water Resources: Environmental quality standard for surface water" http://kjs.mep.govscn/hjbhbz/5t20020601-66497.html (last accessed 12 March, 2015).

do exist, most are expressed as guidelines or targets rather than requirements, and very few water standards have any legal basis or, are subject to enforcement[3].

Two exceptions are the European Drinking Water Directive and the Safe Drinking Water Act in the USA, which require legal compliance with specific standards. In the European Union, includes a requirement for Member States to enact appropriate local legislation to mandate the European Drinking Water Directive in each country. Routine inspection and, where required, enforcement is enacted by means of penalties imposed by the European Commission on non-compliant nations.

The Protocol on Water and Health to the 1992 Convention on the Protection and Use of Trans-boundary Watercourses and International Lakes is the first major international legal approach for the prevention, control and reduction of water related diseases in Europe. The protocol was adopted in 1999 at the Third Ministerial Conference on Environment and Health, and entered into force in 2005, becoming legally binding for the ratifying countries. So far 36 countries have signed and 24 have ratified it.

Signatories agreed to establish and maintain comprehensive national and/or local surveillance and early warning systems to prevent and respond to water related diseases. They also agreed to promote international cooperation, to establish joint or coordinated system for surveillance and early warning systems, contingency plans, responses to outbreaks, incidents of water related diseases and significant threats of such outbreaks. WHO/Europe and the United Nations Economic Commission for Europe (UNECE) provide the Joint Secretariat for the Protocol, coordinating activities for its implementation: WHO handles the health aspects, while UNECE handles the legal and procedural aspects.

[3] Safe Drinking Water for Canada. What is the purpose of Drinking Water Quality Guidelines/Regulations? http://www.safewater.org (last accessed on 12th March, 2015).

By adopting the protocol, the signatory countries agreed to take all appropriate measures to achieve:

a. Adequate supplies of wholesome drinking water;
b. Adequate sanitation of a standard that sufficiently protects human health and environment;
c. Effective protection of water resources used as sources of drinking water, and their related water ecosystems, from pollution from other causes;
d. Adequate safeguards for human health against water-related diseases; and
e. Effective systems for monitoring and responding to outbreaks or incidents of water related diseases[4].

Countries with guideline values as their standards include Canada, which has guideline values for a relatively small suite of parameters; New Zealand, where there is a legislative basis, but water providers have to make "best endeavours" to comply with the standards[5]; and Australia, where drinking water quality standards have been developed by the Australian Government National Health and Medical Research Council (NHMRC) in the form of the Australian Drinking Water Guidelines[6]. These guidelines provide contaminant limits (pathogens, aesthetic, organic, inorganic and radiological) as well as guidance on applying limits for the management of drinking water treatment and distribution.

In the United States of America (USA), National, State, and Local regulations interact to form a variety of drinking water quality regulations across the country. Nevertheless, drinking water quality remains a policy concern and a management

[4] WHO: Protocols on water and health http://www.euro.who.int/en/waterandsanitation/protocolonwater (last accessed 9th March, 2015)
[5] New Zealand Water Standard: Drinking water for New Zealand http://www.drinkingwater.co.nz/general/ (last accessed 12th March, 2015)
[6] Department of Health of Australia: Australian Drinking Water Guidelines (2011) http://www.nhmrc.govsau/guidelines/publications (last accessed 12th March, 2015)

challenge[7]. There is considerable uncertainty that must be resolved concerning whether current environmental regulations are sufficiently protective of public heath, water quality, and aquatic systems. Between 1991 and 2003 there were about 183 documented out breaks of waterborne diseases[8]. Waterborne illnesses from drinking water impact an estimated 19.5 million Americans annually, a figure that does not include illnesses caused by chemicals or toxins[9].

In 2003, a study[10] concluded that safe drinking water in U.S. cities is increasingly at risk, revealing troubling outcomes in source water protection, water delivery infrastructure, and treatment systems. In addition to known waterborne disease outbreaks and demand pressures on public water infrastructure, cumulative compound impacts of chemical contaminants from natural and human sources are being linked to long-term health impacts.

Back in 1972, the Federal Water Pollution Act, also known as the Clean Water Act (CWA), established the first comprehensive national water quality protection programme. It mandated that federal agencies to cooperate with state and local agencies to develop solutions "to prevent, reduce, and eliminate pollution in concert with programmes for managing water resources"[11]. Under the Clean Water Act, states were required to establish water quality standards based on "use designations", ranging from high quality waters used for consumption and recreational use to low quality waters, often used in industrial processes.

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[7] Derrington, E. Drinking Water in the United States: Are we planning for a sustainable future?; Consilience: The Journal of Sustainable Development. pp.69

[8] About 75% of these outbreaks, except for highly published 1993 Milwankee Cryptosporidium outbreak that infected 400,000 people, involved groundwater. About 65% involved individual wells which were subject to less water quality regulation – per Anisfeld, S. (2010). Water Resources. Island press

[9] Toxic Waters: A Series About the Worsening Pollution in America. The New York Times 2009-2010. http://projects.mytimes.com/toxicwaters (Last accessed 3rd January, 2015)

[10] The Natural Resources Defense Council, NRDC (2003). Study finds Safety of Drinking Water in U.S. Cities are at Risk. http://www.nrdc.org/water/drinking/uscities.asp (Last accessed 5th January, 2015)

[11] *Environment Defense Fund vs Costle* (1977) 578 F.2d 337. United States Court of Appeals, District of Columbia Circuit.

In 1974, The US Congress established the Federal Safe Drinking Water Act (SDWA) to address evidence of unsafe contaminant levels in drinking water[12]. The SDWA authorized the EPA to establish drinking water quality criteria and reporting requirements. The original approach to drinking water protection under the 1974 SDWA passed with "Overwhelming" congressional approval. They mandated "State developed critical well head protection programmes", increased drinking water quality criteria, and banned lead and copper in plumbing infrastructure. These amendments targeted improved source water assessment, source protection, and enhanced public participation to ensure high quality drinking water[13].

Today, the SDWA is implemented through health based standards: Maximum Contaminants Level Goals (MCLGs) and Maximum Contaminants Levels (MCLs)[14]. While MCLGs are aspirational guidelines established to protect against any adverse human health effects, MCLs are enforceable standards determined by balancing health risks against the cost and feasibility of implementing control measures.

Current EPA rule making is aimed at expanding the SDWA coverage of certain pollutants, as well as changing the regulatory scheme to target "contaminant groups" In November 2010, the EPA's Office of Chemical Safety and Pollution Prevention Partnered with EPA's Office of Water to identify a list of 134 Chemicals to be screened as potential endocrine system disrupters, and the two offices are continuing to collaborate to develop Human Health Benchmarks for pesticides in drinking water and a tool for States and the public to use to interpret drinking water information. Administrator Jackson[15] reaffirmed the EPA goals to "update our laws in a way that is sensible and practical for protection of the health of the American people," as well as evaluate the feasibility and affordability of

[12] EPA Reports: 1986, 2004; EPA SDWA Report, 2009.
[13] Ansfeld, S. (2010) Water Resources. Island Press
[14] United States Environmental Protection Agency Drinking Water Strategy, 2010: A New Approach to Protecting Drinking Water and Public Health.
[15] Lisa P. Jackson, Administrator, US EPA.

treatment technologies, and the costs and benefits of potential standards. She concluded her testimony by emphasizing that: "Clean and safe water is the foundation of healthy communities, healthy families, and healthy economies as well as the right of all Americans".[16]

It is therefore, instructive for the water resources management instrumentalities of government, stakeholders and the civil society to work in collaboration in order to replicate the American model so as to ensure that contaminant levels in drinking water in Nigeria is either reduced drastically or eliminated in the interest of the consuming public. Regulators in Nigeria, in furtherance of their monitoring functions especially in the area of packaged/sachet water, should adopt the Quality Monitoring System in the United States of America known as "Consumer Confidence Report"[17].

This is a compulsory annual report that every private water provider must publish and post to consumers, detailing every important information about the water he supplies to the community. The CPC should partner with NAFDAC to work out an integrated model for implementing this kind of strategy in order to hold manufacturers and distributors of packaged/sachet water more accountable to the authorities and consumers by such frequent formal undertakings and commitments.

2.3 Millennium Development Goals and timeline for safe drinking water supply in Nigeria.

The United Nations' Millennium Development Goals were created to dramatically improve the lives of the world's poorest. Much of these eight goals are water-related.[18]

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[16] United State Environmental Protection Agency. Administrator Lisa P. Jackson, Testimony before the US. Senate Committee on Environment and Public Works (02 February, 2011).

[17] Centers for Disease Control and Prevention. Consumer Confidence Reports (CCR) http://www.cdc.gov/ healthywater/drinking/ public/understanding-ccr.html (last accessed 3rd December 2014)

[18] Safe Drinking water is Essential- Millennium Development Goals http://www.drinkin-water.org/html/en/overview/millenniumdevelopementgoals (last accessed 9th March, 2015)

By the year 2015 (the target date for all Millennium Development Goals), the United Nations has resolved to halve the proportion of people who are unable to reach or to afford safe drinking water and who lack basic sanitation.[19] According to the National Planning Commission[20] the policy thrust of Nigeria's Poverty Reduction Strategy, the National Economic Empowerment and Development Strategy (NEEDS), commits to the eradication of water-borne diseases and to improving water supply and management for other economic activities. In implementing NEEDS' programme of managing water resources in an integrated and sustainable manner, the policy drive of the Nigerian government therefore, is building on the National Water Resources Management Strategy, which involves all stakeholders to ensure integrated management and development of water resources in the country. The thrust is more on sustainable water resources management to meet the nation's present and future water resources needs in all demand sectors. The key objectives of the policy include:

1. Ensuring the development and management of water Resources in an integrated manner and as a national strategic resource;
2. Protecting water resources and the environment for balanced socio-economic development;
3. Involving all stakeholders particularly the private sector in the sustainable development of the water sector through coordinated management and holistic utilization;
4. Optimizing the use of water resources at all times for the present generation to survive on without compromising water supplies for future generations.

It is however disheartening to note that even in the target date of 2015, it does not appear that Nigeria has recorded remarkable progress in meeting this sensitive target of

[19] Goal 7, Target (C) Millennium Development Goals

[20] NPC. National Economic Empowerment and Development Strategy (NEEDs). National Planning Commission (NPC), Nigeria, 2004

water availability to the citizenry. Therefore, it is submitted that the persistent scarcity of safe drinking water, still amply justifies the reliance of the majority of the populace on alternative sources which include prominently, sachet water.

2.4 World Health Organization (WHO) Guidelines and Benchmarks.

The World Health Organization (WHO) developed a document titled "Water Quality and Health Strategy (2013)[21]. This document sets out the strategy adopted by WHO to manage water quality with a view to protecting and promoting human health. This is against the backdrop of the realization, that the quality of water, whether used for drinking, domestic purpose, food production or recreational purpose has an important impact on health. Water of poor quality can cause disease outbreaks and it can contribute to background risk of diseases manifesting themselves on different time scales. Initiatives to manage the safety of water do not only support public health, but often promote socio-economic development and wellbeing as well.

The Water Quality and Health Strategy is a framework for action by the WHO Secretariat. It was prepared through a consultative process, building on past World Health Assembly resolutions, in particular WHA64/24 expert consultations, and feedback from a wide range of stakeholders on WHO water quality guidelines and associated activities. It also builds upon the MDGs, the human rights to water and sanitation and the post 2015 MDG process, which give increased attention to water quality aspects. It defines strategic objectives and includes activities to guide the water quality work of WHO.

The Strategy which centered on primary prevention of waterborne and water-related diseases, has the following five strategic objectives for the period 2013 to 2020.

[21] WHO (2012) Consultation on the Development of a strategy on Water Quality and Health (http://www.who.int/water sanitation health/dwq/en/ (last accessed 9th March, 2015)

1. Obtain the most rigorous and relevant evidence regarding water quality and health,
2. Provide up-to-date, harmonized water quality management guidelines and supporting resources,
3. Strengthen capacity of Member States to most effectively manage water quality to protect public health,
4. Facilitate implementation of water quality and health activities through partnerships and support to Member States,
5. Monitor the impact of these activities on policies and practice to more effectively inform decision making.

For each strategic objective, WHO's broad responsibilities are defined and associated outputs are included. In meeting these objectives, the following four strategic outcomes will be achieved:

1. Reliable, up-to-date technical and policy advice on water quality management, informed by research conducted on water quality and health,
2. Increased number of countries with effective water risk management of drinking water, waste water and recreational water and harmonized management of water – related hazards and risks,
3. Improved risk management and risk communication practiced by all stakeholders responsible for water safety,
4. Effective networks and collaborations supported and strengthened to exchange resources, raise awareness and respond to specific water quality and health issues.

The mission is for WHO to be the authoritative source on health-based water quality information, for use by water and health regulators, policy makers, their advisors

and other stakeholders including practitioners and NGOs. This includes the provision of information on health based assessments on the various microbial, chemical, radiological and physical human health hazards that may be present in the water cycle and the approaches to manage those associated risks.

To fulfill its mission and to ensure achievement of the recommendations in WHA 64/24, the Water Quality and Health Strategy includes five strategic objectives and associated functions and outputs which include (for the purpose of our context); obtaining the most rigorous and relevant evidence on water quality and health in which case WHO will;

a) Establish a research agenda to address major knowledge gaps and emerging issues on water quality and health,
b) Conduct health–based assessment of existing and emerging hazards in water for their potential risks.
c) Coherently present health–related evidence to inform water quality management decision making indifferent settings and contexts throughout the water cycle,
d) Carryout revised assessments of the burden of disease attributable to unsafe drinking-water, waste water and recreation water,
e) Examine the water Sanitation and Health (WASH) contribution to health outcomes in integrated efforts addressing multiple conditions of ill-health.

2.5 Nigerian Standard for Drinking Water Quality[22]

Drinking water quality standard ensures the safety of the drinking water supplies and the protection of public health. The establishment of Nigerian Standard for Drinking Water Quality (NSDQW) is geared towards ensuring the protection of consumers.

[22] NIS (Nigerian Industrial Standard) 554: 2007 1CS 13.06-20

Consensus on the content of the Nigerian Standard for Drinking Water Quality was reached through extensive consultations with all stakeholders including development partners with responsibilities in the management of water quality. This standard is therefore based on general principles of preventive, integrated and collaborative multi-agency approach[23].

The Nigerian Standard for Drinking Water Quality (NSDQW) contains mandatory limits concerning constituents and contaminants of water that are known to be hazardous to health and/or give rise to complaints from consumers. The standard includes a set of procedures and good practices required to meet mandatory limits.

In 2005, the National Council on Water Resources (NCWR) recognized the need to urgently establish acceptable Nigerian Standard for Drinking Water Quality because it was observed that the "Nigerian Industrial Standard for Potable Water" developed by Standards Organization of Nigeria and the "National Guidelines and Standards for Water Quality in Nigeria" developed by the Federal Ministry of Environment did not receive a wide acceptance by all stakeholders in the country[24].

Since water quality issues are health related issues, the Federal Ministry of Health, collaborating with the Standards Organization of Nigeria (the only body responsible for developing National Standards in Nigeria) and working through a technical committee of key stakeholders developed this Standard.

The effective protection of public health against water related diseases requires a preventive integrated management approach which includes;

a) The protection of drinking water from catchment and source to its use by consumers;

[23] Nigerian Industrial Standard NSDWQ; para. 1.1
[24] Nigerian Industrial Standard NSDWQ; para.1.2

b) A collaborative multi-agency approach that involves all agencies with responsibilities in the management of water quality;

c) Water quality standard that is comprehensive, realistic and implementable within the resources of the implementing agencies;

d) The development of procedures and requirements that ensure good water quality management in order to meet the maximum allowable limits. These procedures also protect the environment;

e) An independent surveillance agency with strong enforcement authority and functions decentralized to local government level;

f) An effective drinking water quality data management system to enable the generation of data for the development of coherent public – centered policies and practices[25].

The selection of parameters and the determination of maximum allowable limits have been conducted taking into consideration the WHO guidelines for drinking water quality[26].

The standard shall be reviewed every three years and/or as when necessary. The Technical committee shall meet once a year to address new water quality issues and to prepare for the review of the Nigerian Standard on Drinking Water Quality[27].

The Nigerian Standard for Drinking Water Quality covers all drinking water except mineral water and packaged water. The Standard applies to:

i. Drinking Water Supplied by State Water Agencies

ii. Drinking Water Supplied by community managed drinking water system

iii. Drinking Water Supplied by Water Vendors and Water Tankers

iv. Drinking Water used in public or privately owned establishments

[25] Ibid; para. 1.3 (principles)
[26] Nigerian Industrial Standard NSDWQ; para. 1.4 (Technical approach)
[27] Ibid; para. 1.5 (Recommended Revision period)

v. Drinking Water used in food processing by manufacturers

vi. Drinking Water from privately owned drinking water system and used solely for the family residence.

Mineral water and packaged water shall comply with the Nigerian Industrial Standards for Natural Mineral water (NIS 345: 2003) and Potable Water (NIS 306: 2004) and used for regulation and certification by the National Agency for Food and Drug Administration and Control (NAFDAC) and the Standards Organization of Nigeria (SON) respectively. The standards for mineral water and packaged water have different allowable limits and NAFDAC Regulation[28].

According to the Nigerian Standard for Drinking Water Quality[29], the National Agency for Food and Drug Administration and Control (NAFDAC) shall:

a. Enforce packaged water quality standard;

b. Regulate the use of water treatment chemicals

While the Consumer Protection Council (CPC) shall:

a. Receive complaints and/or observed lapses and use appropriate institutional framework to ensure adequate corrections;

b. Seek redress and compensation for aggrieved consumers or community as provided in the CPC Act;

c. Undertake awareness campaigns to enlighten consumers on their rights to safe and wholesome drinking water as generally provided for in the CPC Act.

Regarding Drinking Water Quality, the NSDWQ[30] contains tables of parameters and maximum permitted limits for contaminants. The substances contained therein are simply divided into physical/organoleptic, chemical organic and inorganic constituents, disinfectants and disinfectant by-products, radionuclide and microbiological parameters.

[28] Ibid; para. 1.6 (Scope)
[29] Ibid; para. 1.5
[30] Nigerian Industrial Standard NSDWQ; para. 5 (Requirements)

All drinking water shall at all times meet the requirements set out in table 1, table 2, table 3, table 4, table 5, table 6 and table 7[31]. All water sources intended for human consumption shall comply with the guidelines above and shall receive authorization from the Ministry of Health before being supplied to the population.

A. Parameters and Maximum Allowable Limits

Table 1: Physical/Organoleptic Parameters

Parameter	Unit	Maximum Permitted Levels	Health Impact	Note
Colour	TCU	15	None	
Odour		Unobjectionable	None	
Taste		Unobjectionable	None	
Temperature	Celsius	Ambient	None	
Turbidity	NTU	5	None	

This table shows the physical/organoleptic parameters and their maximum allowable limits in drinking water. In this case it has no negative health impact.

Table 2: Chemical Parameters (Inorganic Constituents)

Parameter	**Unit**	**Maximum Permitted**	**Health Impact**
Aluminum (AI)	mg/L	0.2	Potential Neuro-degenerative disorders
Arsenic (As)	mg/L	0.01	Cancer,
Barium	mg/L	0.7	Hypertension
Cadmium (Cd)	mg/L	0.003	Toxic to the kidney
Chloride (CI)	mg/L	250	None
Chromium (Cr +)	mg/L	0.05	Cancer
Conductivity	PS/Cm	1000	None
Copper (Cu +2)	mg/L	1	Gastrointestinal disorder,
Cyanide (CN^-)	mg/L	0.01	Very toxic to the thyroid and the nervous system
Fluoride (F^-)	mg/L	1.5	Fluorosis, Skeletal tissue (bone teeth) morbidity
Hardness (as $CaCO_{3)}$	mg/L	150	None

[31] Nigerian Industrial Standard NSDWQ Pp. 15-20.

Hydrogen Sulphide (H_2S)	mg/L	0.05	None
Iron (Fe^{+2})	mg/L	0.3	None
Lead (Pb)	mg/L	0.01	Cancer, interference with Vitamin metabolism, affect mental development in infants, toxic to central and peripheral nervous systems
Magnesium (Mg^{+2})	mg/L	0.20	Consumer acceptability
Manganese (Mn^{+2})	mg/L	0.2	Neurological disorder
Mercury (Hg)	mg/L	0.001	Affects the kidney and central nervous system
Nickel (Ni)	mg/L	0.02	Possibly carcinogenic
Nitrate (NO_3)	mg/L	50	Cyanosis, and asphyxia (blue-b syndrome") in infants under 3 months syndrome") in infants under 3 months
Nitrite (NO2)	mg/L	0.2	Cyanosis, and asphyxia (blue-Lung syndrome") in infants under 3 months
pH		6.5-8.5	None
Sodium (Na)	mg/L	200	None
Sulphate $_{(SO4)}$	mg/L	100	None
Total Dissolved Solids	mg/L	500	None
Zinc (Zn)	mg/L	3	None

Note 1: Parameter to be monitored only if aluminum chemicals are used for water

This table shows the chemical parameters otherwise known as inorganic constituents of drinking water. It also indicates the maximum allowable limits of these constituents. If these limits are exceeded, the indicated health impact will manifest.

Table 3: Organic Constituents

Parameter	Unit	Maximum Permitted Levels	Health Impact	Note
Detergents	mg/L	0.01	Possibly carcinogenic	
Mineral oil	mg/L	0.003	Possibly carcinogenic	
Pesticides	mg/L	0.01	Possibly carcinogenic	
Phenols	mg/L	0.001	Possibly carcinogenic	
Poly Aromatic Hydrocarbons	mg/L	0.007	Possibly carcinogenic	
Total Organic Carbon or Oxidisability	mg/L	5	Cancer	

The table above shows the organic constituent parameters of drinking water with their maximum allowable limits. If these limits are exceeded, the potential health impact is indicated.

Table 4: Disinfectants and their By-products

Parameter	Unit	Maximum Permitted Levels	Health Impact	Note
Free residual Chlorine	mg/L	0.2-0.25	None	Note 2
Trihalomethanes Total	mg/L	0.001	Cancer	Note 2
2,4,6-trichlorophenol	mg/L	0.02	Cancer	Note 2

Note 2: For chlorinated water only

The table above shows disinfectants and their By–products in drinking water with their maximum permitted levels as well as potential health impacts when they exceed these levels.

Drinking water providers shall increase the amount of residual chlorine during epidemics or special cases according to instructions of Ministry of Health.

The presence of the following contaminants shall not exceed limits specified in Table 5.

Table 5: Radioactive Constituents

Parameter	**Unit**	**Maximum Permitted Levels**	**Health Impact**	Note
Radionuclides	Bq/L	0.1	Cancer	

The table above shows the radioactive parameters for safe drinking water in the form of radionuclides, its maximum permitted level and the potential healthy impact which is cancer.

Table 6: Microbiological Constituents

Parameter	**Unit**	**Maximum Permitted levels**	**Health Impact**	Note
Total Coliform count Chlorine	cfu/mL	10	Indication of faecal contamination	
Thermo tolerant Coliform or E. coli	cfu/100mL	0	Urinary track infections, bacteraemia, meningitis, diarrhea, (one of the main cause of morbidity and mortality among children), acute renal failure and haemolytic anaemia	
Faecal Streptococcus	cfu/100mL	0	Indication of recent faecal contamination	
Clostridium perfringens spore	cfu/100mL	0	Index of intermittent faecal contamination	

The table above shows the microbiological parameters for safe drinking water. Their maximum permitted levels, as well as the potential health impact if they exceed the maximum permitted levels are indicated.

B. Routine Monitoring

Inspectors in charge of Drinking Water Quality Surveillance shall conduct regular verification water quality tests and sanitary inspections to determine whether water

utilities, community water committees, food processing industries, private or public establishment and private water system owners meet standard for drinking water quality.

C. Minimum Parameters for Monitoring

The following set of simple parameters indicators of quality of drinking water shall be controlled on regular basis:

Table 7: Routine Monitoring Parameters

Parameters	**Notes**
Taste	
Odour	
Colour	
Turbidity	
pH	
Conductivity	
Iron	
Nitrates	
Aluminum	Note 1
Residual chlorine	Note 2
E. coli	Note 3
Fluoride	

Note 1: Parameters subject to monitoring water treated using aluminum compound

Note 2: Parameters subject to monitoring water treated using chlorine compound

Note 3: 95% compliance over a one-year period

2.6 NAFDAC Regulations for packaged water

Packaged water is categorised as 'regulated product' under the provisions of NAFDAC Act. The registration of every regulated product is made compulsory by the Drugs and Related Products (Registration etc) Decree No 19 of 1993[32] which provides

[32] As Amended by Act No. 20 of 1999

that no processed food, drug, drug products, cosmetics, medical device or packaged water shall be manufactured, imported, exported, advertised, sold or distributed in Nigeria unless it has been registered in accordance with the provision of the Act or regulations made under it[33].

The establishment of NAFDAC is an expression of the resolve of the government to ensure the well being of the generality of Nigerians. The reason is that the human body is composed of certain combination of chemical molecules and entities, which it is familiar with and which do not cause any harm when introduced from outside the body in small or reasonable amounts. Uncontaminated water, for instance, does not do harm to the body since a good proportion of the body mass is composed of water molecules. Apart from such familiar chemical molecules, the body is also able to tolerate varying reasonable amounts of compounds for which it has mechanism to metabolize to compounds normally present in the body. Some other chemical substances, which are Generally Regarded As Safe (GRAS), are not toxic to the body in reasonable amounts[34].

In carrying out its mandate, therefore, NAFDAC seeks to ensure that the public is protected not only from substandard and fake processed foods, medicines, drugs, cosmetics and bottled/packaged water, but also from those products which contain the right composition but due to lapses in raw materials, methods of preparation, machinery, environment, or personnel, may introduce contaminants whose harmful effects may be immediate or so delayed that the cause effect association may never be known even when a lot of people are affected.

The methods used in the production of regulated products for public consumption to greatly minimise human errors, avoid contamination, and ensure consistent, effective

[33] See also S.1, Food and Drug Act, Cap F 32 (LFN) 2004
[34] NAFDAC Guidelines for Lawful Transactions in Regulated Products (para. 3.2)

and safe products are known as Good Manufacturing Practice (GMP), which varies in detail and scope with the product and the circumstances[35].

To enforce the indispensability of GMP to public health and well being, the Federal Military Government of Nigeria in 1974, promulgated the Food and Drugs Decree[36] which mandates the registration of regulated products i.e. medicine, processed foods, cosmetics, medical devices, packaged water and chemicals to be registered with NAFDAC before manufacture, importation, exportation, distribution, advertisement and Sale etc. so that during the process of registration, the level of compliance with GMP requirements can be established.

Product registration is a task undertaken by government to evaluate, monitor and document all regulated products in order to ensure their efficacy, quality, safety or wholesomeness for the benefit of those who consume them. It is the conception of the Nigerian regulatory regime[37] that in cases where there is an error or discrepancy, a registered product can easily be recalled from circulation.[38] It is however pertinent to note that this cannot be wholly effective as sachet water is usually hawked or sold in unregistered premises.

In line with the foregoing statutory authority, NAFDAC drew up the general guidelines for the registration of packaged bottled water as well as the production requirements thereof.[39]

The National Agency for Food and Drug Administration and Control (NAFDAC) by its registration regulations, emphasises more on the inspection and accreditation of

[35] Ibid (para. 3.5)
[36] No. 35 of 1974; re-iterated by Decree No. 19 of 1993; an amendment Decree No. 20 of 1999 and Re-enacted and codified lately as Food and Drugs Act, Cap F 32 (LFN) 2004
[37] S. 2 (b); S.3(a) Consumer Protection Council Act Cap C 25, LFN 2004.
[38] Ladan, M.T., (2008) The Limits of Legal Protection and Enforcement/Regulatory Framework in Consumer Protection Against Counterfeit and Pirated Products:- The Nigerian Experience. *CALS Review of Nigerian Law and Practice*, Vol. 2 (1) pp.34, 53
[39] See Appendix 1 for NAFDAC Guidelines for the Registration of packaged water in Nigeria.

production sites, plants and methods without paying adequate attention to the distributive chain of sachet water across the country. This may be due to corruption on the part of the staff of the Agency who ought to know that if the distributive processes are not closely monitored by them, abuse on the part of unscrupulous producers will be inevitable.

At present, the registration and certification for operators of sachet water business in Nigeria is rather slack as nearly every street has either an unregistered or a registered but ill-monitored sachet water factory (usually residential apartments) where both wholesome and unwholesome "pure" water is packed and sold. These quack operators generate fake NAFDAC Registration number, untraceable factory addresses and either fake or imitated trade marks on the sachet for the market. The market is also convoluted with too many genuine and fake brands of sachet water with all manners of labeling that are at best valued for mere aesthetic appeal[40].

In 2012, NAFDAC shut down over ten (10) sachet water manufacturing factories in Port Harcourt metropolis and its environs when it discovered that some sachet water producers were operating under very poor/unhygienic conditions without Good Manufacturing Practice (GMP) while some were illegal operating without NAFDAC license but were affixing fake NAFDAC number on their sachet. More mischievous was the act of some of these producers imitating the labels and NAFDAC numbers of law biding and genuine pure water producers in the area.[41]

According to the publication[42], NAFDAC could only achieve the feat of tracing and shutting down the premises in question with the assistance of the Association of Table Water Producers (ATWAP) which is an umbrella association of practitioners in the sector. Apart from useful information ATWAP provided to NAFDAC, it also

[40] NAFDAC News (A Publication of NAFDAC) Issue 3, 2012, ISSN 1118-4086, p.51
[41] *Ibid*
[42] *Ibid*

complemented the manpower of NAFDAC which was not sufficient to cover the entire area. Currently, NAFDAC estimates that there are over 8,679 packaged water factories in Nigeria, thereby creating more tasks for regulation especially in terms of adequate manpower and finance[43].

2.7 Evidence of Sachet Water Contamination in Nigeria

A full length research paper titled" Investigation of Heavy Metals in Drinking Water (Sachet and bottled) in Ago-Iwoye and Environs, Ijebu North LGA, Ogun state, Nigeria[44] contains the following report excerpt;

> All the data and information are obtained from analysis of sachet and bottled water samples from different manufacturers consumed in the study area, which covers Ago-Iwoye, Ijebu—Igbo, Oru, and Ijebu-Ode on November 03, 2008. Five (5) sachets and three (3) bottled packaged water were collected from different manufacturers. All manufacturers refused access to their factories for understanding of their water treatment processes and source of water, but it is believed that the sources of their water are from boreholes. All the sachets and bottled water have NAFDAC registration number. NAFDAC is Nigeria's health and safety regulatory body which ensures among other things, the quality of water intake by Nigerians the study area inclusive…. This investigation of the concentration of heavy metals in the samples gave a good indication of the present state of metal contamination of both bottled and sachet water in Ijebu North LGA, comprising Ago-Iwoye, Oru and Ijebu-Ode which is at a very low level. Presently, consumption of this sampled water in Ijebu North LGA, Ogun State, Nigeria is high and may obviously not lead to immediate poisoning. However, long term effect if there is not enough check may be of major concern. Consequently, close monitoring of heavy metals must be carried out by the regulatory agency (e.g. NAFDAC) in Ijebu-North LGA., in view of the possible risks to the health of consumers, particularly in the processing and packing stages of the water. .

[43] NAFDAC News (A Publication of NAFDAC) Issue 3, 2012, ISSN 1118-4086, p.13, 51

[44] David, T.W., Awoh, D.K. and Essa, G.A., (2013, January), Drinking Water (Sachet and Bottled) in Ago-Iwoye and Environs, Ijebu North L.G.A., Ogun State, Nigeria, *Scholarly Journals of Biotechnology Research*, Vol. 2(1), pp. 1-6.

According to the Report of another study[45], to determine the bacteriological quality of drinking water sold in Lagos, Nigeria, in which one hundred samples of high and low demand sachet water obtained from vendors at hot spot locations were assessed using the multiple tube fermentation method. It was discovered that based on the zero tolerance standards stipulated by NAFDAC, there was a 22% non-compliance level.

It also stated that the quality of the packaged water is compromised significantly as it moves from the manufacturer to the consumer owing to the nature of the packaging material, the conditions of storage and transportation. Regulatory activities that promote core hygiene values, for instance, hand washing, general cleanliness of storage environment and vendor containers as well as proper handling culture could produce the desired improvements rather than a tenacious focus of end- product monitoring, which does not always give a complete picture in terms of microbiological risk assessment.

The two reports above show that;

(a) The hygiene of the production plants and processes required significant improvement, stricter regulation and monitoring,

(b) That sachet water, even though properly treated and well packaged from the production factories, can still be contaminated in the distribution chain as a result of poor handling and storage environment,

(c) That sachet water even though contaminated, may not manifest its hazardous effect on the health of the consumers immediately. The harm will usually build up over a course of consumption.

[45] Dada, A.C., (2009, January), Sachet Water Phenomenon in Nigeria: Assessment of the Potential Health Impacts, *African Journal of Microbiology Research, Academic Journals* Vol. 3(1), pp. 015-021.

The researcher adopts the fore-going conclusions on the basis that they are the empirical scientific opinions of the authors[46] who are eminently qualified and competent to embark on the research and draw those conclusions.

Furthermore, in 2012, NAFDAC,[47] admitted that the Agency received a lot of complaints about sachet water containing floating particles and sediments in year 2011.

The Agency then did some research by taking samples off the shelves and from the streets for analysis. It found out that the sachet water cannot stay beyond two months, so the shelf life was pegged at approximately two months. Even after this, the agency later found out that most of the sachet water is either badly produced or has fungal growth. NAFDAC therefore decided to conduct a recertification of water for a period of one or two years, after re-assessing every sachet water producing factory for Good Manufacturing Practice (GMP).

2.8 The Effect of Contaminated Drinking Water on the Health of the Consumers.

According to the United States Environmental Protection Agency (USEPA)[48] (a global model), the factors that could undermine the quality integrity of drinking water are: Microorganisms, disinfectants, disinfection by-products, inorganic chemicals and radionuclides. The contaminants above must not exceed their Maximum Contaminants Levels (MCLs) if drinking water must be ascertained safe for human consumption.

The potential health effect from long-term exposure to these contaminants above the Maximum Contaminants Levels (MCLs) include:- Gastro-intestinal illness (such as diarrhea, vomiting, and cramps), legionnaire's Disease (a type of pneumonia), increased risk of cancer, Anemia in infants and young children: (nervous effects), liver, kidney or

[46] See appendix 2 for the particulars of the Scientific Journals and Editorial Boards.
[47] Op.cit., p.45
[48] USEPA. Drinking Water Contaminants, National Primary Drinking Water Regulations. http://water.epa.gov/drink/contaminants/index.cfm (last accessed 30th March, 2015)

central nervous system problems, eye and nose irritation, stomach discomfort, increase in blood cholesterol, decrease in blood sugar, increased risk of developing benign intestinal polyps, increase in blood pressure, allergic dermatitis, cardiovascular system or reproductive problems, adrenal gland problems, cataracts, skin damage, thymus gland problems, immune deficiencies, Typhoid, bacillary dysentery and cholera diseases.

Nigeria, with an ailing public health sector cannot cope with the treatment and management of all the sicknesses associated with the consumption of contaminated water on a Universal Health Insurance Scheme, hence an invidious dilemma for the consumers of unwholesome sachet water who may be harmed thereby.

The way out for Nigeria, therefore, is for NAFDAC to concentrate more of its regulatory, monitoring and enforcement capacity on prevention of malpractice by the manufacturers through the initiatives that are proffered by the writer in the next chapter of this work.

2.9 Conclusion

This chapter has so far evaluated both the international and national policies on safe drinking water to the end that NAFDAC regulations for packaged water were formulated from their general safety parameters. It is the researcher's view that NAFDAC's emphasis which is mainly on monitoring "production processes" is rather self-restricting, as it has always focused its attention on only inspecting and accrediting production sites, plants and methods (which is only the first phase) of the production and supply circle as conceived by the NAFDAC Act, 2004; hence, falling short on monitoring the entire chain of distribution of sachet water. This is rather strange, because in the drug segment of its purview, NAFDAC does not only control importation and local manufacture, it also conducts *pharmacovigilance* in drug stores, pharmacies and hospitals

to ensure that fake drugs are not sold and prescription drugs are neither put on the shelf nor abused. This is a reflection that NAFDAC's monitoring and enforcement mechanism in the packaged drinking water area is weak either due to manpower challenge, corruption, obsolete devices/technology, inadequate funding or infrequent update and review of initiatives and field strategies.

CHAPTER THREE
REGULATORY FRAMEWORK ON CONSUMER PROTECTION ON PACKAGED WATER IN NIGERIA

3.1 Introduction

This chapter examines the statutory mandates of the regulatory agencies with a view to evaluating their capability or otherwise in ensuring adequate protection or remedy to consumers of sachet water in Nigeria.

The institutions to enforce consumer protection laws in Nigeria are set up by government and charged with the task of implementing the provisions of the relevant Laws for the overall benefit of the consumer. These bodies are empowered by statutes to enforce the laws and regulations governing consumable products, their manufacturers, importers and distributors. The major institutions in this sector are:-

(i) The National Agency for Food and Drug Administration and Control (NAFDAC);

(ii) The Standards Organization of Nigeria (SON), and

(iii) The Consumer Protection Council of Nigeria (CPC).

3.2 The National Agency for Food and Drug Administration and Control (NAFDAC)

It is the duty of every government to ensure that its citizens are protected from the negative health exposures that could arise from the production, distribution and sale of fake, unwholesome, contaminated and adulterated consumables, i.e. food and drugs (including packaged drinking water).

In Nigeria, this responsibility is given to the Federal Ministry of Health. Until December 1992, the responsibilities relating to food and drugs were handled by the Department of Food and Drugs Administration and Control (FDAC) within the Federal Ministry of Health. The downside of this state of affairs is that it was not independent of the typical bureaucratic culture of the civil service system expressed in the slow

mobilization of ideas, initiatives, human resources and sufficient materials; poor funding of programmes; insensitivity of management to the core values of the Department; poor salaries and allowances to the staff and general low level of discipline.

As a result of these problems, the military Administration of General Ibrahim B. Babangida, established the National Agency for Food and Drug Administration and Control NAFDAC as a parastatal under the Federal Ministry of Health by Decree No. 15 of 1993. By Section 5 of the enabling legislation[49] NAFDAC was mandated to:

a) Regulate and control the importation, exportation, manufacture, advertisement, distribution, sale and use of drugs, cosmetics, medical devices, bottled water and chemicals;
b) Conduct appropriate tests and ensure compliance with standard specifications designated and approved by the Council for the effective control of quality of food, drugs, cosmetics, medical devices, bottled water and chemicals and their raw materials as well as their production processes in factories and other establishments.
c) Undertake appropriate investigation into the production premises and raw materials for food, drugs, cosmetics, medical devices, bottled water and chemicals and establish relevant quality assurance system, including certification of the production sites and of the regulated products;
d) Undertake inspection of imported food drugs, cosmetics medical devices, bottled water and chemicals and establish relevant quality assurance systems, including certification of the production sites and of the regulated products;

[49] NAFDAC Act, Cap N1, (LFN), 2004

e) Compile standard specifications and regulations and guidelines for the production, importation, exportation, sale and distribution of food, drugs, cosmetics, medical devices, bottled water and chemicals;

f) Undertake the registration of food, drugs, medical devices, bottled water and chemicals;

g) Control the exportation and issue quality certification of food, drugs, medical devices, bottled water and chemicals intended for export;

h) Establish and maintain relevant laboratories or other institutions in strategic areas of Nigeria as may be necessary for the performance in its functions;

i) Pronounce on the quality and safety of food, drugs, cosmetics, medical devices, bottled water and chemicals, after appropriate analysis;

j) Undertake measures to ensure that the use of narcotic drugs and psychotropic substances are limited to medical and scientific purposes;

k) Grant authorization for the import and export of narcotic drugs and psychotropic substances as well as other controlled substances;

l) Collaborate with National Drug Law Enforcement Agency in measures to eradicate drug abuse in Nigeria;

m) Advise Federal, State and Local Governments, the private sector and other interested bodies regarding the quality, safety and regulatory provisions on food, drugs, cosmetics, medical devices, bottled water and chemicals;

n) Undertake and co-ordinate research programmes on the storage, adulteration, distribution and rational use of food, drugs, cosmetics, medical devices, bottled water and chemicals;

o) Issue guidelines on, approve and monitor the advertisement of food, drugs, cosmetics, medical devices, bottled water and chemicals;

p) Compile and publish relevant data resulting from the performance of the functions of the Agency or from other sources;

q) Sponsor such national and international conferences as it may consider appropriate;

r) Liaise with relevant establishments within and outside Nigeria in pursuance of its functions;

s) Determine the suitability or otherwise of medicines, drugs, food products, cosmetics, medical devices or chemicals for human and animal use; and

t) Carryout such activities as are necessary or expedient for the performance of its functions under the Act.

These functions are implemented through NAFDAC product registration which ensures that any registered product by the agency is certified fit for human consumption. When the provisions of its rules and regulations are breached, punitive measures such as revocation of registration license, closure of production sites and seizure of the defective products are taken against the defendant.

However, NAFDAC needs to do more in the area of registration and certification of sachet water production businesses, methods and sites, by ensuring more stringent background checks on applicants, their plants and storage facilities with a view to building a fool proof and accurate database of genuine producers and distributors who would be held accountable for product defects. Also, the distributive chain and end point retailers must be closely monitored in order to avoid or reduce the prevailing incidents of transit contamination as sachet water moves from the manufacturing sites to the consumers. NAFDAC can do this by introducing tracking technology and also by collaborative action with other agencies of government as outlined in its functions.

3.3 The Standards Organization of Nigeria (SON)

Established under Decree No. 56 of 1974 as amended by Decree No. 32 of 1984 and subsequently re-enacted in the 1990 Laws of the Federation (LFN)[50], the purpose of the enactment is to establish an organization for the standardization of methods and products in Nigerian industries and to provide for other matters relating thereto.

S.3 of the Act vests it with the following functions, to wit;

(a) To advise the federal government generally on the national policy on standards, standards specifications, quality control and metrology;

(b) To designate, establish and approve standards in respect of metrology, materials, commodities, structures and process for the certification of products in commerce and industry throughout Nigeria;

(c) To provide the necessary measures for quality control of raw materials and products in conformity with the standard specification.

Under S.4 of the Act, the organization is assigned specific functions which include, inter alia, the duty;

(1) To organize tests and do everything necessary to ensure compliance with standards designed and approved by the council;

(2) To undertake investigations necessary into the quality of facilities, materials and products in Nigeria and establish quality assurance systems including the certification of factories, products and laboratories.

(3) To ensure reference standards for calibration, verification of measures and measuring instruments.

[50] SON Act Cap. S.9 LFN, 2004.

(4) To develop methods for testing of materials, and equipment including items purchased for use of departments of the federation or of a state and private establishments;

(5) To compile an inventory of products requiring standardization, and Nigerian Standards Specification;

(6) To register and regulate standards, marks and specifications;

(7) To undertake preparation and distribution of standards samples;

(8) To establish and maintain such number of laboratories and other institutions as may be necessary for the performance of its functions under the Act.

The essence of the Standards Organisation of Nigeria is to ensure that buyers and consumers of both imported and locally manufactured goods alike are protected against the circulation of defective and substandard goods when they enter into commercial transactions. It also helps in eradicating most uncertainties that parties encounter when buying and selling products, hence the requirement of manufacturers' and importers' strict compliance with the standardization function of the SON.

However, it should be noted that the jurisdiction of the Standard Organization of Nigeria (SON) does not cover the specific area of packaged drinking water. It only covers and regulates water, both drinking and for other uses, sourced from public water mains and designated for public use.

3.4 The Consumer Protection Council of Nigeria (C.P.C)

The Council was established under Decree No. 66 of 1992[51] and assigned extensive functions and powers. Its functions are set forth in Section 2 as follows:-

a) To provide speedy redress to consumer complaints through negotiations, mediation and conciliation;

[51] Consumer Protection Act, Cap. C25 (LFN), 2004.

b) To seek ways and means of removing or alienating from the market hazardous products and causing offenders to replace such products with safer and more appropriate alternatives;

c) To publish from time to time lists of products whose consumption and sale have been banned, withdrawn, severely restricted or are not approved by the federal government or any foreign government;

d) To cause an offending company, firm or trade association or individual to protect, compensate, provide relief and safeguards to injured consumers or communities from adverse effect of technology that is inherently harmful, injurious, violent or highly hazardous;

e) To undertake and organize campaigns and other forms of activities as will lead to increased public consumer awareness.

f) To encourage trade, industry and other professional associations to develop and enforce in their various fields quality standards designed to safeguard the interest of consumers;

g) To issue guidelines to manufacturers, importers, dealers, and wholesalers in relation to their obligations under the Act;

h) To encourage the formation of voluntary consumer groups or association for consumer well being;

i) To ensure that consumers' interests receive due consideration as appropriate for and to provide redress to obnoxious practices or the unscrupulous exploitation of consumers by companies, firms, trade association or individuals;

j) To encourage the adoption of appropriate measures to ensure that products are safe for either intended purpose or normally safe for use.

Section 3 of the Act further empowers the Council to:

1. Apply to court to prevent the circulation of any product which constitutes an imminent public hazard;
2. Compel a manufacturer to certify that all safety standards are met in their products.
3. Cause as it deems necessary, quality tests to be conducted on a consumer product;
4. Demand production of labels showing date and place of manufacture of commodity as well as certification of compliance;
5. Compel a manufacturer, dealer or service company where appropriate, to give public notice of any health hazard inherent in their products;
6. Ban the sale, distribution or advertisement of products which do not comply with safety or health regulations.

It is noteworthy that the CPC has a remarkably direct mandate on the consumer, and if its functions are effectively harnessed, it will redress whatever complaints that exist in contractual transactions. This is in addition to the fact that it is yet the only regulatory agency that has compensatory provision for the benefit of the injured consumer against an erring manufacturer.

However, the Consumer Protection Council needs to embark on sustained sensitisation of Consumers on their rights, as lack of public awareness of the existence of the Council has fettered its relevance and hence, stalled the development of product liability regime in Nigeria.

3.5 Bottlenecks to Enforcement and Implementation

In a Consumer Protection Council of Nigeria (CPC)'s consumer feedback document in 2014[52] it was stated that as lofty and well-crafted as the objectives of the regulatory agencies (NAFDAC and CPC) are, the true test of their impact on the Nigerian consumers lies in their deliverables. To what extent have these bodies protected the Nigerian Consumers? The ability of the agencies to answer this question rests squarely on the extent of their success in combating the following key socio-political and legal obstacles, to wit;

1. Poor constitutional Framework - Inherent weakness in the enabling laws such as non-definition of consumer's rights and inadequate provisions for enforcement, (especially in the Consumer Protection Council Act); duplication of functions for the regulatory agencies and absence of a robust network for effective collaboration amongst them.
2. Bureaucratic bottlenecks - This is a common feature of all government Ministries, Departments and Agencies (MDAs). Nigerians are generally averse to the idea of utilizing government instrumentalities to process anything or claim, except if it is the only option available to them. They would rather prefer any other alternative even if it means forfeiting their hard earned money and accepting their loss. This is usually as a result of the disenchantment of the citizens with the tardy procedure of obtaining institutional redress.
3. General lack of awareness of the existence of these agencies and their mandates, especially the Consumer Protection Council of Nigeria. The predominance of illiteracy in our society, inadequate publicity and public enlightenment by the regulatory agencies make matters worse.

[52] Nigerian Consumers: how protected are Nigerian consumers? http://nigerianconsumers.com (last accessed on 30th March, 2015)

4. The corruption and ineptitude of Law Enforcement Apparatus is another factor. It is a truism that every law or policy is only as viable as the degree to which it is enforced. It is the enforcement of a Law, and not its formulation that delivers benefit to the people.

5. The Regulatory Agencies are grossly under – staffed, the few staff they have are mostly ill – motivated, unequipped, and poorly trained to effectively handle the enforcement aspect of our regulatory statutes.

It is provided under sections 6-8 of the CPC Act, that a consumer who has suffered a loss, injury or damage as a result of the use or impact of any goods, products (sachet water inclusive) or service, may make a complaint in writing or seek redress through the State Committee of the Council. The committee is empowered to inquire into the complaint and if substantiated and subject to the approval of the Council can impose a redress but without prejudice to any other civil remedy the consumer may have.

Under Section 10, the council or any State Committee may request and obtain satisfactory written assurance from any person whose conduct of business has been detrimental to the interest of consumers that such person shall refrain from such conduct. If such person fails to give such assurance or having done so he acts contrary to it, the Council or State Committee may notify the Federal Attorney-General who may proceed against the offender for violation.

These provisions further compound the plight of the injured consumer due to its indirect approach to litigation. Hence, it is rightly observed by Ladan, M.T.,[53] thus;

> Although the protection afforded is apparently well packaged … the procedure for obtaining redress is so cumbersome by its indirect approach, especially for the

[53] Ladan, M.T., (2008) The Limits of Legal Protection and Enforcement/Regulatory Framework in Consumer Protection Against Counterfeit and Pirated Products:- The Nigerian Experience. *CALS Review of Nigerian Law and Practice*, Vol. 2 (1) p. 17

> illiterate or uninformed consumers that most Nigerian consumers are. Again, many provisions or injunctions are not positive enough to elicit prompt compliance or action against an erring manufacturer, company, trade association or individual. In the final analysis, whether an action for redress is taken or not depends essentially on the willingness of the Council, State Committee or the Federal Attorney-General. Doubtless, these factors will make the lofty ideals and policies encompassed in law difficult to accomplish. Again the Council needs to do a lot more, given the general indolence, apathy and illiteracy of the Nigerian consumer, to bring to their notice or awareness of the existence of the Council, State Committees and their functions and powers and above all, the rights of the consumer.

Also, S. 3 (2) of the CPC Act which empowers the Council "to compel a manufacturer to certify that all safety standards are met in their products" appears to give the impression of the law seeking a mere ceremonial gesture of manufacturers which is not positive enough to deter malpractice. This position of statute has created an escape route for defaulting manufacturers because it has reduced their duty of care and diligence only to "meeting certain standard". The question is: What happens if injury or harm occurs to a consumer even if this regulatory condition is satisfied by the manufacturer, in the absence of intermediate tampering and/or contributory negligence on the part of the consumer? Should the defendant not take his victim as he finds him? Herein lies the implicit foundation for the reliance of the courts on the evidential proof of the 'fool proof' production process by the manufacturers to exonerate them of liability.

In the light of the foregoing challenges, it is not strange that the average consumer is exposed to widespread abuse by manufacturers and distributors, leaving him with no choice than to accept his losses, injury, harm and even death, more especially where the aggrieved consumer is up against a major player in the economy.

3.6 Conclusion

The various regulatory agencies and their statutory mandates discussed in this chapter have been doing their utmost in ensuring some level of consumer protection in Nigeria. What is curious is the observation that despite their sustained efforts, there is still a prevalence of fake and substandard products in the market, including sachet water. This is due to a number of factors which include corruption, lack of collaborative efforts by the agencies to tackle most of the antics of unscrupulous manufacturers and distributors; absence of an exhaustive recourse to, and implementation of their statutory mandates and infrequent update of their regulations, rules and strategies to beat emerging trends invented by defaulters to circumvent the regulatory capabilities of the agencies.

CHAPTER FOUR

CONSUMER PROTECTION AND PRODUCT LIABILITY IN NIGERIA

4.1 Introduction

Nigeria does not yet have an articulated body of laws termed "Product liability law" as there is in developed countries like the United States of American. For the protection of consumers in Nigeria, there is reliance on the rules of liability under the law of contract, the law of negligence and also under the criminal provisions of NAFDAC and CPC Acts.

This chapter therefore examines the extent that the current consumer protection laws are able to provide protection or remedy to an injured consumer of harmful sachet water either in the law of contract, the law of tort or under the criminal provisions of the Natural Agency for Food and Drug Administration and Control, NAFDAC Act and the CPC Act.

The Consumer Protection Act[1] in Section 32 defines a consumer to mean "an individual, who purchases, uses, maintains or disposes of products or services. Consumer protection therefore means the prevention or reduction of wrongs or injuries, and the provision of redress for an individual purchaser, user or disposer of any product or service[2].

According to Ese Malemi[3] Product liability or liability for defective products is the liability of a person for defective products made or supplied by him. Product liability may be borne by a producer or person holding out himself as a producer for instance by having his name, or mark on a product; importer, distributor and so forth. Thus, manufacturers of products and sometimes persons involved in the distribution chain owe

[1] Cap. C25 (LFN) 2004.
[2] Kanyip, B.B., Consumer Protection in Nigeria; Law, Theory and Policy, 1st edition, Rekon Books Limited, Abuja, p.27.
[3] Malemi, E., Law of Tort, Princetown Publishing Company, Lagos, 1st ed. p. 267

a duty of care to consumers of their products and where a person is harmed by a defective product, they become liable in negligence for breach of this duty.

A manufacturer's duty of care to consumers of his product was established in 1932 by Lord Atkin in his watershed judgment in the leading case of *Donoghue vs Stevenson* that:

> A manufacturer of products which he sells in such a form as to show that he intends them to reach the ultimate consumer in the form in which they left him with no reasonable possibility of intermediate examination, and with the knowledge that the absence of reasonable care in the preparation or putting up of the products will result in an injury to the consumer's life or property, owes a duty to the consumer to take that reasonable care[4].

In this case, the House of Lords held that the defendants who were manufacturers of drinks, owed a duty of care to the plaintiff, who became sick after drinking a bottle of the manufacturer's ginger beer, bought for her by a friend at a restaurant and which contained the decomposed remains of a snail. Before this case was decided, the absence of contractual relationship between a manufacturer and a consumer of his products had been a bar to a successful claim in negligence. The decision in this case corrected the position, and thereby gave to consumers the right of action in negligence. The current law is that, an action in tort for negligence can arise without a contract existing between the parties, once a plaintiff has suffered damage. This position underlines Section 32 of the Consumer Protection Council Act[5]. Which defines a consumer as: "an individual, who purchases, uses, maintains or disposes of products and services."

Product liability[6] is a tort which imposes liability on manufacturers and sellers of products that are manufactured or sold in defective condition. A product is defective if it

[4] (1932) AC. 562 at 599
[5] Op.cit., p. 63
[6] The tort protects the consumer from unfair trade practices by manufacturers and other key players in the chain of distribution who put in the market potentially dangerous and shoddy consumer products, unwholesome and adulterated food, fake and substandard food and fake drugs.

is unreasonably dangerous to the user. Liability is tied to physical or emotional injury to the ultimate consumer as was held in *Constance Ngonadi vs Nigerian Bottling Co. Ltd*[7]. The greatest challenge to the consumer in product liability cases is in the area of food poisoning, adulteration of drinks and contaminated sachet water.

The courts are inherently disposed to holding the presumption of due exercise of care in favour of manufacturers of unwholesome food and drinks, despite genuine and obvious proofs to the contrary by the injured consumer. The burden of proving negligence is on the person who alleges it. In order to discharge this burden, it is usually necessary for the plaintiff to prove specific acts or omissions on the part of the defendant which will qualify as negligent conduct. More particularly in the context of liability for defective products, the consumer must establish that his damage resulted from defects in the product and was caused by the defendant failing in his duty to take reasonable care[8]

This state of affairs leaves the injured consumer in a state of helplessness, frustration and loss of confidence in the judicial process as can be observed from the following cases:

a. In *NBC Plc. vs Okwejiminor & Anor*[9], the respondent bought a crate of coca-cola drink from the appellant. While drinking a bottle of fanta, he felt some sediment down his throat and stopped drinking and discovered that it contained some particles of foreign bodies. He also discovered that another bottle in the same crate contained identical foreign bodies. He developed stomach pain and was rushed to the hospital where he was first confirmed to be suffering from poisoning which could have been caused by the fanta he drank. The trial court awarded the plaintiff the sum of N950, 000.00k. However, the court of Appeal reversed the decision and held that because

[7] (1985) 1 NWLR pt.4 p.739 – where the Plaintiff/Appellant sustained severe injuries from a brand of Kerosene refrigerator which was sold to her by the defendant/Respondent.
[8] Mickleburgh, J. Consumer Protection, p.213
[9] (1998) 8 NWLR. 295

the consumer ate breakfast earlier on that day (bread and Coffee) before leaving his house, it could not be concluded that the fanta orange caused the injuries complained of.

b. In *Okonkwo vs Guinness Nigeria Ltd*[10], the plaintiff drank small stout, brewed by the defendant. The drink contained particles of roots, leaves, and back of tree. The plaintiff relied on *Res ipsa loquitur*. The trial judge rejected the plaintiff's case and held that the plaintiff could not establish that the defendant was the manufacturer of that particular bottle of stout; and that he could not also prove when the drink left the manufacturer. He finally held that the principle of *Res ipsa loquitur* did not apply to the case. In his words, Obi-Okoye J. summed up his judgment as follows;

> In conclusion, let me say this, *Donoghue vs Stevenson* did not create a magic for the recovery of damages against manufacturers of drinks by ultimate consumers of the drinks. A plaintiff in a case of this nature realizes that unless he has obtained admission of certain facts from those he sues, the burden which he has assumed of establishing his case is enormous: no presumptions exists in his favour; all the ingredients of the case must be proved by credible evidence at the trial. If therefore, he is not in a position to discharge such burden, it is pointless instituting the action at all.

c. In *Ebelamu vs Guinness Nig. Ltd*[11], the plaintiff at the occasion of the 10th Anniversary of his wedding organized a party and treated his guests to food and drinks, some of the invitees who drank harp beer, a product of the defendant's developed stomach pains, vomiting, and were rushed to a nearby hospital, where they were diagnosed with food poisoning.

One unopened and two opened bottles of the harp beer were sent for laboratory analysis, and were found to be poisonous. Despite the overwhelming evidence, the

[10] (1980) 1 PLR 538.
[11] (1983) FNLR 42.

court dismissed the plaintiff's claim and stated *inter alia*, that no nexus had been created between the opened bottle and the unopened ones; and that a manufacturer owed no duty to ensure that its product was perfect, beyond taking reasonable care to ensure that no injury is done to the consumer. In his Judgment, Oshodi J., held that:

i) There was no nexus between the opened bottles and the unopened ones;

ii) A manufacturer owed no duty to ensure that the goods are perfect, but merely to take reasonable care that no injury is done to the consumer or ultimate purchaser;

iii) The principle of *Res ipsa loquitur* has no place in a case of this nature.

d. In *NBC vs Olanrenwaju*[12], the plaintiff/respondent purchased two bottles of coca-cola, a product of the defendants/appellants. After taking some content of the drink, he noticed visible particles in it. He also saw similar particles in the unopened bottle. Thereafter, the respondent felt unwell and consulted a doctor. He thereafter instituted an action for damages at the Ilorin High Court, and was awarded damages. On appeal by the appellant, the court of Appeal, Ilorin, reversed the appeal on the ground that the respondent could not establish a direct link between the coca-cola he drank and his ailment. In his Judgment, Ogunwumiju J.C.A stated;

> What is most important in the circumstances of this case is whether or not the respondent was able to prove on a balance of probabilities that he drank a contaminated bottle of coca-cola and became ill as a result of it… merely brandishing Exhibit = A, an unopened but obviously contaminated bottle of coca-cola is not enough.

[12] (2007) All FWLR (pt. 364) 360

e. Also, in *Boardman vs Guinness (Nig.) Ltd*[13], the plaintiff drank an unwholesome liquid content of harp beer in an ill lit room. It was found to contain a considerable quantity of sediments. The plaintiff filed an action for negligence against the defendant, for the manufacture of adulterated beer. The defendant in its defence gave a detailed account of the manufacturing process to show that the drink was produced under the strictest scientific brewing and quality control process, such that the presence of extraneous or deleterious substance could easily be ruled out. The court discountenanced the laboratory report which revealed that the beer contained certain bacteria and held that the plaintiff had failed to show that the defendant was guilty of negligence. This was in spite of the fact that the case appeared clearly to be on all fours with *Donoghue vs Stevenson*[14].

From the foregoing decisions, it appears that the principle enunciated in *Donoghue vs Stevenson* no longer represents the law in Nigeria in cases relating to the manufacture of unwholesome food and drinks. It is strange to note that the courts have actively contributed through judicial pronouncements to further weakening the protection hitherto afforded the consumer in this area of law.

The extreme rigidity of the Nigerian Courts in cases of this nature is hinged on the question of whether the plaintiff consumer has adduced sufficient evidence to show that the defect complained of was present when the article left the defendant manufacturer (proof of producer's fault). The evidence must unerringly show that the defect cannot be attributed to any intermediary or even to unlawful interference by the plaintiff himself. This task is enormous, as the courts may not be willing to take the issue for granted. The courts, therefore ought to be a bit liberal as to strike a balance between the interests of the

[13] (1980) NCLR 109
[14] *Supra*

consumer and those of the defendant. They should be prepared (in the public interest) to make some reasonable assumptions where there is reasonable circumstantial evidence against the defendant, in favour of the claimant/plaintiff.[15]

The courts ought not to deviate from the earlier judicial landmark set in 1973 in the case of *Osemobor vs Niger Biscuit Co. Ltd and Nassars and Sons* held (in line with the principle in *Donoghue vs Stevenson*) that;

> A manufacturer of product which he sells in such a form as to show that he intends them to reach the ultimate consumer in the form in which they left him with no reasonable possibility of intermediate examination, and with knowledge that the absence of reasonable care in the preparation or putting up the product will result in an injury to the consumer's life or property owes the duty to the consumer to take that reasonable care[16].

4.2 Consumer Rights

The United Nations General Assembly by its Resolution [17] unanimously adopted Guidelines for Consumer Protection which member nations are expected to implement. Although the Resolution has not been domesticated by Nigeria, its guidelines laid down basic principles in the nature of consumer rights and governmental obligations that should apply in all economies.

In general, therefore[18], the Guidelines make provision in respect of the following matters:

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[15] Monye, F., (2005), Law of Consumer Protection, 2nd ed., Spectrum Law Series, Ibadan, pp. 181- 182.
[16] In this case, the plaintiff in the course of eating the biscuit manufactured by 1st defendant, and sold by the 2nd defendant in its supermarket found a decayed tooth in it, and in consequence became hysterical and physically ill. The court held that the consumer of biscuit would reasonably not be expected to carry out an examination of the product before consuming it. The defendants were held liable.
[17] Resolution 39/248 of 9 April, 1985.
[18] Kanyip, B.B., Op.cit., p. 21

a. that countries should adopt appropriate measures to ensure that products are safe for either the intended or normally foreseeable use,
b. that government policies should enable consumers obtain optimum benefit from economic resources, and achieve the goals of satisfactory production and performance standards;
c. That governments should formulate and promote the elaboration of standards at both national and international levels for the safety of goods and services and give them appropriate publicity;
d. That governments should ensure the efficient distribution of goods and services to consumers;
e. That governments should establish and maintain legal and/or administrative measures to enable consumers or relevant organisations to obtain redress expeditiously and inexpensively;
f. That governments should develop and encourage the development of general consumer education and information programmes and which should be an integral part of the basic curriculum of the educational system, preferably as a component of existing subjects;
g. That governments should adopt and maintain the standards of food security, safety and adequate supply laid down by the Food and Agriculture Organisation (FAO), the World Health Organisation (WHO) and Codex Alimentarius Commission;
h. That governments should ensure the supply and distribution of good and quality drinking water;
i. That governments should develop and maintain adequate standards and regulations for the supply of appropriate medicare through a National Drug Policy; and

j. That governments should develop, review, maintain or strengthen appropriate mechanisms for the exchange of information on material policies and measures, in co-operation with other countries at the international level or among different tiers of government at the domestic level.

Implicit in these Guidelines, therefore, are the basic rights of consumers, namely;

i. The right to basic needs
ii. The right to safety
iii. The right to be informed
iv. The right to choose
v. The right to be heard
vi. The right of redress
vii. The right to consumer education
viii. The right to a healthy environment, and
ix. The right not to be exploited.

4.3 Application of *Res ipsa loquitur* in Nigerian Cases

Res ipsa loquitur[19] is a Latin maxim which means "the thing speaks for itself". The term is used to refer to anything that is plain, clear, or self-explanatory and needs no further explanation, proof, or clarification. *Res ipsa loquitur* is a rule of the law of evidence whereby the mere fact that a thing happened raises an inference of negligence on the part of the defendant so that there is a prima facie case and he has to make his defence. The application of this doctrine automatically shifts the burden of proof to the defendant to exonerate himself from liability in negligence.

[19] Erle, C.J. in the case of Scott vs London & St. Katherine's Dock (1865) 159 B.R. 465

However, it was observed in *Management Enterprises Ltd vs Otusanya,*[20] as follows:

> If there is evidence the occurrence took place, an appeal to *Res ipsa loquitur* is misconceived and inappropriate. There, again, the defendant's negligence must be determined on the available evidence. In other words, the doctrine of *Res ipsa loquitur* is never meant to supplant inconclusive evidence of negligence on the part of the plaintiff, it is meant to apply where there is no other proof of negligence than itself.

It therefore means that for the doctrine to be applied to any case, three conditions must be met, to wit:

1. There must be an absence of explanation of the occurrence by the plaintiff,

2. The thing that caused the harm must have been under the management or control, of the defendant or his servant; and,

3. The accident or harm must be one which in ordinary course of things, does not happen without negligence on the part of the defendant.

Adefarasin, Ag. CJ Lagos State (as he then was) rightly pointed it out in *Akinola vs Guffanti & Co. Ltd*[21] that:

> The maxim is no more than a rule of evidence affecting onus. It is based on common sense, and its purpose is to enable justice to be done, when the facts bearing on causation and on care exercised by the defendant are at the outset unknown to the plaintiff and are, or ought to be within the knowledge of the defendant.

In the case of *Boardman vs Guiness (Nig) Ltd (Supra),* even though the doctrine of *Res ipsa loquitur* was held inapplicable to the facts of the case, it was admitted that a plaintiff could be justified in invoking it in appropriate cases. Iguh, J. (as he then was)

[20] (1987) 2 NWLR pt. 55, p.16
[21] (1974) 5 CCHCJ 671 at 673

refused to accept the submission of counsel for the defendants that the principle can never be applied to product liability cases. He stated;

> To the extent that the plaintiff must aver and prove negligence against the defendant, I am in complete agreement. I am however unable to agree that the doctrine of *Res ipsa loquitur* can never be applied by a plaintiff to prove negligence in this class of cases. In my view, proof of the presence of foreign or deleterious matter in a consumable or other product which irresistibly suggests negligence on the part of the manufacturer or other class of person is sufficient to establish a prima facie case of negligence founded on the doctrine of *Res ipsa loquitur*.

The application of *Res ipsa loquitur* will avail the plaintiff (injured consumer of unwholesome sachet water) the leverage to approach the courts more easily because his dilemma in most cases is that he did not know and there are no avenues beyond mere labeling of sachet water to make him know whether or not the water is pure. It must be emphasised that the injury caused must be one that affects more than a few plaintiffs who have proof that they consumed the same brand of sachet water which was manufactured by the defendant in the same area and manifesting the same disease symptom and syndrome at about the same time.

However, the Supreme Court of Nigeria, held in the case of *Linus Onwuka & Anor vs Omogui*[22] that the principle only shifts the burden of proof, which is adequately met by showing that despite the accident, the defendant was not infact, negligent. If this is successfully done, the burden shifts back to the plaintiff to show that the defendant was in fact, negligent.

[22] (1992)3 N.W.L.R. (pt. 230) 393. S.C

4.4 Relevance of Trade Mark Act Provisions to the Interest of a Consumer.

A trade mark is any visible sign adopted by a manufacturer to distinguish his product from goods of the same general description.[23] An infringement of trade mark which could be against goods or trade consists of the unauthorized use or colourable imitation of a trade mark on substituted goods of the same class as those for which the trade mark has been appropriated with the result that intending customers could readily confuse one product for the other. The law of trade mark was summed up by Lord *Cramworth L.G, in Seixo vs Provenzende*[24] as follows:

> Where a manufacturer has been in the habit of stamping the goods which he has manufactured with a particular mark or brand so that persons purchasing goods of that description know them to be of his manufacture, no other manufacturer has a right to adopt the same stamp.

Distinctiveness has always been the fundamental essence of granting injunction in favour of objectors against the simultaneous use by imitators of trademarks similar to those of the objectors. It is therefore clear, that the endless conflicts and litigation between manufacturers over the protection of merchandising marks is, primarily to safeguard their economic interest and also ensure continuity in the use of distinctiveness of the marks. A manufacturer would hardly resort to litigation against the imitator of his product, for the singular purpose of protecting the consumer of his product. The fact that the consumer ends up being protected from being fed with imitation is coincidental and consequential.

The foregoing allusions are eloquently attested to by the following judicial authorities;

[23] The definition given to trade mark in the Trade Marks Act, Cap. T. 13 (LFN) 2004 i.e. S. 67 and S. 43.
[24] (1866) 1 Ch. App. 192 at 196.

In *Alban Pharmacy Ltd vs Sterling Products International Inc*[25], Ademola, CJN opined that the criterion for determining what constitutes an infringement was that "the mark sought to be registered must not when compared with what is already registered, deceive the public as to cause confusion". In this case, the owners of the trade mark "castoria" objected to the defendant's application to use the mark "castorina" on medicines of the same type as sold by the objector. The court was of the view that the objector's apprehension about the possibility of confusion was well founded, having regards to the similarity in the dominant syllables in both marks. On the same footing, in *Iyke Medical Merchandise vs Pfizer Inc. & Anor*[26], the plaintiff/respondent (Pfizer Inc) had been engaged in the manufacture and sale of a pharmaceutical product, a worm expeller for the treatment of worms in children and adults, known as "combantrin plus" duly registered under trade mark No. 31159. Thereafter, the defendant/appellant (Iyke Medical Merchandise) also a pharmaceutical outfit, sought to put in the market a product known as "Combiterin" which is also for the treatment of worms in both children and adults. The plaintiff's action for injunction, order of delivery up for destruction of the infringing product (Combiterin) and general damages succeeded.

The relevance of this exposition on trade mark to the subject matter of this research is that the lack of effective pro-active measures to ward off trademark imitation by the relevant agencies has left hapless consumers of sachet water unprotected against the antics of some unscrupulous individuals who forge the trade marks of established and safety complaint manufacturers of sachet water on bags which they use to sell untested, unapproved and contaminated water to the consumers who simply buy on the basis of their confidence in the quality of the real product. This action is both an infringement on the trade mark rights of the original holders and infliction of health hazard on the buying

[25] (1968) 1 All NLR 300.
[26] (2001) 6 NSCQR 997; (2001) 10 Nigerian Weekly Law Report (Pl. 722) 540.

but unsuspecting public. It is submitted that infringement of trade mark should be made actionable in tort and in crime. That the laws should be amended to prescribe definite deterrent punishment, i.e. a long term of imprisonment for convicted defaulters instead of limiting penalties to seizure and/or forfeiture only.

4.5 Protection in the Law of Contract

Implied Terms (Merchantable Quality).

By section 14 (2) of the Sale of Goods Act, 1893, goods bought by description from a seller who deals in those goods must be of merchantable quality. The condition, however, does not apply if the buyer has examined the goods and fails to detect defects which such an examination ought to have revealed. However, the Sale of Goods Act, 1893 does not apply to the whole of Nigeria as the old Western Region repealed it and replaced it with Sale of Goods Law, 1959 (subsequently adopted by all the states that were hitherto in old Western Region), as well as Kaduna and Benue States which have enacted the Sale of Goods Law, 1990 and 2004 respectively.

The decision that gave birth to the doctrine of implied terms which subsequently found expression in the Sale of Goods and Hire purchase Acts[27] is that of *Jones vs Bright*[28], wherein Sir William Best had this to say:

> It is the duty of the court in administering the law to lay down rules calculated to prevent fraud, to prevent persons who are necessarily ignorant of the qualities of a commodity they purchase and to make it the interest of manufacturers and those who sell to furnish the best article that can be supplied… if a man sells an article, he thereby warrants that it is merchantable that is, fit for some purpose.

[27] Ladan, M. T., (2008) The Limits of Legal Protection and Enforcement/Regulatory Frameworks in Consumer Protection Against Counterfeit and Pirated Products:- The Nigerian Experience. *CALS Review of Nigerian Law and Practice*, vol. 2 (1) p. 17

[28] (1892) 5 Bing 533

Merchantable quality is defined in the English Supply of Goods (Implied Terms) Act of 1973 to mean;

> Goods of any kind are of merchantable quality within the meaning of this Act if they are fit for the purpose or purposes for which goods of that kind are commonly bought as it is reasonable to expect having regard to any description applied to them, the price (if relevant) and all other relevant circumstances.

Merchantable quality" is construed to be "satisfactory quality" due to the impreciseness of it. Thus, goods are of a satisfactory quality if they "meet the standard that a reasonable person would regard as satisfactory; taking account of any description of goods, the price (if relevant) and all the other relevant circumstances. Where the buyer deals as a consumer, these relevant circumstances 'include any public statements on the specific characteristic of the goods made about them by the seller, the manufacturer, or his representative, particularly in advertising or in labelling' (i.e. that the sachet water is pure). Manufacturers/sellers can however, avoid liability for non conformity with these public statement and assurances, if they can show that when the contract was made:

(a) they neither knew nor could reasonably have been aware of the statement,
(b) the statement had before the contract was made, been publicly withdrawn or corrected, or
(c) the decision to buy the goods could not have been influenced by the particular statement[29].

Actions under the Sale of Goods Act have a number of advantages over proceedings in tort. There is no need to prove fault; only defectiveness, thus, making the remedy potentially wider than in the tort of negligence. Furthermore, in contrast to the

[29] Dugdale, A.M., (Ed.) (2006). *Clerk & Lindsell on Torts.* 19th ed., London, Sweet & Maxwell, 11-05, 698

position in tort, no distinction is drawn between dangerous and ineffective goods, or between physical and economic loss; all losses are recoverable, provided they are not too remote – save that such liability only applies between parties to a contract of sale[30]. But in the case of *Heningsen vs Bloomfield Motors*[31], the development in the U.S. was amply reflected in the judgment which emphasized that the manufacturer's contractual liability ensures to the benefit of the ultimate consumer. This therefore seems to obviate the privity rule as far as the consumer rights against the manufacturer in product liability matters are concerned. It is therefore, edifying for Nigeria.

4.6 Privity of Contract and Consumer Protection

As a general principle, a contract cannot confer enforceable rights or impose obligations arising under it on any person, except parties to it. Thus, only parties to a contract can sue on it. It also follows that only those who have furnished consideration towards the formation of the contract can bring an action on it[32].

Therefore, Lord Haldane stated in *Dunlop Pneumatic Tyre Co. Ltd vs Selfridge Ltd.* thus;

> My Lords, in the Law of England, certain principles are fundamental. One is that only a person who is a party to a contract can sue on it. Our law knows nothing of a jus quaesitum tertio arising by way of contract. Such a right may be conferred by way of property, as for example, under a trust, but it cannot be conferred on a stranger to a contract as a right in personam to enforce the contract[33].

However, the law of negligence and the duty of care concept embodied therein present an interesting exception to the privity doctrine. In English tort law, an individual may owe a duty of care to another, to ensure that they do not suffer any unreasonable

[30] Elliot, C., and Quinn, F., (2007) Contract Law, 6th ed., LexisNexis, London.
[31] 161 A. 2d 69 (1960).
[32] Sagay, I., (2000).Nigerian Law of Contract, Spectrum Law Series, Ibadan p. 489
[33] (1915) AC 487 at 853

harm or loss. If such a duty is found to be breached, a legal liability is imposed upon the tort feasor to compensate the victim for any loss or damage they incur.

The idea of individuals owing strangers a duty of care where beforehand such duties were only founded from contractual agreements developed at common law, through the 20th century. The doctrine was significantly developed in the case of *Donoghue vs Stevenson*[34]. Following this, the duty concept has expanded into a coherent judicial test, which must be satisfied in order to claim in negligence. The common law position regarding negligence recognized strict categories of negligence. The position was significantly changed in *Donoghue vs Stevenson,* in 1932, which established that a duty of care applied despite absence of prior relationship or interaction and was not constrained by privity of contract. Here, a duty of care was found to be owed by a manufacturer to an end consumer, for negligence in the production of his goods. Mrs. Donoghue's claim for damages for gastroenteritis and nervous shock where allowed, where a ginger beer manufacturer had negligently allowed a snail into a bottle, which she had consumed. Lord Atkin established liability on the basis that a neighbourhood principle existed between the two parties, to ensure reasonable care was taken in the production of the ginger beer, so as not to cause Mrs. Donoghue any unreasonable harm;

> There must be, and is, some general conception of relations giving rise to a duty of care, of which the particular cases found in the books are but instances…. The rule that you are to love your neighbour becomes in law you must not injure your neighbor; and the lawyer's question: Who is my neighbor? receives a restricted reply. You must take reasonable care to avoid acts or omissions which you can reasonably foresee would be likely to injure your neighbor. Who, then in Law is my neighbour? The answer seems to be persons who are so closely and directly affected by my act that I ought reasonably to have them in contemplation as

[34] *Supra*

> being so affected when I am directing my mind to the acts or omissions that are called in question[35].

This speech of Lord Akin's established a **neighbour principle,** or a general duty that individuals must take reasonable care in their actions or omissions, so as not to cause harm to others proximate to them. It did not matter that Mrs. Donoghue was unidentified or unknown to the manufacturer; as the type of harm which occurred was foreseeable through the negligence of the ginger beer manufacturer.

Following the firm establishment of the **neighbour principle** in negligence, it became clear in subsequent years that it did not represent an easily applicable approach to new forms of duty, as to unprecedented situations of negligence[36]. As such, new categories of negligence evolved, as in *Hedley Byrne & Co. Ltd vs Heller & Partners Ltd*[37], to cover different types of negligent acts, i.e. negligent misstatements occasioning economic loss for instance, rather than a coherent doctrine or ratio being taken from *Donoghue vs Stevenson.*

Some forty years after Donoghue was decided, in *Home Office vs Dorset Yacht Co. Ltd.*[38], Lord Reid stated judicially that; "the time has come when we can and should say that it ought to apply unless there is some justification or valid explanation for its exclusion." It was not until the case of *Anns vs Merton London Borough Council*[39], however, that the neighbour principle was adopted in a formal test for negligence. The case involved the negligent construction of a block of maisonettes, commissioned by the Merton London Borough Council. The flats, finished in 1972, had poorly constructed foundations, resulting in sloping of floors, and cracks in the walls. The Lessees of the

[35] (1932) AC. 562 at 599
[36] Elliott, C., and Quinn, F., Op.cit., p.35
[37] (1964) AC 465
[38] (1970) AC 1004 at 1027
[39] (1978) AC 728

maisonettes sued the Council in negligence, alleging a duty of care existed for the building to be properly constructed and in a usable state.

The House of Lords unanimously found a duty to exist. The test established by Lord Wilberforce known as the *Anns test* imposed a prima facie duty of care where;

(a) A sufficient relationship of proximity or neighborhood exists between the alleged wrongdoer and the person who has suffered damage, such that the carelessness on the part of the former is likely to cause damage to the latter.

(b) There are no considerations relevant which may reduce or limit the scope of any imposed duty.

The current test for a duty of care can be found in the judgment of *Caparo Industries Plc vs Dickman*[40].

Lord Oliver's speech in the above case sets the test for a duty of care thus;

(a) The harm which occurred must be a reasonable foreseeable result of the defendant's conduct;

(b) A sufficient relationship of proximity or neighbourhood exists between the alleged wrongdoer and the person who has suffered damage;

(c) It is fair, just and reasonable to impose liability.

It is submitted that this should form the basis for the liability of manufacturers of unwholesome sachet water whenever the consumer is harmed or injured by its contaminants. More so, that the health of the consumers is of the utmost priority to government, hence bringing acts and/or omissions that endanger it under breaches of public interest and policy.

[40] (1990) 2 AC 605

It is salient to opine that proof of unwholesomeness of packaged water which causes harm or loss or death to a consumer satisfies the first ingredient, i.e.;

"a) the harm which occurred must be a reasonably foreseeable result of the defendant's conduct".

The neighbour principle that operates between the manufacturer/retailer/seller of sachet water and the ultimate consumer underscores the satisfaction of the second ingredient – i.e;

"b) a sufficient relationship of proximity or neighbourhood exists between the alleged wrong doer and the person who has suffered damage"; and, because the health and well being of the citizens is such a serious priority of government, it would only be fair, just and reasonable to treat issues that relate to the safety or otherwise of food, drugs, packaged water, etc. as constituting public policy concerns, thus satisfying the third ingredient – i.e.,

"c) it is fair, just and reasonable to impose liability."

4.7 Strict Liability

Strict liability makes a person responsible for the damage and loss caused by his acts and omission regardless of culpability (or fault in criminal law terms, which would normally be expressed through mens rea – 'guilty mind' requirement. Strict liability is the legal responsibility for damages, or injury, even if the person found liable was not at fault or negligent.[41]

It is important to, and finds ample application in product liability and consumer protection cases. For reasons of public policy, certain activities may be conducted only if

[41] Fatula, O. A., (2011) Fundamentals of Tort, S.A. Printers, Lagos, p.123

the person conducting them is willing to insure others against the harm that results from the risks the activities or in-activities create.

In the United States of America, strict liability is enforced against a manufacturer who puts detective products in the market for consumers' use. In *Greenman vs Yuba Power Production Inc*.[42] a man was injured while using an all-purpose power tool given to him as a present by his wife. This injured the consumer who brought an action. The Supreme Court of California held the manufacturer liable and stated in its judgment as follows;

> A manufacturer is strictly liable in tort when an article he places on the market knowing that it is to be used without inspecting for defects, proves to have a defect that causes injury to a human being…. The purpose of such liability is to ensure that the costs of injuries resulting from defective products are borne by the manufacturer that puts such product on the market rather than by the injured persons who are powerless to protect themselves.

Also, Comment 'C' to Section 402 A of the US Restatement (Second) of Torts, 1965, is cited thus:

> On whatever theory, the justification for strict liability has been said to be that the seller, by marketing his product for use or consumption, has undertaken and assumed a special responsibility towards any member of the consuming public who may be injured by it, that the public has the right to expect and does expect in the case of products which it needs and for which it is forced to rely upon the seller, the reputable sellers will stand behind their goods, that the burden of accidental injuries caused by products intended for consumption be placed upon those who market them, and be treated as a cost of consumption against which liability insurance can be obtained; and that the consumer of such product is entitled to the maximum protection against injury at the hands of someone and the proper persons to afford it are those who market the products.

[42] (1963) 27 Cal. Report 697

The reason for the consumer protection provision above is that the manufacturer or distributor, by his skill and means, is in a better position to insure against possible risks. In addition, by putting his product on the market, the manufacturer or distributor impliedly guarantees the quality of such products. He should therefore, be held liable for any harm that may arise therefrom.[43]

The same applies to manufacturers and distributors of sachet water.

4.8 Protection under Criminal Provisions of NAFDAC and CPC Acts

Under Section 25 of NAFDAC Act[44], any person who contravenes the provisions of any regulations made under this Act is guilty of an offence and liable on conviction to the penalties specified in the regulations. Where no penalty has been specified, the person shall be liable to a fine of ₦50, 000.00 or imprisonment for a term of one year.

Regulation 8, NAFDAC Bottled Water Registration Regulations provides that, if any person fails to comply with the provisions of these regulations, the Agency may prohibit that person from carrying on the importation, exportation, manufacture, distribution, sale or use of the bottled water either absolutely or for such a period of time as the Agency may declare, in addition to the payment of a fine of ₦50, 000.00.

Regulation 14, NAFDAC Bottled Water (Advertisement) Regulations provides that, if any person fails to comply with the provisions of these regulations, the Agency may prohibit that person from carrying on the importation, exportation, manufacture, distribution, sale or use of the bottled water either absolutely or for such a period of time as the Agency may declare, in addition to the payment of a fine of ₦5, 000.00.

Regulation 16, NAFDAC Bottled Water (Labelling) Regulations provides that, if any person fails to comply with the provisions of these regulations, the Agency may

[43] Monye, F., Op.cit., p. 69
[44] Cap N 1, LFN 2004

prohibit that person from carrying on the importation, exportation, manufacture, distribution, sale or use of the bottled water either absolutely or for such a period of time as the Agency may declare, in addition to the payment of a fine of ₦50,000.00.

Under section 9 of the Consumer Protection Council Act[45] it is provided that it shall be the duty of the manufacturer or distributor of a product, on becoming aware after such a product has been placed on the market, of any unforeseen hazard arising from the use of such product to notify immediately, the general public of such risk or danger and cause to be withdrawn from the market such product. Any person who violates this provision is guilty of an offence and liable on conviction to ₦50,000 fine or imprisonment of five years or both such fine and imprisonment.

Under section 11 of the Act, any person who issue or aids in issuing any wrong advertisement about a consumer item, is guilty of an offence and liable on conviction to a fine of ₦50,000 or to imprisonment of five years or both such fine and imprisonment

Also, under section 12 of the Act, any person who, in contravention of any enactment whatsoever for the protection of the consumer-

(a) sells or offers for sale any unsafe or hazardous goods, or

(b) provides any service or proffers any information or advertisement thereby causing injury or loss to a consumer is guilty of an offence under the Act and liable on conviction to ₦50,000 fine or both such fine and imprisonment.

Section 13(1) of the CPC Act[46] gives the court the discretion to make a compensation order in favour of an injured consumer, in addition to the conviction of the offender in deserving cases.

It should be noted that only the CPC Act makes provision for compensation of a victim. This gives it a superior remedial stance over NAFDAC and SON whose

[45] Cap C25 (LFN) 2004
[46] Ibid

legislation do not provide for compensation order in addition to the conviction of an offender.

The view of the writer is that the fines appropriated for various contraventions of the above criminal provisions are too meagre to deter infractions by defaulters.

4.9 Due Care and Prudence of the Consumer

There is need to mention here, an arm of contributory negligence regarding anticipating danger. A reasonable claimant (consumer) must not generally expect that others will always observe due care in their conduct, as simply put by Lord Du Parcq in *Grant vs Sun Shipping Co.*[47]: "A prudent man will guard against the possible negligence of others, when experience shows such negligence to be common." Normally, a claimant (consumer) should, for his own protection, keep his eyes open and take proper precautions to guard against the occurrence of contamination or harm. However, it has been held[48] that where the claimant has been thrown off his guard by the conduct of the manufacturer (as by labeling on sachet water), and reasonably induced to believe that he may proceed with safety (by the assurances of NAFDAC that the sachet water is regulated by it as shown by its authentication number), a lesser degree of care and circumspection may be required of him.

4.10 The Burden of Proof of Negligence on an Injured Consumer of Contaminated Sachet Water

It is the view of the writer that, in order to consider the viability or otherwise of an injured consumer seeking redress against a manufacturer or distributor or retailer or any other defendant under case law, it is pertinent to note that in the law of tort, i.e. negligence, the burden of proof is quite enormous on the plaintiff. In addition to the

[47] (1948) A.C. 549 at 567.
[48] Pressley vs Burnett (1914) S. C. 874.

requirement that the plaintiff must prove fault on the part of the manufacturer, the third ingredient of liability under a duty of care situation is explicit proof of harm or injury. Thus, in cases of injury from the consumption of contaminated sachet water, the indicator of the health hazard in the form of sickness or malignancy is cumulative and usually long term. This creates a problem of proving a direct, distinguishable connection between the contaminated water and the ailment in question (injury), except the ailment is widespread amongst the consumers of the same brand of sachet water at the same time and in the same area in the form of an epidemic in which case, liability may be inferred from prevailing circumstances.

Another challenge with the burden of proof of negligence against the manufacturer or distributor is the disequilibrium in wherewithal and influence between the rich manufacturers (usually limited liability Companies) and an indigent consumer of sachet water who has an uphill task of litigating against an organized corporate colossus.

4.11 Conclusion

From the foregoing examination, liability based the law of contract and the law of negligence provides inadequate protection to the consumer. The consumer's recovery under the Sale of Good Act[49] is limited to only a contractual relationship with the seller[50]. The primary liability for defective products is on the seller, who is often a mere retailer while the actual manufacturer escapes liability on the ground that there is no privity of contract between him and the buyer. Also, the law of negligence places an undue burden of proof on the consumer which usually makes a guilty manufacturer to escape liability and leave the consumer without remedy. Again, the fines appropriated for the various contraventions of the criminal provisions of both the NAFDAC Act and the CPC Act are

[49] 1893
[50] Section 4 of the Kaduna State Sale of Goods Edit, 1990

inadequate to deter malpractice. Therefore, the application of the principle of *Res ipsa loquitur* and the strict liability rule by the courts, in addition to amended criminal provisions of the relevant statutes with significantly increased fines, will go a long way in providing adequate protection for consumers in Nigeria.

CHAPTER FIVE

SUMMARY AND CONCLUSION

5.1 Summary

This research has been able to assess the drinking water safety policies of Nigeria with emphasis on the subject of sachet water. The dissertation set the tone for discussion with such preliminary issues as background to the study, the statement of research problem, aim and objectives of the research, scope of the research, research methodology, justification of the research, literature review and organizational layout. Further, the work focused on standards of safe drinking water. Drinking water being a resource of global significance and interest, its regulation in Nigeria draws from international standards and quality parameters set by some developed countries like the United States of America, Canada and Australia, as well as a global institution like the World Health Organization (WHO). Also discussed are evidences of sachet water contamination in Nigeria, and the effect of contaminated sachet water on the health of the consumers.

Also, it dealt with the regulatory framework on consumer protection on packaged water in Nigeria by highlighting the statutory mandates of the National Agency for Food and Drug Administration and Control (NAFDAC), the Standards Organization of Nigeria (SON), and the Consumer Protection Council of Nigeria (CPC). It concluded with an analysis of the impediments to the effective enforcement and implementation of the statutory mandates of the regulatory institutions.

In addition, the research considered whether there is protection in the tort of negligence, in the law of contract (Sale of Goods) or in the criminal provisions of the NAFDAC and CPC Acts. Issues as to burden of proof, conditions on how it can be discharged and the complexities of duty of care situation were analyzed, to the end that given the current conservative attitude of the courts as far as the burden of proof of

negligence is concerned, the consumer/plaintiff will always go without remedy if the courts do not allow room for flexibility by admitting the doctrines of *Res ipsa loquitur* and strict liability in cases arising from edible product defect generally, and contaminated sachet water in particular.

5.2 Findings

5.2.1 In view of the far reaching legal impetus given to NAFDAC by Section 5 (a) – (t) of the NAFDAC Act[1], it is clear that current registration and certification for operators of sachet water business in Nigeria as well as its monitoring strategies are not wholly effective relative to the extent of its powers. It is obvious that the increase in the business of sachet water production and distribution has overwhelmed NAFDAC in terms of operational coverage, which explains why there are so many illegal production plants and so many brands of unregistered, non-certificated and unregulated sachet water in circulation in the country.

5.2.2 One of the major contamination risk factors for sachet water is the fragile nature of the sachet containers which are used for packaging the liquid content. That is why the contamination usually occurs in transit between the manufacturing plant and the point of sale. Also, illegal producers in a bid to evade liability do not provide all the relevant information that are required by NAFDAC Regulations on the bags.

5.2.3 There is pervasive illiteracy among the citizenry and also lack of adequate awareness of the existence of the regulatory institutions and their statutory functions

[1] Cap. N1 (LFN) 2004.

especially as pertains consumers' complaints and redress avenues. This constitutes a huge clog to the wheel of a robust consumer protection regime in the country.

5.2.4 The provision of Section 3 (b) of the CPC Act[2], that the Council shall have power to compel a manufacturer to certify that all safety standards are met in their products, falls short of total protection for the consumer in the sense that it leaves the consumer without legal remedy where for instance, the product still proves harmful to him even after the manufacturer has satisfied this condition. The implication here is that it reinforces the basis for the courts to rely on the evidence of fool proof production process by the defendant to deny an injured plaintiff his claim. Also, the prescribed penalties in respect of infraction of the criminal provisions of the CPC are not stiff enough to either deter malpractice or adequately punish for it.

5.2.5 In seeking civil redress against the manufacturer or distributor of contaminated sachet water, the consumption of which injures or harms a consumer, the consumer is confronted with the uphill task of successfully proving negligence. In the context of the subject of sachet/packaged water, it seems as difficult to establish the breach of duty of care as it is painful to avoid the issue of holding manufacturers and distributors liable for producing and distributing unwholesome sachet water.

5.3 Recommendations

5.3.1 NAFDAC should resort to Section 5 (f), (r) and (t) of the NAFDAC Act which empowers it to "undertake the registration of food, drugs, medical devices, bottled water and chemicals"; to "liaise with relevant establishments within and outside Nigeria in pursuance of its functions" and also to "carry out such activities as are necessary or

[2] Cap. C 25 (LFN) 2004.

expedient for the performance of its functions under the Act" respectively, in order to restrict the registration of operators to only qualified, capable and verifiable applicants. This reform can be commenced by issuing notices for all operators to reapply for "Provisional Operational License". In the process, a proper audit and inspection can be conducted nationwide while illegal operators will be detected and phased out by NAFDAC working with the security agencies.

For the effective take off of the proposed scheme, NAFDAC should modify the licensing scheme by delineating the entire country along operationally convenient and realistic geographic margins. This will enable it to grant license only to competent operators who have proven capacity and have satisfied the strictest safety standards of NAFDAC to cover each geographical sector. All the sectors should be allotted computerized codes for ease of monitoring.

In order not to infringe on the freedom of trade of other sachet water manufacturing operators who may not have the capacity to totally cover any given NAFDAC operational sector, NAFDAC should allow the manufacturing majors (licensees) to grant franchise rights to thoroughly screened nominees for them to operate at smaller *intra sector* scales under the franchise of the major manufacturers and distributors under the name of the franchisor.

NAFDAC should collaborate with the National Agency for Space Research and Development (NASRDA) Abuja with the aim of utilizing the Global Information System (GIS) coverage of the agency to monitor the performance of this initiative. This can be achieved by logging in the delineated sector map coordinates as well as the digitized particulars of sachet water production plants and major distributors to the NSDRDA satellite program for effective monitoring and supervision.

5.3.2 NAFDAC should commence centralization of sachet production under its control and supervision. The sachets would bear different security identification features representing the different geographical sectors; sector codes; the embossed NAFDAC Certification Seals/Number; Trademarks of the licensee and the standard labeling for sachet water-containing all the nutritional facts, purification method, volume of water, expiry/best before date, address and contact details of the packaging outfit.

Under the proposed scheme, only NAFDAC should accredit and closely monitor the production of these sachets under a regulated out sourcing venture or Public Private Partnership (PPP). The advantages of this proposition are infinite. Beyond giving NAFDAC a vice-grip on the "production processes" and "distributive processes" of sachet water, it will also aid in tracking malpractice and corruption as well as identifying the manufacturer, distributor or retailer for the purpose of investigation, prosecution and liability. It also assists in recalling any batch of particular sachet water that is discovered to be unwholesome and unfit for consumption.

The entire distributive process will easily be monitored because a standard term of the Provisional Operational License to the manufacturer would be that he must conduct frequent (duration as may be prescribed) safety and environmental inspection of the storage facilities of the distributors and retailers with whom he deals, as well as undertake to be vicariously liable for any error in the satisfaction of the Standard Operational Procedures (SOPs) he hands to them in the supply contract, should any contamination occur and is exposed either by NAFDAC random inspection/test or injury to a consumer.

5.3.3 NAFDAC should ensure that the labeling and use instructions on packaged water (especially sachet water) must in addition to being comprehensive, be written with translation into the local language or dialect of the area of coverage. The CPC needs to

increase its public enlightenment function in order to bring to the notice of Nigerians the awareness of its existence, its State Committees, its organs, powers and most importantly, the rights of the consumers.

5.3.4 It is recommended that Section 3 (b) of CPC should be further armored by amendment, with a liability note to the manufacturer to cover the consequence of the likely failure of such certification, and also, the prescribed fine in Section 9 of the Act in respect of a manufacturer or distributor who becomes aware of any unforeseen hazard in its product and fails to inform the public in the sum of fifty thousand naira (₦50, 000.00), is not high enough to punish or deter defaulters. It should be reviewed upwards by amendment to one million naira (₦1, 000,000.00).

5.3.5 It is recommended that Nigerian courts should adopt a strict liability approach to cases of product liability and food poisoning (i.e. contaminated sachet water) as it is done in other jurisdictions[3].

Res ipsa loquitur should be accorded a higher pride of place by the Nigerian courts as its applicability in product liability cases of this sort will significantly attenuate the burden of proof of negligence which the law places on the plaintiff (consumer of contaminated sachet water).

[3] Greenman vs Yuba Power Production Inc. (Supra)

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APPENDIX 1

NATIONAL AGENCY FOR FOOD AND DRUG ADMINISTRATION & CONTROL (NAFDAC) ABUJA – NIGERIA
GENERAL

1. THESE GUIDELINES ARE FOR THE INTEREST OF THE GENERAL PUBLIC AND IN PARTICUALR PACKAGED WATER PRODUCERS OR IMPORTERS IN NIGERIA.

2. IT IS NECESSARY TO EMPAHSIZE THAT NO PACKAGED WATER (REGULATED PRODUCT) SHALL BE PRODUCED, IMPORTED, EXPORTED, ADVERTISED, SOLD OR DISTRIBUTED IN NIGERIA UNLESS IT HAS BEEN REGISTERED IN ACCORDANCE WITH PROVISIONS OF DECREE 19 OF 1993 AS AMENDED BY FOOD, DRUGS AND RELATED PRODUCTS (REGISTRATION ETC) DECREE NO. 20 OF 1999.

i. Registration Procedure

(a) An application for the registration of packaged water (bottled and sachet) shall be made by the manufacturer.

(b) In case of a manufacturer outside Nigeria such shall be represented in Nigeria by a duly registered company or individual with facilities to effect a recall of the product when necessary.

(c) An applicant for a manufacturer outside Nigeria must file evidence of Power of Attorney from the manufacturer which authorizes him to speak for his principal on all matters relating to the latter's specialties. The original Power of Attorney is to be notarized and submitted to NAFDAC.

The representative in Nigeria weather a corporate body or an individual with the Power of Attorney will be held responsible for ensuring that the competent authority in the country is informed of any serious hazard newly associated with a product imported under the provisions of the decree or of any criminal abuse of the certificate in particular to the

importation of falsely labeled spurious, unwholesome or substandard packaged water.

(d) The manufacturer in the case of imported products must show evidence that the company is licensed to manufacture the regulated product for sale in the country of origin (Manufacturer's certificate). Such evidence must be by the competent Health Authority of the country of manufacturer and shall be authenticated by the Nigerian Mission in that country.

(e) The applicant must submit to the Registration Division. NAFDAC a written application, stating the name of the manufacturer, name (brand name where applicable) of the product, and obtain to prescribed application form which must be properly filled with all information required. This form shall be obtained on payment of the prescribed amount per product in Bank Draft (MICR) issued in favour of NAFDAC, Lagos.

(f) A separate application form shall be submitted for each packaged water (bottled or sachet)[4].

Packaged water (regulated product) shall not be manufactured in Nigeria, unless the factory is inspected, and a certificate of recognition issued by NAFDAC. An applicant shall not be allowed to register packaged water in more than one brand name, except in cases where the manufacturers are different having different brand names for the same formulation.

The procedure for Registration of Locally Manufactured Packaged Water is as follows;

(a) Application for registration of the product should be accompanied with a Bank Draft payable to NAFDAC covering the prescribed fees for Pre-production inspection.

[4] NAFDAC Guidelines (para. 3.8 and 3.9) op.cit., p. 71

(b) The Pre-production inspection is carried out to assess if manufacturing facilities, personnel and location of plant are satisfactory.

(c) Registration procedure is halted at this stage if the facilities, etc are not satisfactory.

(d) If successful, a certificate of Recognition as a producer of the product is issued to the company. This enables the producer to go ahead and get the product registered.

(e) Purchase of product registration form with the prescribed fee paid in Bank Draft is also required.

(f) Preregistration inspection and sampling of product for NAFDAC Laboratory analysis are also undertaken.

(g) Final vetting of reports and preparation of briefs for consideration by the Food & Drug Registration Committee is carried out by the Agency as one of the most important stages leading to award of license/certificate of registration.

ii. Labeling

This is an essential element of every regulated product. Its value is to distinguish a product or producer from the others. It also embodies basic product information that the consumer should know.

Labeling should be informative and accurate. In addition to the requirements of the regulations on labeling, the following minimum requirements must appear on the label[5].

(a) Name of Product - Brand Name or Common Name (where applicable), must appear in bold letters.

(b) Full location address of the manufacturer.

(c) Batch Number, Date of manufacture and Best Before/Expiry Date.

[5] NAFDAC Guidelines (para. 5.5) Op.cit., p. 71

(d) Net contents of essential ingredients in metric weight units in case of solids, semisolid and aerosols and metric volume in case of liquids.

(e) The ingredients must be listed by their common names in order of their predominance by weight unless the packaged water is standardized, in which case the label must include only those ingredients which the standard makes optional.

(f) The label must contain directions for safe use where appropriate or necessary (on the information panel (IP) or on the package insert (PI).

(g) Any regulated product which is labeled in a foreign language shall NOT be considered for registration unless an English translation is included on the label and package insert (where applicable).

iii. Production Requirements for Packaged Water

The NAFDAC approved acceptable sources of water are as follows;

a. **Spring Water:** Water from the spring must be collected into a reservoir at the shortest possible distance from the source to prevent environmental pollution. There should be no need to subject this source of water to chemical treatment.

b. **Borehole**: The depth of the drilled borehole must be below the sea level and it should be equipped with a submersible pump. The borehole must be suitably positioned topographically from the septic tank and there must be a good distance (e.g. 30 meters) separating the two of them. The minimum depth of the borehole should be 150ft.

Well water and deep water are not acceptable. This is because in most Nigerian cities, the general mode of disposal of sewage is by the use of cesspools, septic tanks and pit latrines. Except for very few factories now, there are no sewer and modern sewage treatment plants. Consequently, ground water is polluted

to a high degree by open defecation and seepage from various sources (i.e. sewage ponds, refuse dumps, leaching of fertilizers, pesticides from agriculture, detergent, radioactive wastages, etc).

c. **Public Mains Water:** The water must be running freely in the factory. Lifting of water with tankers from another location to the factory is not acceptable, in order to avoid cross-contamination of the water.

iv. Water Treatment and Purification

This depends on the quality of the raw water, and can be subjected to any or a combination of the processes described below:

(a) Chemical Coagulation, Flocculation and Setting: Chemical coagulants used mainly are aluminum slats like Aluminum Sulphate (alum). After coagulation and flocculation, it may be necessary to neutralize the carbonic acidity or other form of acidity in the water by the use of suitable base like the hydroxide of sodium or calcium. This process removes micro- pollutants of particulate nature.

(b) **Softening of Hard Water or Hardness Removal**: Hardness does not affect the sanitary quality of the water but is of importance in the domestic use of water, particularly for laundry and boiling purposes. Calcium and magnesium salts, the principal mineral, constituents of hard water, consumes soap and precipitates as insoluble compounds or soap curds. Until all the calcium and magnesium in the washing water is precipitated, no lather or washing action is obtained from soap (creating a waste of soap or money). Temporary hardness in water (i.e. Calcium and magnesium bicarbonates) can be removed by heating prior to use. Chemical treatments involving the addition of hydrated lime (calcium hydroxide) are also effective in softening such waters. Hardness caused by sulphate and chlorides

of magnesium or calcium, referred to as permanent hardness is not removed by the above treatment but can be removed by ion exchange techniques.

(c) Aeration: The water is aerated by exposure to air (oxygen) e.g. by spraying, a process which helps to eliminate odour, objectionable taste, ferrous and manganese irons. Iron and manganese always occur together in most Nigerian borehole water. The effect of the oxidation is to oxidize the soluble ferrous oxide to insoluble ferric oxide, soluble manganese oxide to the insoluble form to nitrify ammonia removal of odour), increase the oxygen content and therefore improve the taste of water.

(d) **Sand Filter**: The water can be filtered by passing it through a graded sand filter bed after sedimentation (and sludge removal) in order to remove the suspended solids which are of particular size.

(e) Activated Carbon Filter: This special filter removes objectionable colour, taste, smell and excess chlorine (after chlorine disinfection). It is important to note that filters must be washed at regular intervals depending on the rate of filtration and the amount of suspended matter in the water. Poor back- washing adversely affects the production rate of the filter.

(f) Industrial Micro Filters: These remove very fine suspended particles and large microbes or bacteria from the water, 5 micron, 2 micron, 0.5. micron filter thread sizes are recommended.

(g) **Disinfection of the Water**: Disinfection of portable water which is necessary for the destruction of pathogenic micro-organisms in the water can be achieved by the following means:

(1) **Chlorination:** Gaseous chlorine or chlorine compounds such as chloride of lime or calcium hypochlorite are used. The active disinfectant is chlorine. The problem of effective chlorination is to ensure uniform application of chlorine to all portions of the

water being treated, uninterrupted application of chlorine, selection of the dose of chlorine to meet the current needs of the specific water being treated, and control of chlorination so as to produce safe portable water that is at the same time of attractive character.

(2) Ozone: Ozonation is a very attractive method of disinfecting water. It is also very effective in the removal of tastes, odour (it has a bleaching effect) from the water. The ozone has to be generated as needed by passing thoroughly filtered and dried air through tubes or between plates where high voltage electric discharge occurs, changing part of the oxygen or of the air to ozone (02 to 03).

(3) Ultraviolet Light: The water to be sterilized must be clear and the lamps must be kept clean at all times. This treatment is made compulsory by NAFDAC and in combination with chlorination in order to achieve a high level of purity. It should be properly encased (not exposed as it is dangerous to the body and installed just before the filling point.

(4) Boiling: Boiling destroys all forms of disease organisms usually encountered in water in water i.e. bacteria, spores, cercariae, cysts and ova. The water must however be brought to a "rolling" boil to be safe. The appearance of bubbles (simmering) is sometimes confused with boiling or with the appearance of mist or steam over the water. None of these signs is sufficient indications that water but heating changes them to the less soluble carbonates which are deposited as scales in the system. These deposits are hard to remove and can harbor bacteria as well as introduce sediment in the water. For these reasons boiling for the purpose under discussion not recommended.

v. Approved Standards for Potable Water

Potable water must be free from chemical substances and micro-organisms in amounts that could be hazardous to health. It must be organoleptically acceptable and aesthetically attractive. It is expected to meet the World Health organization (WHO) standards which are also the standards adopted by NAFDAC for portable drinking water.

vi. Requirements for a Water Packaging Plant

NAFDAC has by regulation, stipulated compulsory requirements that every water packaging plant must meet.

(a) **Factory and Location/Layout:** The Water Processing Plant should be located in a non-residential area and never within the residential house or premises. The factory building should be walled off from external interference. Provisions should be made for the raw material and finished product storage, processing or water treatment room, packaging room, cloak room, toilet facilities for workers, etc. The factory must not be situated near a refuse dump, abattoir, grave yard, soak-away pit or oil depot; as these are possible sources of contamination. Space for production should be sufficient to allow for free movement of personnel and materials.

(b) **Personnel and Welfare:** The key officers are the production and the quality control managers, who must have a sound knowledge in Food Science and Food Processing, Educational Qualification in relevant fields of science like Chemistry, Microbiology, Food Science, etc is compulsory. The workers must be properly kitted with overalls, head gear, hand gloves, mouth and nose guards, etc. they must also be medically certified fit to handle food meant for public consumption (Food Handlers Tests).

(c) **Equipment:** Water holding tanks in the plant at different stages should be suitable materials, e.g. stainless steel or plastic (PVC). All automatic filling and sealing equipment is preferred to manual packaging in order to avoid human contamination of the processed water. Taps should be of stainless steel. Wash-hand basins should be of stainless steel.

Connecting pipes should be made polyvinyl chloride or stainless steel. Iron pipers should not be used because they tend to rust and contaminate the water.

(d) **Quality Control Procedure**: There should be a well equipped in-house quality control laboratory to cater for physio-chemical and microbiological analysis of the raw and processed water. In the absence of this the services of a government approved public analyst can be engaged. A copy of the letter of agreement between the two parties to this effect should be made available to reflect that regular analysis of the product would be carried out. All Laboratory reports must be well documented.

(e) **Packaging Materials:** Ensure that packaging materials are made from food grade materials. The printing should be made under hygienic conditions.

The production Room Outlook should be well lit and ventilated (preferably air-conditioned) fans are not allowed. Also, the following requirements must be in place;

(a) The floor should be well cemented, preferably tiled.

(b) Drainage should be adequate to allow smooth flow of water

(c) Wall around the taps should be tiled from the floor to a height of about one foot from the taps. The rest of the walls should be painted with oil paint.

(d) There should be U.V Fluorescent light for sterilization of the air.

(e) All demarcations should be done with cement blocks.

(f) Every member of water filling staff should occupy a separate compartment or is adequately separated from the next filling staff.

(g) Personal hygiene of every filling/sealing staff should be checked to ensure that no member has:

(i) Fresh open wound

(ii) Cold (running nose, cough)

(iii) All the production staff should wear head gear, nose mask and hand gloves.

(h) Movement to and from the production room should be restricted.

Standard Operational Procedure (SOP) should be prepared for production, Cleaning and Quality Control.

(i) Packaging Material Stores: These should be well arranged especially empty bottles on pallets, while sachets should be stored on shelves or cabinet away from the ground. The store should be well lit and ventilated. Sterilization of packaging materials and air with ultra violet florescent tube is advised.

(j) Finished Product Store: Bags of water should be stored on pallets in a tidy well lit and well ventilated room.

(k) Fumigation: should be available and strategically located.

(l) Fire Extinguisher: Should be available and strategically located.

(m) Refuse Disposal: Waste bins should be kept covered and disposed hygienically with approved local authority.

Failure to comply with these requirements may result in the disqualification of the application or lead to considerable delay in processing of registration. In case of processed food and packaged water, only manufacturing outfits

situated in industrial areas will have their Registration Certificate valid for 5 years while those located in residential areas have one year validity (yearly listing)[6].

[6] NAFDAC Guidelines (para. 4.9)

APPENDIX 2

PARTICULARS OF SCIENTIFIC JOURNALS AND EDITORIAL BOARDS REFERRED TO IN CHAPTER FOUR

Dr. T.W. David holds a Ph.D degree in Physics and he leads the Research Group in Atmospheric/Ionospheric physics (consisting of his co-authors) in the Department of Physics, Olabisi Onabanjo University, Ago Iwoye, Ogun State, Nigeria.

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