6TH NATIONAL CONFERENCE ON ENVIRONMENT AND HEALTH

(Organized by the LivingScience Foundation, Ile-Ife CAC/IT/91834)

Venue: Redeemer's University, Ede, Osun State, Nigeria + Online at https://zoom.....

Date: Wednesday October 6 - Thursday October 7, 2021

BOOK OF ABSTRACTS



NIGERIAN JOURNAL OF ENVIRONMENT AND HEALTH
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The NJEH is the only journal of its kind in Nigeria that seeks, in a rigorously scholarly fashion, to bridge the gap between Science, Practice, and Policy in the field of Environment-Health. Just like our Conference series, the Journal appeals to a distinguished readership of academics, professionals, policy makers, and other key stakeholders in the environment-health sector. Our ultimate goal is translating research findings in Environment-Health into visible positive benefits for the common man in Nigeria.

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LIVINGSCIENCE FOUNDATION, P.O.BOX 1674, ILE-IFE, OSUN STATE, NIGERIA.

"Science for life more abundant (John 10:10)"

The aim of the *Living*Science Foundation is to enhance public health in Nigeria by facilitating and promoting sound evidence-based, comprehensive and holistically-derived, home-grown environmental-health policies and practices; undergirded by a conviction that an all-wise benevolent Creator designed the world to run sustainably.

The Specific Objectives of the Foundation are to

i. provide an authoritative voice showing that studying and doing Science from a creationist perspective will not only make best sense of our world, it will also yield abundant life for people and the entire ecosystem. This will entail a direct standing up to, and scientific refutation of the currently prevalent evolution theory of origins.
ii. seriously engage in the business of identifying peculiar traditional and modern hazards in the Nigerian environment; scientifically evaluate attendant health risks particularly to identified susceptible, vulnerable and sensitive subpopulations; and widely communicate the findings in society, while advocating for remedial actions as may be necessary.
iii. provide information, education, and advisory services on health and environment to the general public, various tiers of government, and other stakeholders. This may involve undertaking resourced projects and contract works that support the vision of the Foundation.

We welcome your inputs as Partners, Collaborators, and Sponsors. For more details, kindly contact us on +234 805 710 6482, or visit our website at: www.lsfnigeria.org

PLEASE MARK THIS DATE ON YOUR CALENDAR: 6TH NATIONAL CONFERENCE ON ENVIRONMENT AND HEALTH, APRIL 13-14, 2021

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REV. TONY AKINYEMI Director, RAPHA Healthy Living Institute, Lagos

Welcome!



It gives me great pleasure to welcome distinguished participants to the 6th edition of our annual National Conference on Environment and Health.

LivingScience Foundation considers it a significant achievement, bringing together year after year, key Stakeholders from the various Sectors of Environmental-Health to discuss contemporary issues most germane to sustainable development in our country.

The theme for this year's Conference is particularly crucial. Whereas considerable investments have been made in the country in establishing institutions and systems charged with amassing data of critical relevance to public health, there is little indication that data so gathered are contributing as they should to policy formulation in the country. With all the key sectors of Academia, Professional Bodies, Regulatory Authorities, Media, and Government (from Local Government to the Federal Government) represented at this Conference, we hope that the causes for this unacceptable situation would be unravelled; and a the way forward to redress it charted. As evidenced from other climes, when such health data are evaluated together with the numerous available data on environmental hazards, many important environment-health interactions could become clarified, enabling evidence-based policy formulation and leading to significant enhancement of public health in our country.

I bid you God's speed and blessings for fruitful deliberations in this noble pursuit.

Welcome!

Pastor Ezekiel A. Odeyemi

(Fellow, The Institute of Leadership and Management (InstLM), Fellow, the Institute of Supervision and Leadership (ISL); Fellow, the Chartered Institute of Commerce of Nigeria (CICN); Fellow, the Chartered Institute of Management and Leadership (CIML)), Pro-Chancellor and Chairman of Governing Council, Reedemer's University, Ede; Chairman, Board of Trustees, LivingScience Foundation

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Dear distinguished colleagues,

It is my deep pleasure to welcome you to another edition of the annual National Conference on Environment and Health!

I particularly welcome our very distinguished Guest Speakers drawn from far and near, as well as other special guests including members of the Boards of LivingScience Foundation and top government functionaries gracing the Opening Ceremony of the Conference.

Our focus this year is on data. All the various sectors represented at this Conference (from government MDAs, Environmental-Health Professionals, NGOs, to Academics from the tertiary institutions) all routinely generate vast amount of data of relevance in Environmental Health (EH) in course of our regular activities. The question is, what exactly are we doing with this enormous database? Might we be able in these two days of intense interaction work out a new model to effectively manage this Big Data and harness it for the improvement of public health in our country?

As usual, the Conference goes beyond information exchange among EH professionals from various Sectors of Society. The Organizing Committee has made conscious efforts to reach players from other strata of Society in our quest to enhance public health and promote sustainable development. These include our outreach to Secondary School students via the School Innovation Challenge, and the Essay Competition for Undergraduates in tertiary Institutions. On the other end of the spectrum is the AF Oluwole Prize, where we simultaneously honour a leading individual or organization in the EH Community adjudged to have made outstanding contributions towards sustainable development in Nigeria in recent years, together with our mentor, Emeritus Professor Abiodun F. Oluwole, in whose name the Prize is instituted.

Despite the prevailing tough economic and social environment in the country, we have been enabled by the Almighty God to again package together this rich menu in this year's edition of the NCEH; and we are glad you are here to partake of the dish. I urge us all to therefore relax and share freely as we enjoy the beautiful ambience of this Conference, both for those of us present physically here at the Redeemer's University, Ede, and for those who will be joining us virtually online.

We thank most profoundly all our Sponsors and Partners whose supports have enabled us continue to host this Conference at very modest registration fees for participants.

The Table is set. Enjoy!



Joshua Ojo (Ph.D)
Professor of Health Physics and Environment, Obafemi Awolowo University, Ile-Ife
and
President, LivingScience Foundation, Ile-Ife

6TH NATIONAL CONFERENCE ON ENVIRONMENT AND HEALTH

(Organized by the LivingScience Foundation, Ile-Ife CAC/IT/91834)

Venue: Redeemer's University, Ede, Osun State, Nigeria + Online at https://xxxxxxxxxxxxxxxxxxxxxxxxxx

Date: Wednesday October 6 - Thursday October 7, 2020

Theme: HARNESSING THE POTENTIALS OF HEALTH INFORMATION AND ENVIRONMENTAL BIG DATA FOR MANAGEMENT OF PUBLIC HEALTH IN NIGERIA

PROGRAMME SCHEDULE

Day 1: Wednesday 6th October, 2021

09.00 – 09:50	Pre-Opening Activities: Set up Exhibition Stands
(09:50 – 13:25)	**PLENARY SESSION I: Formal Opening Ceremonies**

Chairman: Prof Ladi Osasona, Provost College of Engineering, RUN
Rapporteur: Dr Grace Akinlade

09:50 – 10.00	**Opening** Opening Prayer**.** National Anthem. Redeeemer's University Anthem **Pastor Gbenga Akosile, RUN Chaplaincy.**
10:00 – 10:05	**Introductions – Dr (Mrs) Oguntunde** (Sub Dean, College of Natural Sciences, RUN, Ede)
	Welcome Addresses:
10.05 – 10.10	**Prof Anthony Akinlo**, Vice Chancellor, Redeemer's University, Ede
10.10 – 10.15	**Pastor Ezekiel Odeyemi** (FISL, FCICN, FCIML), Chairman, Board of Trustees, LivingScience Foundation, Ile-Ife
10.15 – 10.20	**Chairman Opening Remarks** – Prof Ladi Osasona, Provost, College of Engineering, RUN, Ede
10.20 – 10.40	**Goodwill Messages** **–** Honourable Minister for Health, represented by Osun State Commissioner for Health, Dr Isamotu - Osun State Commissioner for Environment - DG NESREA
	Keynote Address 1:
10.40– 10:45	Citation of David O. Alao (Dr Grace Akinlade)
10.45 – 11.15	THE EVOLUTION OF TRAUMA DATABASE: PERSPECTIVES FROM A HIGH INCOME DEVELOPING COUNTRY

	Prof David Alao
11:30 – 11:45	Interactions. Questions and Answers
	Keynote Address 2:
10.45– 11:50	Citation of Alhaji Babagana Mustapha (Dr Jacob Opele)
10.50 – 11.20	HARNESSING THE POTENTIALS OF HEALTH INFORMATION AND ENVIRONMENTAL BIG DATA FOR MANAGEMENT OF PUBLIC HEALTH IN NIGERIA **Alhaji Babagana Mustapha**
11:20 – 11:45	Interactions. Questions and Answers
11.45 – 11.55	**Refreshment/Tea Break**
	Prizes and Awards –
11.55 – 12.15	.A.F. Oluwole Prize for Environment-Health
11.55 – 12.00	Citation of the Winner**: Prof Oladele Osibanjo** **Presentation of Plaque –** Prof Adeleke Osho
12.00 – 12.10	**Response from Award Recipient –** Prof Oladele Osibanjo
12.10 – 12.20	Innovation Challenge for Secondary Schools Introduction of the Finalists – Mr Isijaan Nkanta
	Keynote Address 3:
12.20 – 12.25	Citation of Prof J.K. Olabanji (Dr (Mrs) Sanyaolu)
12.25 – 12.55	HARNESSING THE POTENTIALS OF HEALTH INFORMATION AND ENVIRONMENTAL BIG DATA FOR MANAGEMENT OF PUBLIC HEALTH IN NIGERIA **Prof J.K. Olabanji**
12.55 – 13.10	Interactions. Questions and Answers
13:10 - 13.20	**Chairman's Closing Remarks –**
13:20 – 13:25	**Closing Prayer. National Anthem - RUN Chaplaincy**
13.25- 13:35	**Group Photographs./Networking**
13:35 – 15:00	**Lunch / Press Conference**
	Afternoon session:
(15:00 – 17:15**)**	**PLENARY SESSION II:**

Chairman: Mr Adeleke Ajani (Retired Director, NESREA SW Zone)
Rapporteur: Dr Sanyaolu

15:00 – 15:20	MULTI-SECTORAL COLLABORATIONS AND FUNDING IN PUBLIC HEALTH MANAGEMENT **Hope Uweja**

15.20 – 15:40	Interactions. Questions and Answers
15:40 – 16.00	HEALTH INFORMATION MANAGEMENT: AVAILABILITY, RELIABILITY AND PATRONAGE BY RELEVANT STAKEHOLDERS IN NIGERIA **Jacob Kehinde Opele**
16.00 – 16:10	Interactions. Questions and Answers
16:10 – 16.25	Tea Break. Networking
16.25 – 16.45	GIS AND BIG DATA SCIENCE IN ENVIRONMENTAL HEALTH MANAGEMENT **Olatunji Sunday ABOYEJI.**
16.45 – 17:00	LOCAL HEALTH DATA AS DRIVER OF ENVIRONMENTAL REGULATIONS AND STANDARDS **Victor Azubuike Chukwuka**
17:00 – 17:15	Interactions. Questions and Answers
17:15	Closing and Networking

Day 2: Thursday 7th October, 2021

(09:00 – 10:40) **PLENARY SESSION III**
Chairman: Prof Cyril A. Ajayi, Dean, Faculty of Environmental Sciences, RUN
Rapporteur: Dr Grace Akinlade

09:00 – 09:20	ENVIRONMENTAL-HEALTH INDICATORS: USES AND ABUSES **Joshua Ojo**
09:20 – 09:40	LOCAL EXPERIENCE WITH DEVELOPING A TRAUMA REGISTRY FOR NIGERIA: CHALLENGES AND WAY FORWARD **Oluwole Olayemi Olaomi**
09:40 – 09:50	Interactions. Q&A
09:50 – 10:10	SOCIAL HEALTH INSURANCE AND HEALTH CARE FINANCING IN NIGERIA **Adeniyi Samuel Oginni**
10:10 – 10.30	INFORMATION GOVERNANCE IN NIGERIA TERTIARY HEALTHCARE INSTITUTIONS: QUO VADIS? **Gabriel Olubunmi ALEGBELEYE & Micheal Babatunde ADEOJO**
10:30 – 10:40	Interactions. Q&A.
10:40 – 10:50	Short Break

(10:50 – 11.30) **PLENARY SESSION IV**
Chairman: Prof Adeleke Osho, Dean, College of Natural Sciences, RUN
Rapporteur: Dr Soge

10:50 – 11:05	RADON-222 CONCENTRATION IN GROUNDWATER IN KWARA STATE AND ESTIMATION OF EFFECTIVE DOSE **Kabir Opeyemi Jimoh and Janet Ayobami Ademola**

11.05 – 11.20	RADIONUCLIDE CONTENTS IN SEDIMENT AND SEAFOOD FROM MAKOKO LAGOON, LAGOS STATE, NIGERIA **Andrew C.Ugbechi and Nnamdi Norbert Jibiri**
11:20 – 11:30	Interactions. Q&A
11:30 – 11:45	Refreshment/Tea Break

(11:45 – 12.25) **PLENARY SESSION V**
Chairman: Prof Bamidele Salau, Dean, Faculty of Basic Medical Science, RUN
Rapporteur: Dr Grace Akinlade

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11:45 – 12:00	EDXRF ANALYSIS OF HEAVY METALS IN SOIL AND VEGETABLE SAMPLES FROM SELECTED AUTOMOBILE WORKSHOPS AT IWOROKO-EKITI, NIGERIA **Oketayo Oyebamiji Oyedele and Ajao Enoch Oyedele**
12.00 – 12.15	STABILISATION OF CRUDE AND PROCESSED GROUNDNUT OILS WITH ANTIOXIDANT COMPOUND EXTRACTED FROM TWO *LONCHOCARPUS* SPP **Funmilayo P. Afolabi, Mutalib A. Aderogba and Muyiwa S. Falade**
12:15– 12:25	Interactions. Q&A
12:25 – 13:30	Lunch

(13:30 – 14.30) **PARALLEL SESSION I** Location 1: [Ground Floor, Auditorium]

13:30 – 13:45	COMPARATIVE ANALYSIS OF THE LEVELS OF NATURALLY OCCURING RADIONUCLIDES IN SOIL AND VEGETABLE SAMPLES FROM A SELECTED HOSPITAL WASTE DUMPSITE IN ADO – EKITI, EKITI STATE **Isikilu S.A and *Oketayo O.O**
13:45 – 14:00	HEAVY METAL AND RADIONUCLIDE CONTENT OF VEGETABLE SAMPLES FROM SELECTED RADIOLOGICAL CENTRES IN EKITI STATE, NIGERIA **Oketayo Oyebamiji Oyedele and Adigwe Blessing Chika .**
14:00 – 14:15	RADIOACTIVITY LEVELS IN BERYL AND FELDSPAR MINERALS FROM OLODE MINING AREA, IBADAN **Babatunde Rilwan Onawola and Nnamdi Norbert Jibiri**
14:15 – 14:30	Interactions. Questions & Answers
14:30 – 14:40	Short Break

(14:40 – 15:55) **PARALLEL SESSION II** Location 1: [Ground Floor, Auditorium]

14:40 – 14:55 MEASUREMENT OF PERIPHERAL DOSE FROM ^{60}Co IN WATER PHANTOM AT RADIOTHERAPY LEVEL UNIT OF THE SECONDARY STANDARD DOSIMETERY LABORATORY IN NIGERIA
Ahmed Mohammed Shiyanbade and Nnamdi Norbert Jibiri

14:55 – 15:10 POLLUTION IMPACT ASSESSMENT OF SECONDARY IRON SMELTING COMPANY ON SOIL AND SOME MEDICINAL HERBS GROWN AT FASINA COMMUNITY IN ILE-IFE NIGERIA
Grace O. Akinlade, Danjuma D. Maza, Samuel O. Inuyomi, Yemisi T. Alani and Joshua O. Ojo

15:10 – 15:25 VERTICAL ELECTRIC SOUNDING INVESTIGATION OF GROUND WATER POLLUTION AT ONIBU-EJA, EGBEDORE LGA, OSUN STATE, SOUTHWEST NIGERIA.
Shukwunweizu Muhammad Maike

15:25 – 15:40 LEVELS OF MANGANESE AND RADIOACTIVITY IN SOIL AND WATER ASSOCIATE WITH CANCER PREVALENCE IN TWO SECTIONS OF ONDO CITY, SOUTHWEST NIGERIA
Joshua Ojo, Mary Adeola, and Yetunde Oluwasina

15.40 – 15.55 Interactions. Questions & Answers

(13:30 – 14:30) **PARALLEL SESSION III** Location 2: [Upstairs, Auditorium]

13:30 – 13:45 INVESTIGATION OF CANCER PREVALENCE AND NATURAL BACKGROUND RADIATION IN EKITI STATE, SOUTHWESTERN, NIGERIA
Yemisi T. Alani, Joshua O. Ojo, Augustine B. Arogundade, Grace O. Akinlade

13:45 – 14:00 CANCER DISTRIBUTION PATTERNS OVER 5-YEAR PERIOD (2016-2020) IN EKITI STATE CANCER REGISTRY SOUTHWESTERN, NIGERIA
Augustine B. Arogundade, Yemisi T. Alani, Grace O. Akinlade, and Joshua O. Ojo

14:00 – 14:15 RADIOLOGICAL RISK ASSESSMENT OF RADON INHALATION IN OFFICES OF SELECTED INSTITUTIONS IN SOUTHWESTERN NIGERIA
Aremu, Abraham A; Oni, Olatunde M; Oladapo, Olukunle O; Oni, Emmanuel A and Oyero, Olaoluwa P

14.15 – 14.30 Interactions. Questions & Answers

14,30 – 14:40 Short Break

(14.40 – 15:55) **PARALLEL SESSION IV** Location 2: [Upstairs, Auditorium]

14:40 – 14:55 ASSESSMENT OF HEALTHCARE WASTE MANAGEMENT (HCWM) PRACTICES IN SOME HEALTHCARE FACILITIES (HCF) DURING COVID-19 PANDEMIC IN NIGERIA – A PRELIMINARY STUDY.
Oluwaseun Odipe, Femi Abolade, Mercy Ogunruku, and Temitope Famubode

14:55 – 15:10	MANAGEMENT OF PHARMACEUTICAL WASTES IN SELECTED HOSPITALS IN LAGOS METROPOLIS **Wale Toluwalase**
15:10 – 11:25	EXCLUSIVE BREASTFEEDING AS A PANACEA FOR INFANT DEATH IN NIGERIA: A REVIEW **Tolulope Karokatose**
15:25 – 15:40	**THE HEALTH IMPLICATIONS OF IMPROPER MANAGEMENT OF WASTE WATER IN CASSAVA MILL OF ODEMOKE VILLAGE, EBONYI STATE, NIGERIA.** Vivian Amaka
15.40 – 15.55	Interactions. Questions & Answers
15.55 – 16:05	Refreshment/Tea Break

(16:05 – 16:35**)** **PLENARY SESSION VI (CLOSING)**

Chairman: **Joshua Ojo**. (Professor of Health Physics and Environment). President, LivingScience Foundation, Ile-Ife

Rapporteurs: **Dimeji Babatunde** and **Tosin Alani**

16:05 – 16:35	Communique and Closing

PROFILES

SPECIAL GUESTS OF HONOUR



Anthony Enisan Akinlo is a Professor of Economics, with a PhD in Monetary and Development Economics from the Obafemi Awolowo University, Ile-Ife, in 1995. He has over 130 publications in the areas of reforms and growth. He has supervised 23 PhD theses, 5 M.Phl theses and 31 M.Sc theses. He has served and still serving on the Editorial Board of a number of impact journals in his field. Prof Akinlo is rated among the three most productive Nigerian researchers in Economics in the 2021 AD Scientific Index ranking of Economists. He has served the Obafemi Awolowo University in various capacities: Head, Department of Economics, 2002 to 2006; Director, Centre for Industrial Research and Development (now Institute for Entrepreneurship and Development Studies), 2007 to 2011, and Dean, Faculty of Social Sciences, 2013 to 2015. He has equally served in various committees of the University. Professor Anthony Akinlo has participated in many international sponsored Research works and carried out consultancies for such organizations as IDRC, African Economic Research Consortium (AERC), Institute of Developing Economies (IDE), Population Research Fund (NPF) and UNDP. Professor Akinlo served as Visiting Professor to many institutions including; United Nations World Institute of Development and Research (UNWIDER), Helsinki; Institute of Developing Economies, Japan; Ekiti State University, Ado-Ekiti; Federal University, Oye-Ekiti. He is a Pastor-In-Charge of Zone (PICZ), The Redeemed Christian Church of God, Osun Province 7, Ile-Ife. He is married with children.

Emeritus Prof A.F. Oluwole



Doyen of Environment-Health studies in Nigeria**,** Prof A.F. Oluwole was born in September 1939 at Ijare, Ondo State. He joined the services of the then University of Ife (now Obafemi Awolowo University), Ile-Ife in 1969 as a Lecturer I and rose to become a Professor in 1978. Between 1975 and 1976 he served as the acting Head, Department of Physics, after which he became the Coordinator of the University's Nuclear Technology Programme (1976 – 1980). The Programme gave birth to the Centre for Energy Research and Development (CERD), where Prof Oluwole served as the pioneering Director (1980 to 1983). Prof Oluwole not only raised the profile of research on the Nigerian environment by attracting several multi-million dollars international fundings for pioneering original research, he also spearheaded the introduction of the Health Physics and Environment option into the postgraduate programmes at the Obafemi Awolowo University, Ile-Ife.

Outside the Obafemi Awolowo University, Prof A.F. Oluwole held various teaching and research positions at several academic institutions including the University of California, Berkeley, (1964/65, 1969), University of Heidelberg FRG (1971), University of Sussex (1970), University of Washington, Seattle, (1972), Columbia University (1974), McMaster University, (1977).Federal University of Technology, Akure, (1984/85), Nuclear Research Center, Washington State University, Pullman (1985, 1991), University of Surrey, (1989, 1990, 1992, 1993, 1994) and University of Stuttgart, FRG (1989, 1990, 1992, 1993, 1994).

Apart from teaching and research, the meritorious services of Prof A.F. Oluwole include membership of**:** Federal Panel on Ionising Radiation (1970 to 1990); Natural Sciences Research Council Committee on the National Institute of Nuclear Sciences (1975); FMST's Review Panel on National Policy on Science and Technology (1983). National Panel on Integrated Energy Policy for Nigeria by Ministry of petroleum and Energy 1984, Energy Panel on National Nuclear Centre and Science village, Abuja by FMST, 1987., Energy Commission of Nigeria (2001). Prof Oluwole was also a member of the International Atomic Energy Agency (IAEA) Committee on Nuclear Information Services (1982), and Nuclear Data (1993).

Prof Oluwole was inducted a fellow of the Nigerian Institute of Physics in 1996. He is a member of several professional bodies, including the Tau beta Pi-American National Honour Engineering Society (1964), American Physical Society (1968), American Association of Physics Teachers (1968), Science Association of Nigeria (1970), West African Science Association (1970), Nigeria Institute of Physics (1974), New York Academy of Sciences (1980), and the American Nuclear Society (1982), American Association for the Advancement of Science (1996).

He has authored over eighty scholarly articles in reputable local and international journals in addition to several important books and Monographs

An accomplished scholar, Prof Oluwole was awarded the Nigerian National Order of Merit (NNOM) for Science in 2004. Among over a dozen other prestigious awards received by Prof A.F. Oluwole are the Doctor of Science *(Honoraris Causa)* from the Federal University of Technology, Akure (2006) and the Adekunle Ajasin University, Akungba, Ondo State (2008). In 2019, Prof A.F. Oluwole was appointed Emeritus Professor at the Obafemi Awolowo University, Ile-Ife.

Co-Host: Dean College of Natural Sciences, RUN. Prof Adeleke Osho.



Organizing Committee Members



Aaron Oladipo Aboderin MD, FMCPath, FRCPath(UK) , FAMedS is Professor of Clinical Microbiology and Parasitology at the Obafemi Awolowo University, Ile-Ife. He is also Consultant Clinical Microbiologist at the Obafemi Awolowo University Teaching Hospitals Complex since 2000 where he coordinates the Residency Training programme for the institution. For many years Prof Aboderin was the Head of the Department of Medical Microbiology and Parasitology. He also served two-terms as Deputy Provost, College of Health Sciences, Obafemi Awolowo University.

He is involved with the training and examination of a large number of students and resident doctors in clinical microbiology all over the country. The Primary focus of his research is on epidemiology of enteric infections and antimicrobial resistance and has over 50 peer-reviewed journal articles. Prof Aboderin chairs the Nigeria's National Technical Working Group on Antimicrobial Resistance (AMR). As an expert in field of of AMR including antimicrobial stewardship, he has been leading Nigeria's One-Health multisectorial response to the threat of AMR through the Nigeria Centre for Disease Control (NCDC) since 2015. He chairs the Steering Committee of the National Conference of Environment and Health.



Adeniyi Samuel Oginni; **MBChB; MPH (Comm. Med); Ph.D (Ecology & Env. Science); Cert. MM4H (Edinburgh)**

Dr. Adeniyi Samuel Oginni is a public health physician, environmentalist, human rights activist, university lecturer and civil servant. He graduated from Obafemi Awolowo University, Ile-Ife Nigeria as a medical doctor in 1989, bagged a Master of Public Health (Community Medicine) degree at the University of Ibadan through a World Health Organisation (WHO) fellowship programme in 2006 and obtained his Ph.D in Ecology and Environmental Science from the Institute of Ecology and Environmental Studies of Obafemi Awolowo University, Ile-Ife, Nigeria in 2017. He completed a certificate course in Managing Markets for Health (MM4H) of the University of Edinburgh supported by the World Bank Group in 2020.

He is a fellow of the Nigeria Institute of Management (Chartered) and the only Nigerian admitted into the 2016 cohort of Emerging Leaders of the World Heart Federation (WHF). He is the Executive Secretary of Osun Health Insurance Agency and the Chairman of the Forum of Chief Executive Officers of State Social Health Insurance Agencies established to accelerate the movement towards achieving Universal Health Coverage (UHC) in Nigeria. His research interest is workplace safety, health financing, health policy and management. His doctoral thesis assessed the health of metal smelters in a fast growing factory and he was in the collaborative research that assessed compliance of hospitality facilities in Kampala with the 100% smoke-free law of the government of Uganda.

Dr. Oginni is the Scientific Officer for Nigerian Heart Foundation (NHF), a member of the NCD Alliance Nigeria Research Working Group and an active member of the Nigerian Joint Learning Network for UHC. He is the president of Christian Initiative for Nation Building (CINB) an NGO with health promotion and disease prevention, good governance, poverty reduction and human rights advocacy as its thematic areas. He is a past chairman of the Osun state chapter of Nigerian Medical Association. He currently sits on the boards of a number of NGOs including the Network of Non-Governmental Organisations (NETNOS), the Christian Leaders Assembly in Yorubaland (YCLA), and Community Building Development Initiative (CBDI) in Osun state, Nigeria.

Dr. Oginni was appointed as NCD Alliance Nigeria Country Focal Point for the 2020 Global week for Action on NCDs with the theme "Accountability". In recognition of the activities carried out during the week, NCD Alliance Nigeria won the 'Act on NCDs Campaign Fuel Awards' of the Global NCD Alliance. He is a winner of many awards for meritorious service to humanity and in the civil service of Osun State, Nigeria where he currently works.



Beatrice Oluyomi Emma-Okon is a Senior Lecturer and the Acting Head of Department of Medical Biochemistry, College of Health Sciences Obafemi Awolowo University Ile-Ife. Her area of Research are Lipids in Health and disease and Pathophysiology of Type 2 Diabetes Mellitus. She is a member of the Nigerian Society of Biochemistry and Molecular Biology, American Association for Clinical Chemistry and American Society of Biochemistry and Molecular Biology. Mrs Emma-Okon is the Treasurer to the Steering Committee on Environment and Health.



Oluwatoyin Ikuteyijo is a doctoral student at the Swiss Tropical and Public health, University of Basel Switzerland. Her research interests are in the areas of Violence against Women, Adolescent Sexual Health, Child Health and Environmental Health. She is a Fellow of Ife Institute of Advanced Studies, the French Institute for Research in Africa (IFRA) as well as a 2019 Policy Communication fellow (PRB). Mrs Ikuteyijo is a member of the Mixed Method International Research Association (MMIRA) and she serves on the Board of Advisers of the LivingScience Foundation.



Ismail Adeleke Ajani was born on the 4th of January, 1960 in Osogbo, Osun State to the family of Alhaji and Madam R. A. Ajani. He had his elementary School education at St. Michael Primary Iyin-Ekiti and John Mackay Primary School Osogbo; while he had his Secondary Education at Doherty Memorial Grammar School Ijero-Ekiti and Ado Grammar School. He further went through Higher School Education at Ondo High School in Ondo State, He gained

admission to University of Ife (now Obafemi Awolowo University (OAU) Ile-Ife to study Agriculture (Plant Science) in 1981. Mr. Ajani bagged the Bachelor of Agriculture (B.Agric.) in 1985 and did his NYSC Primary Assignment at Nigerian Agricultural and Cooperative Bank Owerri, Imo State. In his quest for academic excellence, Mr. Ajani bagged Master of Science (M.Sc.) Agriculture in 1992 from University of Ibadan, Ibadan.

Mr. Ajani was among the Pioneer Staff of the National Environmental Standards and Regulations Enforcement Agency (NESREA) in 2007. Between 2008 and 2015, he served as the Ekiti State Coordinator, and became the Zonal Director, Southwest Zone of NESREA from July 2015 from which position he retired in 2020. Mr Adeleke Ajani has attended several International Conferences and Trainings both within and outside the country on Environment with interest and vast experience in Compliance Monitoring and Enforcement, Industrial Ecology, Forest Resource Management, Biodiversity Conservation and Management, Environmental Planning and so on. Mr. Ajani is a devout Muslim happily married to Mrs. Bosede Ajani his best half and mother of his lovely children.



Tope Akinwumi *fwapceh* (DPH, B.SC (H\E),MEM, M.Sc, PhD) is a Public and Environmental Health expert, a registered Environmental Health Officer with Environmental Health Officers Registration Council of Nigeria (EHORECON) and for the past six years, has served as the President of Environmental Health Officers Association of Nigeria ,Osun State Chapter.

Dr Akinwumi has served in various capacity including Head of Division , Health Education and Community Mobilization, and as Water Supply Officer in Egbedore L. G in Osun State where he made a tremendous achievements in the areas of borehole drilling and supervision ,rehabilitation of HPBH, MBH, Hand washing.

Dr Akinwumi is currently the Head of Department, Water and Environmental sanitation Olorunda L.G , Igbona- Osogbo, Osun State where he is in charge of supervision of water and waste management activities at the centre of Osogbo (Osun State capital) potable water supply and quality control, market sanitation, flood control activities, food hygiene, environmental impact assessment, pollution control, excreta and sewage management, sanitary inspection of premises, pest & vector control and other environmental health activities.

He is the leader/coordinator of a popular weekly radio programme on Osun State Broadcasting Cooperation Ile- Awiye Oke - Bale Osogbo, tagged **"Imototo Ayika Wa"** meaning Environmental Sanitation where the public is educated / enlightened on the components of Environmental Health to improved quality of life, survival, promote hygienic condition and welfare and sustainable environment .

Dr Akinwumi is a part- time lecturer at Environmental Health Officers Registration Council of Nigeria (EHOREON} training centre, Ilesa and chief examiner to the Council certification examination in Nigeria with a good track record.

Dr Akinwumi was inducted as fellow of West African Postgraduate College of Environmental Health in 2015 and Fellow of Nehemiah Fellows, Diocese of Osun Anglican communion. He is a member of several professional and social bodies where he has been decorated with awards and recognitions He has attended several conferences, training and workshops home and abroad on issues relating to water quality assurance, waste management, climate change, health education, pollution control dispute management e.t.c and presented many technical papers in various conferences, meetings and workshops. He is happily married and blessed with children.



Dr (Mrs) Oyenike Oguntunde is a Senior Lecturer in the Department of Computer Science and currently the subdean of the Faculty of Natural Sciences of the Redeemer's University, Ede. She holds a B.Tech (Hons) degree in Computer Engineering from LAUTECH, Ogbomosho. She obtained her MSc and PhD degrees in Computer Science from University of Ibadan, Nigeria. Dr Oguntunde aspires to contribute to national development through handwork, integrity, diligence dedication and honesty; and to be an epitome of success in humility to women folks.



Oluropo F. DAIRO BSc, MSc, Electronic and Electrical Engineering, Ph.D Physics

Since October 2010, Dr Dairo joined the Department of Physical Sciences in Redeemer's University as an Assistant Lecturer. His research visits traversed the International Satellite Beacon symposium at Abdus Salam International Centre for Theoretical Physics (ICTP, Italy), Quantum, Atomic, Molecular and Plasma Physics (QuAMP) at Durham/Newcastle University, UK, courtesy of Institute of Physics (IOP), UK and Gaseous Electronic Conferences at North Carolina State University, USA courtesy of American Physical Society. Prior to the appointment he was with *Société Internationale de Télécommunications Aéronautiques* (SITA) where he started as an intern in 2002 and was welcomed back to top-flight service as a Field Service Engineer after his studies in the UK in 2009.

While in the UK, he obtained PgD Communication Engineering and MSc Electronic Instrumentation Systems in 2006 and 2007, respectively from the University of Manchester. Among the opportunities enjoyed while in the UK are: communication support staff of the Alumni Relation and Development Unit of the University of Manchester (UK and North America campaign, 2006-2007), EDEXCEL Specialist Marker (Systems and Control, 2006-2008), NIST short course on Laser measurement (US Department of Commerce, Boulder, Colorado, 2007) and member of staff Creative Support Ltd (2007-2009). Dr Dairo is an alumnus of the Obafemi Awolowo University with BSc (Hons) in Electronic and Electrical Engineering. He is an active member of Institute of Electrical and Electronic Engineers (IEEE), Optical Society of America (OSA), Society of Satellite Professionals International (SSPI), American Physical Society (APS), Institute of Physics (IOP) and Nigerian Union of Radio Science (NURS). His specific research interests include: Radio communication and environmental

monitoring; Molecular effect of green house gases on radio communication; Atmospheric transmission at microwaves frequency; and Nano-Photonics and sensing applications.

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Dr. Paulina Olufunke Adeniji



Dr Adeniji Paulina Olufunke has her PhD in Human Nutrition from the Department of Human Nutrition, College of Public Health, University of Ibadan, Ibadan, Nigeria. She is currently a Reader at the Department of Tourism Studies, Redeemer's University, Ede, Nigeria. Her research areas are: Human Nutrition, Public Health, Nutritional Biochemistry, Home Economics, Hospitality and Tourism. She has published 33 articles in reputable journals. She is member of various Professional bodies: American College of Toxicology(ACT), Society of Toxiclogy (SOT) USA, Institute of Hospitality, UK, African Nutrition Society, Nutrition Society of Nigeria, Home Economics Research Association of Nigeria (HERAN) among others. She is Editorial Board member, African Journal of Hospitality, Tourism and Leisure. Reviewer: International Journal of Contemporary Hospitality and Tourism Management, Scientific African Journal. Member - Board of Governors, Christ Redeemer's School Management (CRSM) - Redeemer's International Academy, Ifewara.



Joshua Ojo is a Professor of Health Physics and Environment at the Department of Physics and Engineering Physics, Obafemi Awolowo University, Ile-Ife, Nigeria. He obtained his PhD in Engineering Physics from the same University in 1995, and served as Head of Department between 2011-2015. Prof Ojo acquired broad research experience from top laboratories in several parts of the world including Britain, the United States, Czech Republic, Poland, and Italy. He has published over 50 articles in local and international peer-reviewed journals. Provoked by results he obtained as Principal Investigator in a series of Research Contracts carried out under the auspices of the International Atomic Energy Agency (IAEA), Vienna between 2001 and 2014, Prof Ojo decided to form a non-governmental organization that would conduct research into environment-health issues of peculiar relevance to Nigeria, communicate the findings widely in the country, and advocate for possible mitigating actions at the appropriate levels. The LivingScience Foundation was consequently registered with the Corporate Affairs Commission in October 2016. Prof Ojo's broad research interest is in assessment of risks associated with exposure to environmental hazards by various population subgroups. His works include both measurements and modeling of exposure to the hazards. He is particularly interested in toxic and essential elements, pesticides, tropospheric ozone, microwave radiation associated with GSM communication, and environmental radioactivity. He is happily married to Olusola and they are blessed with grown-up children.



Olufemi Aluko is a Senior Lecturer in the Environmental Health Unit of the Department of Community Health, in the College of Health Sciences of the Obafemi Awolowo University. Dr Aluko has published over 25 peer-reviewed articles in professional journals covering various fields in public health. He has served in several research and consultancy services in Nigeria, including being the technical lead on the World Bank assessment of the Water, Sanitation and Hygiene assessment in rural Nigeria project with Hanovia Nigeria Limited. He was also engaged by WaterAid Nigeria to review the 2011 WASH policy of Bauchi state. Olufemi is a registered Environmental Health Officer with the Environmental Health Registration Council of Nigeria (EHORECON). Between 2005 and 2011, he was a state level UNICEF consultant, with Rural Water Supply and Sanitation Agency on the Water Supply and Sanitation Sector Reform programme between 2005, until November 2011.



Isijaan A. Nkanta is a Senior Enforcement Officer at National Environmental Standards & Enforcement Regulatory Agency (NESREA). He is a Federal University of Technology Owerri (FUTO) trained Industrial Chemist with post graduate degrees, certifications and research interests in Science Education, Educational Technology, Science Communications, Environmental Chemistry, Chemical Technology, Green Technology and Geo-Informatics.

He is a member of various professional bodies including International Union of Pure & Applied Chemistry (IUPAC), Chemical Society of Nigeria (CSN), Nigerian Environmental Society (NES) amongst others and has served in various capacities both at workplace and professional associations.

He was Head, Chemicals, Pharmaceuticals & Pesticides Sector, Telecommunications & Broadcast Facilities Sector, School Outreach Program at NESREA Osun Field Office, Osogbo and currently the Vice Chair, Chemical Society of Nigeria (CSN), Osun State Chapter.



Isijaan is also passionate about Educational and Industrial Advancement in Africa. He has raised hundreds of young scientists and has engaged in several religious and community development initiatives. He was pioneer Youth Coordinator at Rivers Community (RIVCOM), Abuja. Isijaan is ordained into the evangelical cum pastoral ministry for over two decades. He is a true Ijaw son from Obolo (Andoni), Rivers State.

Grace Olubunmi Akinlade is a Lecturer in the Department of Physics and Engineering Physics at the Obafemi Awolowo University, Ile- Ife. There, she also serves as Coordinator of the

EnvironLab, a Research/public service Laboratory with full accreditation from the Department of Petroleum Resources. Dr Akinlade had her first and second degrees in Meteorology and Atmospheric Physics respectively. Her Ph.D (Engineering Physics) was obtained in the field of Health Physics and Environment. Her research focus is presently in toxic metals and environmental radioactivity. Dr Akinlade had research stints in Germany and Portugal and has participated in several learned Conferences at home and abroad, including the prestigious Women in Physics Conference held in Seoul, Korea in 2008. Grace is happily married with children.

INVITED SPEAKERS

David Alao MBBS, FRCS(Ed) FRCEM



David qualified from the University of Ibadan Nigeria in 1987. After an initial training in general surgery in Leeds and Newcastle Upon-Tyne, he had higher specialist training in emergency medicine in the South West of England.

He was consultant in emergency medicine for 16 years at the University Hospital Plymouth, UK, before relocating to the United Arab Emirates, Al Ain, in 2018.

He is currently assistant professor, emergency medicine, College of Medicine and Health Sciences, United Arab Emirate University, Al Ain and senior consultant in emergency medicine, Tawam Hospital, Al Ain, United Arab Emirates.

David is a member of several professional organizations such as the Royal College of surgeons Edinburgh and the Royal College of emergency medicine UK. He is also a member of non-profit organizations such as the Centre for Medical Informatics and Professional Development (CMIPD), the Medical Association of Nigerian Specialists and General practitioners (MANSAG). For the past decade, at both personal and organizational levels, David has been providing annual educational and skills training at various hospitals in Nigeria.

His areas of interests are medical education, capacity building, skills training and transfer, trauma systems development and trauma care.



ALHAJI BABAGANA MUSTAPHA: REGISTRAR/CEO, HEALTH RECORDS OFFICERS REGISTRATION BOARD OF NIGERIA

Born on 5th July 1967, in Bama Local Government Area of Borno State to a humble and dedicated Muslim family whose father was a farmer and renowned Islamic scholar of repute. Alhaji Babagana Mustapha (proudly Kanuri) had his early education at the Old Bama Primary School, in Bama Local Government Area of Borno State, where his leadership strides were noticed by his

teachers as his brilliance and coordination of his classmates left no one in doubt that he was destined for greater heights. Upon a heroic graduation from primary school armed with first school leaving certificate 1979,admission into secondary school was a mere formality as he enrolled into form1 in 1980 where he left with a West African School Certificate in 1985. Thereafter, proceeded to Borno College of Basic Studies (BOCOBS) in 1986, graduated in 1988 armed with his IJMB result, proceed for a Degree programme but opted for business in Petroleum resources which at that time was very lucrative till 1990, when he left scouting for a Government for proper job security.

He got employed with University of Maiduguri Teaching Hospital as a clerical officer in the Medical Records Department in 1991 – 1994, not being satisfied as his quest for education was of great concern to him, he immediately re wrote (WAEC)West African Examination Council, at Success Private School,Maiduguri,Borno State in 2009. Went for his National Diploma (ND) in Health Records Management and Biostatistics, University of Maiduguri Teaching Hospital, Borno State.1994-1996. He didn't rest on his oars as he immediately went for his Higher National Diploma (HND) in same field from same institution from 1996 -1998. Thereafter went for the one year compulsory National Youth Service Corps (NYSC), as a corps member from 1999-2000 at the State Specialist Hospital, Abeokuta, Ogun State. Aside being a professional in Health Records Management, his crave for versatility, got him enrolling into the famous MBH Computer, Maiduguri, Borno State where he bagged a diploma programme in Computer Application and Internet in 2002.

Desiring excellence and more academic qualifications, he went for a Post graduate Diploma in Education (PGDE), University of Maiduguri, 2007-2008 earning him leadership/teaching skills which made him an all-rounder in his interface with people. From there, just like the man Midas with the golden touch in fairy tales, he transferred his services from University of Maiduguri Teaching Hospital to Health Records Officers Registration Board of Nigeria in 2019 where his wealth of knowledge and experience will be felt and harnessed. Feeling light feathered with a first degree and post graduate degree, he went further to cap it with an MSc in Health Information Management from the prestigious Maryam Abatcha American University of Niger (MAUN), Maradi, Republic of Niger, 2019-2021. He is currently the second substantive Registrar/CEO of Health Records Officers Registration Board of Nigeria after the retirement of the first substantive Registrar/CEO, Alhaji Mohammed Ibrahim Mami on completion of his tenure on the 13th July 2021. His journey to the peak spawned over the years from being a clerical officer, department of Records,UMTH,1991-1994, Head of Outpatient,PHRO ,Department of Health Records, University of Maiduguri Teaching Hospital, 2002 -2003, Tutor/Students Affair Officer, School of Health Information Management,UMTH,2003-2010, Chief Health Records Officer, Coordinator, School of Health Information Management UMTH,2011-2015, Chief Health Records Officer, Head, Department of Health Records, University of Maiduguri Teaching Hospital, Maiduguri, 2017-2019, Assistant Director, Health Records Management, Head, Professional Matters, Health Records Officers Registration Board of Nigeria, 2019-2021 and Deputy Director, Health Records Management, Head, Professional Matters, Health Records Officers Registration Board of Nigeria 2021 before assumption of office as the Registrar/CEO .

A renowned Health Information Management expert, Babagana Mustapha is happily married with children.





Prof J. Kayode Olabanji is currently the Chief Medical Director (CMD), Ekiti State University Teaching Hospital, Ado-Ekiti (June 1, 2019 till date). Before now he pioneered and was the head Plastic, Reconstructive and Burns Surgery Unit, Obafemi Awolowo University / Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife (1998-2019). He had also been the Chairman, Medical Advisory Committee (CMAC) Obafemi Awolowo University Teaching Hospitals, Ile-Ife (April 3, 2014 – April 2, 2018), and Deputy Chairman, Medical Advisory Committee, Obafemi Awolowo University Teaching Hospitals, Ile-Ife (2010 – April 2, 2014).

Prof Olabanji was educated at Christ School Ado-Ekiti and studied Medicine & Surgery at the the University of Ife, (now Obafemi Awolowo University), Ile-Ife (1979-1986). He also did his Postgraduate training at Ile-Ife with additional postings at the Senior Residency level at UCH, Ibadan and LUTH Lagos. He was a BAPRAS (British Association of Plastic & Reconstructive Surgery) fellow at Saint Thomas and Guy's Hospitals, London, 2010.

As a trainer he has inspired and trained many surgeons in his specialty. As a seasoned administrator he has wide interactions among many disciplines in the Healthcare industry.



Dr. Hope Uweja is a recognized national and regional leader in health financing and health systems development in Africa. His work has focused primarily in Nigeria through government, international organizations and businesses.

Dr. Uweja is the country director for Nigeria at Results for Development (R4D), where he oversees the organization's cross-cutting practice areas in health, education and nutrition. He oversees and contributes to strategy and program development and delivery, partner and donor management, thought leadership, research design, knowledge building and collaborative learning efforts.

For much of his career, Dr. Uweja has focused on improving access to affordable health care for poor and vulnerable groups in Nigeria. As the general manager of the National Health Insurance Scheme (NHIS), he played a key part in implementing the work of the NHIS across public and private sectors and tertiary institutions in Nigeria.

He led the task force that executed the NHIS/MDG maternal and child health program in Nigeria between 2008 and 2011 which resulted in access to primary and secondary care for over 1.5 million pregnant women and children annually in 12 states. He also led the team that carried out a national assessment of community health insurance schemes. That work was presented in the National Summit on Community Health Insurance Scheme and published as the national policy on community health insurance.

As country director for Nigeria at GAUHCIA, Dr. Uweja provided technical assistance to the NHIS and several states. Since then, he has focused on driving the country's drive to universal health care through his consulting practice.

Dr. Uweja holds a MB:CB degree in medicine and surgery from the University of Ife (now Obafemi Awolowo University). He also holds master's degrees in business administration and in finance from the University of Calabar and in economics from the Ambrose Alli University. He is currently pursuing a Ph.D. in economics. He is fluent in English.
https://r4d.org/about/our-team/hope-uweja/



Dr. Jacob Kehinde Opele is a Senior Lecturer in the Department of Library and Information Science, Faculty of Education, Federal University Oye-Ekiti, Ekiti State,

Nigeria. He is a scholar of the Graduate School, Babcock University. He bagged his Master and Doctorate Degrees in Information Resources Management (IRM) with specialization in Health Information and Knowledge Management from the foremost Faith-based Babcock University. He bagged a Bachelor of Science Degree (BSc.) in Economics, a Postgraduate Diploma (PGD) in Technology Management as well as a Higher National Diploma (HND) and National Diploma (ND) in Health Record and Information Management

He has more than 50 published articles including monographs and book chapters in both local and International peer-reviewed Journals of repute and has presented in several conferences. Dr. Opele is a member of the Nigerian Library Association (NLA), Health Records and Information Management Practitioners of Nigeria (HRIMPN) and also a member of the International Federation of Health Information Management Associations (IFHIMA).

Dr Opele won the Scholarship Award of the Lagos State Government Doctoral Scholarship Programme in 2014. He also won institutional grants for Master and PhD Research at the National Centre for Technology Management (NACETEM), OAU, IIe-Ife in 2012 and 2017 respectively. He has served as the Institute's Librarian at the National Centre for Technology Management (NACETEM), OAU, IIe-Ife between 2013 and 2020. As an active team player, Dr. Opele has served as lead papers' presenter in international and national conferences.

Dr. Opele is an active team player, innovative thinker, motivator and go-getter, development expert and true educator who enjoys contributing to the development and transformation of humanity and society. Dr Opele is a Data Scientist with over 15 years' experience in data management and has participated in more than 5 National Research and Experimental Development (R&D) projects in Nigeria.

He has also served in several committees in his university (FUOYE), the National Centre for Technology Management (NACETEM), OAU and the Health Records Officers Registration Board of Nigeria (HRORBN). Few of these committees include participation in the NUC accreditation of LIS undergraduates programme, Member - FUOYE Central Research Board, Member – production Editor, FUOYE International Journal of education (FIJED. Faculty of Education Journal, Member- Faculty of Education Research Committee. He is a Member- Faculty of Education Curriculum Development Committee, Member - committee on the development of guidelines for undergraduates project writing in the faculty of education, FUOYE, Member - Faculty of Education teaching practice monitoring/disciplinary team, Member promotion Assessment Committee for Research Officers (NACETEM), Editor-in-chief, Livingspring Journal of Library and Information Science-- a publication of Osun State Chapter of the Nigerian Library Association, Invigilator/Examiner - professional licensing Examination, Health Records Officers Registration Board of Nigeria



CITATION: PROF OLADELE OSIBANJO, RECIPIENT, AF OLUWOLE PRIZE FOR ENVIRONMENTAL HEALTH, 2021

Prof Oladele Osibanjo was Professor of Analytical and Environmental Chemistry at the University of Ibadan, Nigeria until his retirement in December 2015. For several years, he was the face and unrivalled authority in Nigeria of e-waste and Persistent Organic Pollutants during which period he served the country, indeed the African continent, as the Executive Director of the Basel Convention Coordinating Centre for Africa (BCCCA). Prof Osibanjo also was Co-chair of the Working Group on Partnership for Action on Computing Equipment (PACE) of the Basel Convention 2009 -2015.

Born April 10, 1946, Prof Osibanjo had his education training at Adeola Odutola College, Ijebu-Ode (1959-64); Muslim College, Ijebu-Ode (1965-66); University of Ibadan (1967-70); and the University of Birmingham, England, (1972-76). Before proceeding to England for his PhD, he worked briefly as a Pupil Research Chemist with the Federal Department of Agricultural Research, Moore Plantation, Ibadan, 1970-71 and at the Lever Brothers (Nigeria). On his return to the country, he had stints at the Federal Ministry of Health, Lagos where he served as Food and Drugs (Public) Analyst in 1979 before eventually joining his alma mater, the University of Ibadan where he served until retirement as Professor of Chemistry in December 2015. Both at the UI and the University of Zimbabwe (where he was a Visiting Professor in 1986), and through his many articles and textbooks in environmental and analytical Chemistry, Prof Osibanjo impacted the lives of countless African students many of who he supervised at M.Sc and Ph.D levels.

He became a member of the Royal Society of Chemistry, London in 1976 and was the First African Recipient of the The Elwell Award of the Royal Society of Chemistry. Prof Oladele Osibanjo served as the First Regional Advisory editor for Africa, for The Analyst, Undon, 1980. He also served the Chemical Society of Nigeria as National Secretary between 1983-87, and as the National Vice President in 1987. For many years he was an FAO/UNEP Marine Pollution Expert to 8 Countries in East Africa..

At retirement, Prof Osibanjo continues to manage his company, Jawura Environmental Services Limited, Lagos, Nigeria as well as provide further public service in his capacity as the President of the Waste Management Society of Nigeria (WAMASON).

We are indeed honoured to identify with Prof Oladele Osibanjo and present him to our generation as a worthy example of selfless public service. To the glory of the Almighty God, we humbly present this community-service Icon, an academic giant with deep footprints at both the local and global scene, with the Abiodun Francis Oluwole Prize for Environmental Health for the year 2021.

HIGH SCHOO INNOVATION CHALLENGE – COORDINATORS

LSF 6TH NCEH SECONDARY SCHOOLS COMPUTER TEACHERS/HEALTH MASTERS PARTICIPANTS

1. Mr Adeniji Rufus, Victory Montessori School, Dele Yes Sir Area, Osogbo (Computer Teacher)

2. Mrs Bukola Akinradewo, Victory Montessori School, Dele Yes Sir Area, Osogbo (Health Mistress)

3. Mr. Adekola Deji, Sterling Integrated International College, Oke-Ibode, Ilesa (Computer Teacher)

4. Ms. Adewale Ronke Mary, Sterling Integrated International College, Oke-Ibode, Ilesa (Health Mistress)

5. Mr. Adeyeye Omotayo, Brain Builders International School, Osogbo (Health Master)

6. Mr. Adedayo Sunday Samson, Mustard Seed Group of Schools, Ibokun (Computer Teacher)

7. Mr. Moshood Hammed Akinkunmi, Kuta Community High School, Kuta. Ayedire LGA, Osun State (ICT Officer)

8. Mr. Alawode Saheed O., Success for All High School, Kobongbogbe Area, Osogbo (Health Master)

9. Mr. Adewale Sherif O., Eyitayo Model College, Agunbelewo (Health Master)

10. Mrs Oni Olabimpe Modupe, Community High School Ilaa Ijesa, Atakumosa West LGA (Health Mistress)

11. Mr. Dada Temitayo Olayimika, Peace and Joy college, Esa Oke (Health Master)

12. Miss Fabiyi Ajoke, Adventist High School, Olude-Osogbo (Computer Teacher)

13. Mr. Diekolayomi Joseph, Iyanu-Oluwa Comprehensive College, Ede (Computer Teacher)

14. Mr. Siyanbola Bolaji, Iyanu-Oluwa Comprehensive College, Ede (Health Master)

15. Mrs. Grace Ekwubiri, Annoited College, Osogbo (Health Officer)

16. Mrs Fadare Fikayo Olatayo, Benfad International School, Osogbo (Health Mistress)

17. Mrs. Ayoola Elizabeth Olanike, Ibodi Grammar School, Ibodi-Ijesa (Chemistry Teacher/Environmental Health Instructor)

18. Oyero Oyebola Foluke, St Mary's Grammar School, Iwo.
(Chemistry Teacher/Environmental Health Instructor)

19. Adebayo Rukayat, Nahadah Secondary School,
Ife South (Computer Teacher)

20. Mr Opatade Olawumi, Iwo Grammar School, Iwo (Chemistry Teacher/Environmental Health Instructor)

INVITED ABSTRACTS

Keynotes:

THE EVOLUTION OF TRAUMA DATABASE: PERSPECTIVES FROM A HIGH INCOME DEVELOPING COUNTRY
David Alao

HARNESSING THE POTENTIAL OF HEALTH INFORMATION AND ENVIRONMENTAL BIG DATA FOR MANAGEMENT OF PUBLIC HEALTH
Babagana Mustapha

HARNESSING THE POTENTIAL OF HEALTH INFORMATION AND ENVIRONMENTAL BIG DATA FOR MANAGEMENT OF PUBLIC HEALTH.
J. K. Olabanji. BSc (Health Sciences), MBCHB, FWACS, FICS

Lead Talks:

LOCAL EXPERIENCE WITH DEVELOPING A TRAUMA REGISTRY FOR NIGERIA: CHALLENGES AND WAY FORWARD
Oluwole Olayemi Olaomi.
Chief Consultant Surgeon and Chief of Trauma National Trauma Centre, National Hospital Abuja Nigeria**.**

LOCAL HEALTH DATA AS DRIVER OF ENVIRONMENTAL REGULATIONS AND STANDARDS
Victor Azubuike Chukwuka
NESREA, Osogbo

HEALTH INFORMATION MANAGEMENT: AVAILABILITY, RELIABILITY AND PATRONAGE BY RELEVANT STAKEHOLDERS IN NIGERIA
Jacob Kehinde Opele, PhD

GIS AND BIG DATA SCIENCE IN ENVIRONMENTAL HEALTH MANAGEMENT
ABOYEJI Olatunji Sunday
African Regional Institute for Geospatial Information Science and Technology (AFRIGIST), Ile-Ife, Nigeria

SOCIAL HEALTH INSURANCE AND HEALTH CARE FINANCING IN NIGERIA
Adeniyi Samuel Oginni

Hope Uweja

ENVIRONMENTAL-HEALTH INDICATORS: USES AND ABUSES
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RADON-222 CONCENTRATION IN GROUNDWATER IN KWARA STATE AND ESTIMATION OF EFFECTIVE DOSE

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RADIOLOGICAL RISK ASSESSMENT OF RADON INHALATION IN OFFICES OF SELECTED INSTITUTIONS IN SOUTHWESTERN NIGERIA

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COMPARATIVE ANALYSIS OF THE LEVELS OF NATURALLY OCCURING RADIONUCLIDES IN SOIL AND VEGETABLE SAMPLES FROM A SELECTED HOSPITAL WASTE DUMPSITE IN ADO – EKITI, EKITI STATE

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EDXRF ANALYSIS OF HEAVY METALS IN SOIL AND VEGETABLE SAMPLES FROM SELECTED AUTOMOBILE WORKSHOPS AT IWOROKO-EKITI, NIGERIA

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HEAVY METAL AND RADIONUCLIDE CONTENT OF VEGETABLE SAMPLES FROM SELECTED RADIOLOGICAL CENTRES IN EKITI STATE, NIGERIA

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INVESTIGATION OF CANCER PREVALENCE AND NATURAL BACKGROUND RADIATION IN EKITI STATE, SOUTHWESTERN, NIGERIA

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LEVELS OF MANGANESE AND RADIOACTIVITY IN SOIL AND WATER ASSOCIATE WITH CANCER PREVALENCE IN TWO SECTIONS OF ONDO CITY, SOUTHWEST NIGERIA

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MEASUREMENT OF PERIPHERAL DOSE FROM ^{60}Co IN WATER PHANTOM AT RADIOTHERAPY LEVEL UNIT OF THE SECONDARY STANDARD DOSIMETERY LABORATORY IN NIGERIA

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RADIOACTIVITY LEVELS IN BERYL AND FELDSPAR MINERALS FROM OLODE MINING AREA, IBADAN

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RADIONUCLIDE CONTENTS IN SEDIMENT AND SEAFOOD FROM MAKOKO LAGOON, LAGOS STATE, NIGERIA

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ASSESSMENT OF HEALTHCARE WASTE MANAGEMENT (HCWM) PRACTICES IN SOME HEALTHCARE FACILITIES (HCF) DURING COVID-19 PANDEMIC IN NIGERIA – A PRELIMINARY STUDY.

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CANCER DISTRIBUTION PATTERNS OVER 5-YEAR PERIOD (2016-2020) IN EKITI STATE CANCER REGISTRY SOUTHWESTERN, NIGERIA

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POLLUTION IMPACT ASSESSMENT OF SECONDARY IRON SMELTING COMPANY ON SOIL AND SOME MEDICINAL HERBS GROWN AT FASINA COMMUNITY IN ILE-IFE NIGERIA

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THE HEALTH IMPLICATIONS OF IMPROPER MANAGEMENT OF WASTE WATER IN CASSAVA MILL OF ODEMOKE VILLAGE, EBONYI STATE, NIGERIA.

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INFORMATION GOVERNANCE IN NIGERIA TERTIARY HEALTHCARE INSTITUTIONS: QUO VADIS?

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EXCLUSIVE BREASTFEEDING AS A PANACEA FOR INFANT DEATH IN NIGERIA: A REVIEW

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STABILISATION OF CRUDE AND PROCESSED GROUNDNUT OILS WITH ANTIOXIDANT COMPOUND EXTRACTED FROM TWO *LONCHOCARPUS* SPP

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VERTICAL ELECTRIC SOUNDING INVESTIGATION OF GROUND WATER POLLUTION AT ONIBU-EJA, EGBEDORE LGA, OSUN STATE, SOUTHWEST NIGERIA.

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INVITED ABSTRACTS

THE EVOLUTION OF TRAUMA DATABASE: PERSPECTIVES FROM A HIGH INCOME DEVELOPING COUNTRY

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Major trauma constitutes a massive burden on society. Approximately 5.8 million lives are lost yearly, and an additional 50 million people suffer significant disabilities. The majority of this disease burden affects the Low and Middle-Income Countries (LMICs). Combating this menace goes beyond the provision of good medical care.

The American College of Surgeons (ACS) came to this realization in the late 70s when it adopted a systemwide approach to trauma care by establishing a trauma system that addresses trauma from the public health perspective. The systemwide policy integrated all the critical components of trauma care from injury prevention by legislation to the rehabilitation of trauma victim-survivors. Underpinning the success of this system approach was the development of the National Trauma Data Bank (NTDB).

Several other developed countries of the world have followed this example by establishing a similar trauma care system. The UK re-organized its trauma care in 2002. Before then, Trauma Audit and Research Network (TARN), a self-funding organization, collected data on trauma care quality from some hospitals. Following the trauma system reorganization in 2002, it became mandatory for all hospitals that manage trauma to contribute to the TARN database in the UK.

The United Arab Emirates (UAE) started a trauma database in 2003 at a single centre. That was successfully followed, in 2013, with the establishment of the Abu Dhabi Trauma registry by the Emirates of Abu Dhabi, UAE.

This talk will trace the development of the Abu Dhabi trauma system over the past one and a half decades, emphasizing the lessons we have learned and how these may guide the development of a similar approach in Nigeria.

HARNESSING THE POTENTIAL OF HEALTH INFORMATION AND ENVIRONMENTAL BIG DATA FOR MANAGEMENT OF PUBLIC HEALTH.

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A number of reasons like the newest scientific and technological developments, necessities, varying mentality of patients, health demands and demographic changes are causing the transformation in healthcare systems all over the world. Efforts are concentrated towards increasing the quality and efficiency of healthcare services and results alongside reducing cost of expenditures. Health informatics is being used and has a growing indispensable backing for the collection, analysis and the process of specific health data which consist of facts, recordings and symbols. The outcome of data processing is Health Information. An important development of the healthcare systems is reinforced by the use of Big Data technologies and analytics that allow the move towards an evidence-based medicine that depends on unstructured, heterogeneous data coming from multiple sources.

Health data and information is being used to deliver, obtain, give feedback, manage, for dissemination or payment of all services relating to the healthcare system. The major actors that are involved in the sources of health data and information are the patients and the healthcare providers which include all persons involved in health care system like the physicians and all policy makers. Evolving features include management, process, distribution, privacy or security, accuracy, reliability, the integrity, its effectiveness, ability to identify, appropriateness, accessibility, legitimately, surety and promptitude of such data.

The advent of COVID-19 pandemic has also brought to the fore various technological tools that can be used to tackle public health issues without necessarily endangering our lives as care givers.

Keywords: Health Information; Health Informatics; Big Data; Healthcare Systems.

LOCAL EXPERIENCE WITH DEVELOPING A TRAUMA REGISTRY FOR NIGERIA: CHALLENGES AND WAY FORWARD

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Registry is a place where official records are kept and can be examined from time to time for trends which can influence policies and actions for better outcomes. The first known use of registry was in 1589 in New South Wales. Our interest in trauma registry was kindled because of difficulties we encountered during attempts at retrieving Trauma data in our hospital and region. We developed a Nigerian Trauma registry as a collaborative registry on Redcap with other hospitals and later a local Trauma registry in the National Trauma Centre, National Hospital Abuja. The challenges we are having are people's commitment to activities of the registry, lack of training and certification in registry affairs which results in lack of dedicated staff to manage the registry and lack of funding. To improve integrity of our data collection and quality of our registries, awareness must be created about the importance of quality data. Training and certification in registry management should be developed and be a pre-requisite for staff to work in the registry. Staff should not be posted to the registry on *ad-hoc* basis.

LOCAL HEALTH DATA AS DRIVER OF ENVIRONMENTAL REGULATIONS AND STANDARDS

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To understand the role of the environment in the determination of public health outcomes, the collection and study of large, complex data sets covering different geographies, community settings and populations. Despite the input of private and public institutions towards environmental regulation and the development of environmental standards to protect public health, these efforts have rarely translated into data that is easily findable, accessible, interoperable, and reusable. Even when data are readily available, the ability to create, analyze, and draw conclusions using emerging computational tools including artificial intelligence (AI) and machine learning is a challenge. Even the technical skills to process and maximize data generated by research hubs, academic institutions and regulatory enforcement agencies are not readily available. Given this enormous challenge, efforts towards enforcement and compliance program planning and implementation, identifying cases to pursue and developing solutions to benefit overburdened communities are greatly hampered. Without collaborative efforts towards data collection, curation and storage (warehousing), scientific computing, and training, the full potential benefits of environmental regulations and standards for protecting public health cannot be realized. From the NESREA experience, beyond structured data collection, the non-implementation of automated data sharing, and insufficient number of skilled data scientists alongside cyber-infrastructures is a strong limiting factor. Recommendations are discussed.

HEALTH INFORMATION MANAGEMENT: AVAILABILITY, RELIABILITY AND PATRONAGE BY RELEVANT STAKEHOLDERS IN NIGERIA

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Health information management has gained more acceptance among citizens in recent time than in the past years as people now seek for it via various platforms. This paper focused on the issues and determinants of health information management availability, reliability and patronage by stakeholders (patients, physicians, employers, insurance companies, pharmaceutical firms and government) in Nigeria. The paper highlighted the importance of health information management and what needs to be done to improve availability, reliability and patronage. It underscored the potentials of technology in effective health information management system and services as well as recommended strategies for inclusion for sustainable overall health service delivery in Nigeria.

Keywords: Health Information Management, Availability, Reliability, Patronage, Stakeholders Nigeria

GIS AND BIG DATA SCIENCE IN ENVIRONMENTAL HEALTH MANAGEMENT

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Utilization of big data for scientific discovery has generated tremendous interest, excitement and investment in recent times. Big data has now become a strong focus of global interest that is increasingly attracting the attention of academia, industry, government and other organizations. Deployment of big data analytics to identify complex patterns hidden in large volumes of disparate data could accelerate the rate of scientific discovery and lead to the development of beneficial technologies and products. Geospatial data, a crucial component of big data, allows adding of context for better, multidimensional insights that facilitate smarter decisions, improved business operations and innovation to deliver a strong competitive advantage. This position paper presents the concept of geospatial big data and its applications in Environmental Health Management. Further, the paper synthesises problems, major issues and challenges with current developments as well as recommending what needs to be developed further in the near future.

SOCIAL HEALTH INSURANCE AND HEALTH CARE FINANCING IN NIGERIA

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Introduction Out of pocket expenditure represents over 70% of total health expenditure in Nigeria, while between 4.4% and 10.32% of total household annual expenditure is spent on health. Over the years, the quest for healthcare services has pushed many Nigerian households below the poverty line. Consequently, NHIS was established by Act 35 of 1999 with the aim of providing social health insurance and securing Universal Health coverage (UHC) as well as financial risk protection for all Nigerians in the shortest possible time. Nevertheless, ten years into its implementation (in 2015), percentage coverage was less than 5% of the population, covering majorly federal civil servants, hence the need for a more effective and efficient means of achieving UHC. In March 2015, a memo seeking states to adopt and implement State Social Health Insurance Schemes using opportunities presented by the Basic Healthcare Provision Fund (BHCPF), established by National Health Act 2014 was approved by the National Council on Health (NCH). The appropriation of BHCPF in 2018 national budget spurred many states to establish their SSHIS as a pre-requisite to accessing the fund. This paper presents the status of implementation of the SSHISs, highlighting challenges and proffering practical solutions.

Methodology Data was collected on key implementation indicators from the CEOs of all the states health insurance agencies and FCT through Google form and analysed using percentages.

Result 28 (75%) out of 36 states and FCT responded. All (100%) had laws passed between August, 2016 and September, 2021. Although Law provided for formal sector payroll deduction in twenty six (92%) states, only 11(39.3%) had commenced while the amount is yet to be determined in six (21%). While government is matching workers' premium regularly in eight (29%) states, sixteen (57%) have not determined what government contribution to workers' premium should be. The law earmarked for equity grant to pay premium for vulnerable persons in 26 states (93%) and this ranges from 1% CRF of state and LGs to 5% of their IGR nevertheless, only five (18%) have been releasing this regularly. Average annual Informal sector premium per individual is Eleven Thousand Seven Hundred and twelve (11,712) Naira while it is Sixty One Thousand, Four Hundred and three Naira (61,403) for a family of six persons. A total of Two Million, Six Hundred and Ninety Three Thousand Six Hundred and Fifty Two (2,693,652) persons have been enrolled in SSHIS in 24 states while the total number of BHCPF enrollees is Six Hundred and Fifty six Thousand, Nine Hundred and Seven (656,907) in 25 states. Major challenges identified include inability to commence payroll deductions, failure of state

governments to release equity funds, poor ICT infrastructure and shortage of personnel. **Conclusion** Within two years of implementing State Social Health Insurance over three million additional Nigerians (1.7% of population) across 25 states are accessing care with financial risk protection. This underscores the need for all states to demonstrate more political will in implementing the scheme in order to achieve UHC.

Key words: State Social Health Insurance Scheme (SSHIS), Basic Health Care Provision Fund (BHCPF), Equity Fund.

ENVIRONMENTAL-HEALTH INDICATORS: USES AND ABUSES

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The relationship between exposure to environmental hazards and consequent adverse health effects could be very complex making it difficult to formulate appropriate policies needed to manage the environment for sustainable development. Appropriately defined Environmental-Health Indicators could provide simple and objective ways of assessing the state of the environment with respect to health impacts; and knowing their geospatial distribution could help in rational deployment of scarce resources for effective and measurable interventions.

This presentation gives an overview of the process for defining EH indicators, viz: 1) Identifying key demographic and socio-health parameters available from medical records (e.g. Cancer incidence and prevalence, Incidence and prevalence of specific key chronic diseases, Volume of major drugs prescribed, Birthrate, Death rate, No of hospital visits, etc; 2) Developing from these parameters, key health metrics from composites such as Life expectancy at birth, Healthy Life Years, Suicide death rates, etc; and finally 3), using Cluster analysis or AI techniques to identify environmental parameters (Air quality, Water quality , Environmental radioactivity, Use of fertilizers, Use of herbicides, Use of GSM, Algae toxins, food, toxic elements such as Pb, Hg, As, etc) that could associate with any or several of the health parameters or Metrics in steps 1 and 2.

There is however need to proceed with caution in setting EH indicators. As has been shown in the Social-Economic sector, if left to foreign entities to define, indicators could cause a nation to futilely pursue sustainable development using the prism and values of other nations. Indeed, an Emperor might be coaxed to go to town naked, while supposing himself to be robed in superior fabrics!

CONTRIBUTED ABSTRACTS

RADON-222 CONCENTRATION IN GROUNDWATER IN KWARA STATE AND ESTIMATION OF EFFECTIVE DOSE

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Radon is a colourless, odour and tasteless radioactive noble gas. The effects of radon gas exposure on human health are well documented. Radon gas exposure is the second leading cause of lung cancer after smoking and it constitute about 55% of the total exposure of the general public to natural ionizing radiation. Of all the isotopes of radon, radon-222 is the most stable because of its considerable long half-live of 3.228 days and therefore of most concern. Radon-222 concentration in fifty groundwater samples collected from fifty Local Government Areas (LGAs) of Kwara State was measured using AlphaGUARD radon monitor and AquaKIT. The Local Government Areas include Asa, Ifelodun, Ilorin East, Ilorin West and Offa. The mean activity concentration of ^{222}Rn for the five Local Government Areas ranged from 6.92 ± 3.51 (Ilorin East) to 14.33 ± 8.80 Bq/L (Asa). The minimum radon-222 concentration (1.55 ± 0.26 Bq/L) and the maximum (69.71 ± 1.67 Bq/L) for all the LGAs were recorded in Ifelodun Local Government Area. Fifteen groundwater samples had radon concentrations higher than 11.1 Bq/L, the maximum limit recommended by Environmental Protection Agency (EPA, 1999) and World Health Organization (WHO, 2008). None of the Local Government Area had a value greater than 100 Bq/L, the reference level set by the European Union. The annual effective dose due to inhalation and ingestion of radon in the groundwater samples were evaluated from the activity concentrations. The annual effective dose due to ingestion was estimated for adults and children using water consumption rate of 4.5 L/d and 0.75 L/d for infants. The contribution from inhalation dose to the total annual effective dose is negligible. The mean annual effective doses of the groundwater samples from all the Local Government Areas considered in this study were higher than the International Commission for Radiological Protection recommended reference dose level of committed effective dose of 0.1 mSv from 1-year consumption of drinking water.

RADIOLOGICAL RISK ASSESSMENT OF RADON INHALATION IN OFFICES OF SELECTED INSTITUTIONS IN SOUTHWESTERN NIGERIA

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The deleterious health implication of human exposure to radon gas which is radioactive in nature has attracted considerable research attention worldwide. Unfortunately, quantifying its amount in an environment is highly dependent on the availability of specialised gas detectors which are not readily accessible in the third world nations like Nigeria. When indoor radon builds up, there is the possibility that individuals would be exposed to high level of radon. Indoor radon measurements of selected offices in some tertiary institutions across the southwestern Nigeria were carried out using Electret Passive Environmental Radon Monitor (E-PERM) manufactured by Rad Elec Inc. USA. The study offices were chosen to have identical dimensions and ventilation type. The lithology and age of the buildings were considered for probable effect on the radon concentration. Highest radon concentration was observed in offices on migmatite lithology. Radon Concentration values for offices ranged between 2.60 ± 1.37 and 219.0 ± 7.47 Bq.m-3, with mean value of 116.53 ± 5.12 Bq.m-3 and S.D value of 34.26, respectively. Highest mean radon concentration was observed in offices built on granitic bedrock with a value of 64.3 ± 4.83 Bq.m-3 while the lowest was observed in alluvium bedrock with a value of 52.5 ± 4.14 Bq.m-3. The overall average value (0.515 mSvy-1) of Annual Effective Dose (AED) due to indoor radon was observed to be lower than the world average level of 1.15 mSv. The average Excess Life-Time Cancer Risk estimated in this study was 5 Million Person per Year. In addition to lithology, building age contributed significantly ($p = 0.00$) to the variation of the indoor radon concentration. The study therefore concluded that, about 21.4% of the measured indoor radon concentration were higher than the 100 Bqm-3 recommended by World Health Organization.

Keyword: Radon radiological risk; E-PERM; Lithology; Building age

COMPARATIVE ANALYSIS OF THE LEVELS OF NATURALLY OCCURING RADIONUCLIDES IN SOIL AND VEGETABLE SAMPLES FROM A SELECTED HOSPITAL WASTE DUMPSITE IN ADO – EKITI, EKITI STATE

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The activity concentration of the gamma ray emitting from naturally occurring radionuclides 40K, 232Th and 238U in hospital waste dumpsite soil and vegetable samples at Ado-Ekiti were determined using gamma spectrometer CsI(Ti). Their mean activity concentration were 352.88 ± 42.79, 25.51 ± 3.21 and 19.33 ± 1.56 Bq/kg for soil samples and 1091.07 ± 132.10, 45.07 ± 5.67 and 24.47 ± 1.98 Bq/kg for vegetables respectively. Radiological parameters such as absorbed dose rate, radium equivalence, annual effective dose equivalent, internal and external hazard indices were calculated to know the hazardous nature of these environmental samples to the inhabitants of the study area. In most cases, the calculated radiological parameters for vegetables were relatively higher than the world average values and the control.

Keywords: Comparative analysis, naturally occurring radionuclides, soil and vegetables, gamma spectrometer, radiological parameters

EDXRF ANALYSIS OF HEAVY METALS IN SOIL AND VEGETABLE SAMPLES FROM SELECTED AUTOMOBILE WORKSHOPS AT IWOROKO-EKITI, NIGERIA

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The levels of eighteen heavy metals have been determined in six soil and twelve vegetable samples (Talinum triangulare and Amaranthus hybridus) from selected automobile workshops at Iworoko-Ekiti using Energy Dispersive X-ray Fluorescence Spectrometry (EDXRF). The results indicated that the observed heavy metals were within the range (1.044-3180.224) mg/Kg and (1.002-1845.744) mg/Kg respectively. The soil samples were slightly enriched in V, Mn, Ni, Cu, Zn, As, Se, Rb and Y (EF = 1.033 – 2.179). Significant difference also exists between the levels of Ca, Ti, V, Cr, Mn, Fe, Ni, Cu, As, and Y in soil samples from the sites and control (at $p < 0.05$, t = 0.00002 – 0.03950). The accumulation factors of the heavy metals in amaranthus hybridus and talinum triangulare were in the range 0.0006 – 824.1057 and 0.00019 – 338.76885 respectively. The relatively high levels of Cr, Mn, Fe, Ni, Cu, Zn and As in the vegetable samples from the sites compared with WHO/FEPA permissible limits was an indication of contamination. Hence, the consumption of these vegetables could be detrimental to health. Keywords: EDXRF, soil and vegetable samples, enrichment and accumulation factors, Iworoko-Ekiti

HEAVY METAL AND RADIONUCLIDE CONTENT OF VEGETABLE SAMPLES FROM SELECTED RADIOLOGICAL CENTRES IN EKITI STATE, NIGERIA

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In this study, the heavy metal and radionuclide content of vegetable samples from some selected radiological centres have been determined using Energy Dispersive X-ray Fluorescence Analyzer and Gamma Spectrometer respectively. For heavy metals in vegetable samples from the three different sites, the mean concentration ranged from 0.680 to 8260.637 mg / kg. The results showed that the levels of Ti, Mn, Fe, Co, Zn, Br and Ca were relatively higher ($t>0.05$) in the sites than control. In most cases, samples at the sites were slightly enriched in Mo, Zn, As, Se, Fe, Rb, Ti, (E.F = 1.100 - 9.00) but highly enriched in Br (EF > 10). For the radionuclides 238U, 232Th and 40K, the absorbed dose rate in the samples ranged from (1.05 - 54.95) Bq/kg, (50.25 - 61.05) Bq/kg and (113.60 - 14560.56) Bq / kg respectively. The activity concentrations were higher than United Nations Scientific Committee on the Effects of Atomic Radiation guidelines for 232Th and 40K but lower for 238U. The absorbed dose rates and annual effective dose were found to be in range of 50.400 to 120.900 (nGyh−1) and 0.061 to 0.571 (μSvy−1) respectively. The overall annual effective dose was lower than the allowable limit of 1mSvy−1 set by International Commission on Radiological Protection. Hex and Hin were calculated and found to be within internationally recommended values. Findings from this study revealed that the vegetables from these sites were contaminated and not good for consumption.

INVESTIGATION OF CANCER PREVALENCE AND NATURAL BACKGROUND RADIATION IN EKITI STATE, SOUTHWESTERN, NIGERIA

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The relationship between prevalence of cancer and natural background radiation was investigated. Cancer was obtained based on 5-year records between 2016 and 2020 from Ekiti State registry, and the aero-radiometric data on natural background radiation for the entire state was also obtained from the Nigeria Geological Survey Agency (NGSA), which carried out airborne radiometric survey of Nigeria between the years 2002-2009. The aero-radiometric data obtained from the NGSA has been fed into geospatial software called Oasis Montaj, digitized and adapted from the three naturally occurring radionuclides (K, Th and U). The aero-radiometric data were then plotted on a topographic map of Ekiti State. Google map was employed to determine the coordinates (longitude and latitude) of the locations of the patients and ARCGIS software was used for geo-spatial distribution of the patients' geographical locations on map of Ekiti State. Oasis Montaj version 6.4.2 was then used to extract the values of each of the radionuclides, K (%), U (ppm) and Th (ppm) with respect to geographical location of each of the patients, in order to determine the radiation exposure level of the patients to background radiation in their respective locations .

LEVELS OF MANGANESE AND RADIOACTIVITY IN SOIL AND WATER ASSOCIATE WITH CANCER PREVALENCE IN TWO SECTIONS OF ONDO CITY, SOUTHWEST NIGERIA

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As a preliminary check on possible contribution of environmental factors to cancer prevalence in Ondo state, south-west Nigeria, levels of some trace elements and radioactivity were measured in soil and water samples collected from the region. Five representative soil and five water samples were collected from each of five local government areas (LGAs) in the state. These included Ondo East and Ondo West LGAs, representing essentially the eastern and western sections respectively of the city of Ondo. These two contiguous sections have been reported to have cancer prevalence rates of 3.5:1. The natural radioactivity levels associated with ^{40}K, ^{238}U, and ^{232}Th were determined in all the soil and water samples by gamma spectrometry; while levels of fifteen trace elements (K, Ca, Ti, V, Cr, Mn, Fe, Ni, Cu, Zn, Rb, Sr, Ba, Pb, and Tb) were determined in the twenty-five soil samples using ED-XRF. Furthermore, the levels of three elements (K, Mn, and Pb) were also determined in the ten water samples from Ondo West and Ondo East LGAs, using Flame AAS. There was no statistically significant correlation between cancer prevalence and the different parameters measured across the five LGAs. However, comparing results only from Ondo East and Ondo West LGAs, (for which possible confounding socio-economic parameters were virtually absent), mean level of Mn was found to be significantly elevated while that of radioactivity (all three species) were significantly depressed in both soil and water samples from the Eastern section compared with similar samples from the Western section. Manganese is a strong anti-oxidant which could protect against cancer, while radioactivity could promote it. The results obtained therefore suggest that levels of manganese and radioactivity in the environment could be contributing to the disparate cancer prevalence in the western and eastern sections of Ondo, Ondo state, Nigeria.
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Keywords: radioactivity, trace elements, water, soil, cancer

MEASUREMENT OF PERIPHERAL DOSE FROM ^{60}Co IN WATER PHANTOM AT RADIOTHERAPY LEVEL UNIT OF THE SECONDARY STANDARD DOSIMETERY LABORATORY IN NIGERIA

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Scattered radiation is one of the primary sources of exposure that induce secondary effect associated with irradiation during cancer diagnosis and tumor treatment. Hence there is a need to determine the dose distribution in order to ensure that normal tissue especially radiosensitive tissues surrounding the treatment area are not at risk of receiving its threshold dose limit. In this study the peripheral dose from cobalt-60 to water PPM-phantom was measured using ionization chamber inserted in water phantom at a sources to surface distance of 80 cm. The dose was measured from 0 cm from the edge of the field to 6 cm at 1cm interval for three different field sizes; 5 cm x 5 cm, 10 cm x 10 cm, and 1 5cm x l5 cm at depths of between 0 cm and 15 cm in 2.5cm interval. The result obtained showed that the peripheral dose is dependent on field size, distance from the edge of the field and depth. The knowledge of this dependence will help to minimize undue exposure to the normal tissue during any irradiation or Cancer treatment using cobalt-60 source.

RADIOACTIVITY LEVELS IN BERYL AND FELDSPAR MINERALS FROM OLODE MINING AREA, IBADAN

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Forty samples comprising of beryl (20) and feldspar (20) rock minerals were collected from different locations in Olode mining area in order to determine the natural radioactivity due to ^{40}K, ^{226}Ra and ^{232}Th in the samples. Measurement was done using laboratory based gamma ray spectroscopy. In-situ gamma-ray doses were measured using a calibrated dose rate meter, at 1 meter above the surface. The mean activity concentrations for ^{40}K, ^{226}Ra and ^{232}Th were 289.82± 11.0 Bq/kg, 5.99±1.20 Bq/kg and 12.18±1.50 Bq/kg for beryl minerals while for feldspar it was 4133.10±30.40 Bq/kg, 5.37±1.30 Bq/kg and 16.28±1.53 Bq/kg respectively. A comparison of radioactivity from beryl and feldspar radioactivity clearly indicates relatively higher radioactivity in the feldspar minerals. The level of in-situ gamma-ray doses varied from 0.01µSv/h to 0.05 µSv/h. The mean absorbed dose rate, mean radium equivalent(Ra_{eq}) concentration, mean external (H_{ex}) and internal (Hj_n) hazardous indices were calculated and compared with the world average. The mean values were less than the world recommended averages recommended by ICRP. Therefore, beryl ore at Olode mining sites commonly used for jewelries are not radiologically hazardous to human health.

RADIONUCLIDE CONTENTS IN SEDIMENT AND SEAFOOD FROM MAKOKO LAGOON, LAGOS STATE, NIGERIA

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Sediment and seafood were collected from Makoko lagoon, Lagos state, Nigeria. Nine different types of seafood were obtained. Gamma spectrometry was employed in determining the radionuclide activity concentrations of ^{40}K, ^{226}Ra and ^{232}Th in the samples. The concentrations of ^{40}K in sediments ranged from 23.06 ± 4.8 to 62.97 ± 7.94 Bqkg-^{1} with mean 41.04 ± 6.41 Bqkg^{-1}; ^{226}Ra from 2.17 ± 1.47 to 17.32 ±4.16 with mean value of 10.15 ± 3.19 Bqkg-^{1}, while ^{232}Th varied from 0.46 ± 0.68 to 9.86 ± 3.14 Bqkg'^{1} with mean 4.39 ± 2.10 Bqkg-^{1}. The mean value of absorbed dose rate for all sediment samples was 9.03 ± 3.79 nGy/h. The mean annual effective dose calculated was 0.0l mSv/yr, internal hazard index (H_{in}) was 0.08 ± 0.03, external hazard index (H_{ex}) was 0.05 ± 0.02, while mean radium equivalent was 19.63 ± 8.27 Bq/kg. In seafood, activity concentrations of ^{40}K ranged from 5.62 ± 2.37 Bq/kg (*Dentex congoensis*) to 31.24 ± 5.43 Bq/kg (*Pomadasys perotaei*) with mean value of 15.66 ± 8.07. ^{226}Ra ranged from BDL (*Chrysichtys nigrodigitatus*) to 4.91 ± 2.21 Bq/kg (*Callinectes amnicola*) with mean 1.72 ± 1.51 Bq/kg, while ^{232}Th ranged from BDL *(Chrysichtys nigrodigitatus, Dentex congoensis, Sarotherodon galilaeus galiaeus*) to 2.22 ± 1.49 Bq/kg (*Pomadasys perotaei*) with mean 1.93 ± 0.30 Bq/kg. The cumulative effective ingestion dose obtained ranged from 0.016µSv/yr (*giant prawn*) to 1.08µSv/yr (*Pomadasys perotaei*). The committed effective dose from the ingestion of the seafood was significantly lower when compared with UNSCEAR dose levels in all foods. It may ssuufice to say that the use of the sediment for building purposes and the ingestion of the sampled seafood from the lagoon in Makoko pose no radiological health risk to the population.

ASSESSMENT OF HEALTHCARE WASTE MANAGEMENT (HCWM) PRACTICES IN SOME HEALTHCARE FACILITIES (HCF) DURING COVID-19 PANDEMIC IN NIGERIA – A PRELIMINARY STUDY.

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INTRODUCTION: The pandemic COVID-19 ravaging the earth which has led to global lockdown, economic shut down and high rate of mortality has definitely led to some managerial reforms and change in the general practices of health facilities, one sensitive area is the management of waste generated in these HCFs especially due to the high risk of infection by COVID-19. The aim of this study was to assess the HCWM practices in some sampled HCF in Nigeria.

METHODOLOGY: A structured questionnaire developed from the World Health Organization/ United Nations Environment Programme Health-care waste management inventory questionnaires tool was delivered to participants via google forms and shared on different professional social media

platforms to assessing the HCWM practices by Environmental Health Officers/ Departments of HCF nationwide. Data analysis was thematic, inductive, and data-driven.
RESULTS: This study revealed the waste management practices at different categories of HCFs across nine (9) states of the federation, where some are primary, secondary and tertiary facilities. Around 40% of these HCFs has reported cases of COVID -19 since the pandemic started, and over 50% of those generates a total of over 50kg of waste daily. Almost 90% of the respondents attests to it that a regular monitoring and evaluation of compliance to the National HCWM regulation was evident, and scheduled vaccination, training of staff on health matters relating to waste management in each facility is practiced.

CONCLUSION: In respect to the issues and state of management at the facilities, some recommendations are opined to apply in efficiently monitoring, collection, management of healthcare waste during this pandemic.

Keywords: COVID-19; healthcare waste management; healthcare facilities, Nigeria

CANCER DISTRIBUTION PATTERNS OVER 5-YEAR PERIOD (2016-2020) IN EKITI STATE CANCER REGISTRY SOUTHWESTERN, NIGERIA

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Data of cancer cases diagnosed and recorded at the Ekiti state cancer registry located at Federal Teaching Hospital, Ido-Ekiti (FTHI), (formerly called Federal Medical Centre) during the five year period 2016-2020 were analysed to check for patterns which might provide insight into the aetiology or development of various types of cancer. A total of 707 cases were retrieved from the Registry, out of which 272 were further linked with the records available at the Medical Records Department of the FTHI providing information on gender, age, occupation, and geographical residence of the subjects. The records were analysed exhaustively using Excel Spreadsheet and R-statistical package to describe the distribution of the various types of cancer among various demographic groupings. The total 707 cancer cases were relatively distributed into groups, by sites, as Reproductive sites (37.2%), Breast (33.5%), Gastrointestinal track G.I.T. (7.1%), Blood and bone marrow (3.1%), Colon (3.1%), Connective tissue (2.8%), Skin (2.7%), Metastatic (2.5%), Liver and Gall bladder (2.3%), Endocrine (1.8%), Kidney (1.6%), Lungs (1.0%), Lymphoma (0.8%), Eye (0.7%), Jaw (0.4%), and Others (1.8%). The number of male and female subjects was 264 (37.3%) and 443 (62.7%) respectively, with 237 (53%) of the female subjects presenting with breast cancer. The age at diagnosis ranged from 0 (2 female neonates presenting with colon cancer) to 100 years (a male with prostate cancer), with an average of 57.8 years. There was no record of cancer of jaw in female subjects. More cases of cancer of reproductive sites were recorded in male than female subjects. Of the 272 subjects whose records could be linked with the Hospital records, 84.2% were from Ekiti State. The others were from Kwara (7.7%), Ondo (3.7%), Osun (2.9%), Ogun (0.7%), and Oyo (0.7%) and Edo (0.4%) states. Of the 16 Local Government Areas in Ekiti State, the highest cancer prevalence was recorded for Ileje Meje (253 cases per million), while the least was recorded for Ise/Orun (6 cases per million). Since it has been established that over 80% of cancer cases can be attributed to environmental and lifestyle factors,

it is hoped that these preliminary data will stimulate further investigations into the major causes of cancer both in Ekiti State and elsewhere.

POLLUTION IMPACT ASSESSMENT OF SECONDARY IRON SMELTING COMPANY ON SOIL AND SOME MEDICINAL HERBS GROWN AT FASINA COMMUNITY IN ILE-IFE NIGERIA

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Herbal medicine made from medicinal herbs is gaining popularity as alternative to orthodox medicine especially among the low income people because it is cheap, readily available and its "seeming" lack of side effects. However, environmental pollution is a potential threat to its continued use. This study examines the effect of air pollution on the soil and consequently on the medicinal herbs grown on such soil. Soil and four medicinal herbs, *Chromolaena odorata*, *Vernonia amygdalina*, *Carica papaya* and *Ocimum gratissimum* which are commonly used in the south western part of Nigeria either as purely medicinal herbs, soup vegetables or both were carefully harvested from Fasina, a polluted area and Moro, a relatively unpolluted area all in Ile-Ife, Nigeria. Samples were prepared following standard practice and analysed for nickel, chromium, cadmium and lead using Atomic Absorption Spectroscopy. The results showed that elemental concentrations at the two locations were within the permissible limit for both soil and leafy vegetables. Toxic metals concentrations (chromium, cadmium and lead) were found higher at the polluted site while that of the essential metal, nickel, was higher at the unpolluted site. Of the four metals, cadmium has the highest transfer ratio of 0.39 and 0.34 while lead has the least (0.21, 0.25) for Moro and Fasina sites respectively. Similarly, Chromolaena odorata has the highest transfer ratio (0.34) while Carica papaya has the least (0.28). In conclusion, there is evidence of gradual build-up of the toxic metals at the polluted site which may eventually contaminate the medicinal herbs.

Key words: Medicinal herbs, Spectroscopy, Elemental analysis, pollution impact, Nigeria

THE HEALTH IMPLICATIONS OF IMPROPER MANAGEMENT OF WASTE WATER IN CASSAVA MILL OF ODEMOKE VILLAGE, EBONYI STATE, NIGERIA.

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Cassava is the fourth largest staple food after rice, wheat and maize. Cassava is produced in the tropical and sub-tropical countries. Currently, the global production of cassava is about 215,436,496 tons. Out of these, Nigeria account for 20.3%, being the largest producing nation. During processing of cassava flour, [Garri], the main waste is generated including cassava mill effluents [CME], Solid and gaseous emission. CME alters the quality of soil and water with regard to physicochemical, heavy metal and microbial characteristics. CME can induce toxicological effects on the environments and its biota including humans, fisheries, flora and fauna. This paper reviews the impacts of CME in Nigeria. The study found that the physicochemical quality of CMEs often exceeds the limit for effluents discharge onto land and surface water as recommended by the National Environmental Standards and Regulations Enforcement Agency (NESREA). The impacts are mostly associated with

physicochemical [viz;odour, cyanide, acidic, dissolved oxygen, biological and chemical oxygen demand, conductivity] and heavy metals characteristics . Therefore, there is the need for treatment and sustainable management strategies of CMEs through biotechnological advancement.

INFORMATION GOVERNANCE IN NIGERIA TERTIARY HEALTHCARE INSTITUTIONS: QUO VADIS?

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Governance is central to sustainable health service delivery be it in the developing or developed countries. However, the health service delivery in tertiary health institutions in Nigeria still leave much to be desired in the areas of information governance which has the potential to enhance timely and effective services delivery to the citizenry. The negative effects of lack of information governance include dissatisfaction with health services rendered to the sick and the injured as well as increase patients waiting time and delay diagnosis. This paper proposes an alternative strategy for coordination in which information is treated as a valuable resource that should be effectively governed.

Key Words: Information Governance, Tertiary Healthcare Institution, Hospital, Nigeria

MANAGEMENT OF PHARMACEUTICAL WASTES IN SELECTED HOSPITALS IN LAGOS METROPOLIS

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The management of pharmaceutical wastes has not received sufficient attention in the waste management process in Nigeria. Improper disposal of pharmaceutical wastes can result in very negative consequences such as contaminated water supplies, diversion and resale of expired or inactive medicines and improperly incinerated products releasing toxic pollutants into the air. Pharmacists and nurses generally do not receive appropriate training on the management of hazardous healthcare waste during academic studies. There is no specific policy on the management of pharmaceutical wastes in Nigeria.

The study assessed personnel knowledge of and attitude to the management of pharmaceutical wastes, identified the categories of pharmaceutical wastes generated in four selected hospitals in Lagos metropolis and investigated the pharmaceutical waste management practices at these hospitals.

The study was conducted among healthcare personnel in a teaching hospital and three secondary healthcare facilities in Lagos metropolis using pretested structured questionnaire, observation and interview. It was a descriptive cross-sectional survey of 303 healthcare personnel (i.e. 251 Nurses, 39 Pharmacists and 13 Environmental Health Officers) using purposive sampling. The questionnaire was designed to elicit information on personnel knowledge of and attitude of and attitude to the management of pharmaceutical wastes in the hospitals. An observation checklist was used during the site visits made to the hospitals to observe the practices with respect to pharmaceutical waste handling and disposal. Personal (oral) interview, using interview schedules, was conducted with the heads of

pharmacy department in each hospital. Similarly, NAFDAC and LAWMA officials were interviewed to have an insight into the pharmaceutical waste treatment and disposed methods adopted by these agencies. Statistical analyses were performed using IBM SPSS Statistics for Windows version 21. Descriptive and inferential analysis were carried out using frequencies, percentages, and Chi square (with confidence level set at $p< 0.05$)

The result showed that 64.7% of healthcare personnel had a good or high level (> 70%) of knowledge of pharmaceutical waste management (PWM). 92.4% of them had a good attitude to PWM but the training of these personnel in PWM was inadequate. The result also showed that the hospitals generated various types of pharmaceutical wastes including ampoules vials (90.1%), solid/semi solids (85.8%), powders (84.2%) and liquids (82.2%). The study revealed that the pharmaceutical waste management practices at the hospitals were non-compliant with the recommendations of the World Health Organization and that there were no clear policies and plans for the managing the wastes. There was no significant difference in the knowledge and attitude of healthcare personnel to the management of pharmaceutical wastes among the hospitals. However, there was significant difference in their opinions on the containers for packaging pharmaceutical wastes ($p=0.001$), frequency of collection of PW ($p=0.006$), mode of transportation of PW [($p=0.028$), ($p=0.001$), ($p=0.002$)] and the storage of the wastes ($p=0.001$) in the hospitals.

The study concluded that healthcare personnel had good knowledge of and attitude to the management of pharmaceutical wastes which however did not translate into practice. The pharmaceutical waste management practices in the hospitals were below standard and therefore need more attention from relevant stakeholders and the government.

EXCLUSIVE BREASTFEEDING AS A PANACEA FOR INFANT DEATH IN NIGERIA: A REVIEW

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Not exclusively breastfeeding infants have been linked with high rate of infant deaths in Nigeria. Based on personal observations as a mother and an advocate of exclusive breastfeeding, It is noticed that people (especially fellow mothers) know much about breastfeeding but not much is known about exclusive breastfeeding. Most mothers know they just have to breastfeed their babies simply because it is a normal routine that has transcended generations but they do not know why it is important to do so. This is why little or no attention is being paid to exclusive breastfeeding by the mothers. According to WHO findings, 2 out of 3 infants are not exclusively breastfed for the recommended 6 months leading to a proportionate increase in infant deaths. In a study conducted by Friday and Jane in 2019, it was reported that exclusive breastfeeding rates in Nigeria from birth to 6 months is just 23%. A study in 2011 also showed that exclusive breastfeeding rates in Nigeria are amongst the lowest in the world (Kingsley et al., 2011). In Africa as a whole, only about 25% of infants are exclusively breastfed (Abdiasis et al., 2020). Various studies both nationally and internationally have shown that breastmilk reduces to a large extent infant mortality rate (Gouveri E et al., 2016; Hauk FR et al., 2010; Jones G et al., 2003). As important as it is, even mothers with challenging health status like are encouraged to exclusively breastfeed once they take their routine drugs regularly as the baby will not be affected. This truth may not be far fetched as the physiologically based kinetic model I developed for lead

transfer in tissues of human maternal subjects in 2014 predicted that a very reduced amount of lead in mother's blood eventually gets to the breastmilk (0.3 milk to blood lead ratio) (Tolulope, 2014). The study showed that though breastfed infants are at higher risk of lead exposure during lactation, mothers are still not encouraged to resort to formula because several studies have found higher blood lead levels in formula fed infants than breastfed infants. Our infants do not have to die unnecessarily when we have been blessed with a cheaper, free and healthier alternative. Millions of children could be saved if we can be well informed and get intentional about the practice of exclusive breastfeeding. This review therefore aims to enlighten the public on this life saving practice and hopes to contribute in reducing significantly sudden infant deaths in Nigeria as we mothers walk the talk.

Key words: Exclusive Breastfeeding, Infant death, mothers, breastmilk

STABILISATION OF CRUDE AND PROCESSED GROUNDNUT OILS WITH ANTIOXIDANT COMPOUND EXTRACTED FROM TWO *LONCHOCARPUS* SPP

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The *in vitro* antioxidant properties of the crude leaves extracts and fractions of *Lonchocarpus sericeus* and *Lonchocarpus cyanescens* were investigated, and the potential of the most abundant phenolic compound as antioxidant for stabilising groundnut oil was determined. The pulverised leaves of each plant sample were extracted with 80% (v/v) aqueous methanol and the extracts concentrated to give crude extracts (CE). The CEs were subsequently partitioned using n-hexane, dichloromethane, ethyl acetate and butanol to give four fractions for each plant. Antioxidant potential [Metal Chelating Ability (MCA), DPPH Free Radical Scavenging Ability (DPPH), Ferric Reducing Antioxidant Power (FRAP), Total Antioxidant Capacity (TAC), Total Phenol (TP), and Total Flavonoid (TF)] of the CEs and fractions were determined spectrophotometrically. The profile of the constituents of the fraction with the highest antioxidant potential in each of the plants was determined using HPLC. Groundnut oil was extracted as done traditionally, and half of the extracted oil refined using standard procedures. The crude and processed oils were stabilised using the most abundant antioxidant compound obtained using HPLC and the fraction with the overall highest antioxidant potential. The groundnut oil was divided into six different treatment groups as follows: Vegetable oil without antioxidant compound (control); vegetable oil with antioxidant compound to compare the control; vegetable oil with antioxidant compound including pro-oxidants (light, Fe^{2+} and oxygen); vegetable oil without antioxidant compound but with pro-oxidants; vegetable oil with butylated hydroxyanisole (BHA) and vegetable oil with the selected fraction. The progressive lipid oxidation in each of the treatment groups was monitored biweekly over a period of three months by determining iodine value (IV), peroxide value (PV), thiobarbituric acid reactive species (TBARS), lipid hydroperoxide (LHP) and p-anisidine value (p-AnV). The results of the antioxidant assays showed that the crude extracts and the fractions of both plants exhibited varying degree of activities. Of all the fractions tested, butanol fraction of *Lonchocarpus sericeus* demonstrated the highest antioxidant activity while the n-hexane fraction of both plants recorded the least. Gallic acid was identified as the most abundant compound in both plant extracts. The processing of the groundnut oil improved some physical properties (viscosity and surface tension) and chemical properties (Acid Value, Free Fatty Acid, and Total Phenol). The stabilisation

study revealed gallic acid to significantly ($p \leq 0.05$) reduce the formation of all the primary and secondary metabolites used for monitoring the extent of deterioration of the oil samples throughout the period of storage even in the presence of pro-oxidants. The processing of this oil was observed to compromise the natural defence system of the oil because the levels of the metabolites were consistently higher in the processed oil compared with the crude. The study concluded that gallic acid was the most abundant compound in both plants extracts. The butanol fraction of *Lonchocarpus sericeus* and gallic acid had the ability to defend groundnut oil against lipid peroxidation even in the presence of pro-oxidants better than synthetic antioxidant agent (butylated hydoxyanisole) used in this study.

VERTICAL ELECTRIC SOUNDING INVESTIGATION OF GROUND WATER POLLUTION AT ONIBU-EJA, EGBEDORE LGA, OSUN STATE, SOUTHWEST NIGERIA.

Shukwunweizu Muhammad Maike, Osun Field Coordinator, NESREA, Osogbo

Vertical Electrical Resistivity method was conducted to characterise the subsoil. Water samples were analysed for physico-chemical parameters in and around the abandoned dumpsite, in Onibu-Eja, Ido-Osun. The study area falls within Latitude 07°53'33.09"N and 07°53'34.14"N and Longitude 004°29'09.80"E and 004°29'48.83"E, along Osogbo-Iwo road, Southwestern Basement Complex of Nigeria. It covered an area of (360 m by 220 m) with height that varied between 0.5m to 3.0m. The investigations were done to ascertain the lithological identity, and establish the presence of leachate plumes in surface and groundwater. Schlumberger array of Vertical Electrical Sounding (VES) identified three curve types: H, HA and KH with percentage frequency of 55%, 12% and 33%, respectively. VES results produced three to five probable Geoelectric/Geologic layers, namely: the Overburden (i.e. topsoil) (20.32 to 921.13 ohm-m), lateritic soil (73.68 to 558.95 ohm-m), weathered basement rock (17.40 to 482.35 ohm-m), fractured basement rock (7.36 to 64.772 ohm-m) and fresh basement rock (358.95 to 33910.00 ohm-m). A total of thirty-three (33) VES points were sounded, which presented different resistivity values, basement relief features, 3-D Maps, and Geo-electric Sections.

Physico-Chemical analyses of six water samples proved leachate pollution: two from surface water within the dumpsite, three from hand-dug wells, and one from a borehole, which showed presence of pollutants, hence, high conductivity. The results were compared with WHO's and national Standards, respectively, and the potability was found to be in doubt. At the Eastern flank of VES points 26-28, Southwest-Northeast Direction of the study Area, at about 15m to the base of the fractured layer, with a resistivity of 482, a deep bore hole will give a potable water, that will require quality treatment. Some of the low resistivity layers within the weathered and fractured basement were aquiferous zones and suspected to be regions of leachate contaminant plumes. Except for the water sample collected from a borehole on site, samples from surface sources displayed some levels of contamination, due principally to leachate contamination, while the hand-dug wells reveal high level of chlorine.

To reduce the quantity of Wastes at dump sites, governments must enforce Wastes Segregation, Circular Economic Policies, and the conduct of EIA. These will reduce or eliminate negative impacts of dump sites on Environmental and Community Health.

WINNING ENTRY:
UNDERGRADUATE ESSAY COMPETITION

HARNESSING THE POTENTIALS OF HEALTH INFORMATION AND ENVIRONMENTAL BIG DATA FOR MANAGEMENT OF PUBLIC HEALTH IN NIGERIA.

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Information, which refers to a meaningful product which emerges from a processed data, has always played a key role in narrating events and happenings. Health, which is one of the physiological needs of every human according to Maslow's hierarchy of needs plays a pivotal role in our lives.

Health information is the accurate and clear history of a patient's life and illnesses written from the medical point of view. It is the source of the medical history of an individual which has been kept for future purposes. It gives some important features about an individual's health and state of being. According to Dr Haliru AlHassan, the then supervising minister for health in 2014, health information remains one of the six building blocks of any health system. The building blocks are health information resources, indicators, data sources, data management, products and information use.

Health information remains a major thrust of the health system in Nigeria and the availability of accurate, timely, reliable and relevant health information is the most fundamental step towards informed public health action.

The Nigerian health information system comprises of multiple and diverse segments which include the Ministry of Health, National Bureau of Statistics, National Population Commission, National Agency for Control of AIDS, and international development agencies. Health information helps to gather, compile, and analyze health data to help manage population health and reduce healthcare cost. It also helps in the aggregation of patient data, analysis of the data and identification of trends in the population.

Health information gives any organization many positive benefits such as the potential for increased efficiency .
This health information will help to give health practitioners a broader view on prevalent health issues towards working to stop the increase in these health issues among Nigerians. The Nigerian public health will surely get a massive improvement if the potentials of this health information is harnessed well.

Environmental big data on the other hand refers to a large amount of data sets on health and environment whose size is growing at a vast speed making it difficult to handle such large amount of data using traditional software tools available. It also refers to a combination of structured ,semi structured and unstructured data collected by organizations that can be mined for information and used

in machine learning projects, predictive modelling and other advanced analytics applications. This big data is used by medical researchers to identify signs and risk
factors. It is also used by doctors to help diagnose illnesses and medical conditions in patients.

Due to the large amount of data which can not be stored using traditional storage means, a data lake which is time consuming to build and very expensive, is always used to store environmental big data and this device might not be affordable for many hospitals in Nigeria.

A good example of an organization that uses big data is the World Research Institute which uses big data to put together the online tool aqueduct. The online tool aqueduct uses information about water quantity, quality and local regulations to create a global map of water risk and opportunity. This information is freely available to individuals, businesses and government agencies and is expected to help drive policy and investment. Also, network of sensors are being used to collect data on air pollution, providing the best possible information for climate researchers, businesses and governments who want to improve quality, these collected data are usually stored in a big data.

With big data and big data analytics, researchers can have the best possible picture of the issue they are facing, allowing them to see correlations they may have missed with smaller data sets or less advanced analytic techniques.Clinical decision support systems can use big data to help diagnose individual patients and treat them.

An health sector without a big data will surely struggle to meet up to standard as doctors might keep giving wrong diagnosis and medical researchers might keep identifying the wrong disease signs. **The Covid 19 pandemic was an exposure on how important the use of environmental big data needs to be enhanced the virus might not spread widely if a big data and an accurate health information were used to access the number of humans with weak immune system in each local government and state as the virus is known to attack its victims' immune system. Through the knowledge of the number of humans with weak immune systems, drastic preventive measures could have been taken, hence making it easier to curb the spread of the virus.**

Furthermore, the use of these environmental big data and accurate health information will show how badly the Nigerian public health sector is in need of medical infrastructures. Many laboratories and hospitals in Nigeria are known to give wrong diagnosis due to lack of testing materials and infrastructures. An health information will show the number of patients that are prone to new illnesses while an environmental big data will help to identify these illnesses and the needed infrastructures to curb the spread.

The importance of an environmental big data and an accurate health information must be strongly emphasized for any nation's health sector to succeed, the potentials of the big data and health information must be strongly harnessed .

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MANDATORY MASS VACCINATION HAS NO BASIS IN LAW, LOGIC, ETHICS, OR SCIENCE

1.0. Introductions

The Nigeria COVID Response Alliance is a coalition of over 70 CSOs and faith-based NGOs formed to monitor the official response to the COVID-19 pandemic in Nigeria; and ensure that the response remains within the ambit of fundamental human and religious rights. The Alliance arose spontaneously last year in the heat of efforts to introduce legislations which were clearly overreaching the purported purpose of addressing the COVID-19 pandemic in Nigeria. That led to our submitting a Memorandum to the June 10-11 2020 Public Hearing at the House of Representatives, as well as a Press Statement (May 15, 2020) on the subject. For the avoidance of any doubt, our Alliance is an entirely Nigerian initiative, and we are not under the patronage of any political, religious, or foreign entity. Similarly, our position is not to condemn or question any decision freely taken by private individuals, but rather to ensure that the fundamental right to do so is not lightly infringed upon by overzealous and ill-informed agents of government.

First, we would like to draw attention to the huge distinction between three often mixed-up concepts: Vaccination, Mass Vaccination, and Mandatory Mass Vaccination. We recognize and hold that vaccines, just like any other medical product, can be beneficial to some vulnerable group of individuals. [Even drugs that are recognized and duly labelled as pure poison - for example, in chemotherapy - could still be life-savers in certain conditions!]. We certainly do not have a beef with vaccines. Mass Vaccination, however, requires large population groups with different physiological constitutions and widely varying health status to receive the same medical product, generally under the same conditions. Not only will this considerably affect the efficacy of the product, the practice will be rife with serious safety issues, especially where there are no adequate medical infrastructure and system in place to respond to the inevitable emergencies. While our Alliance frowns severely at Mass Vaccination, it is the concept of Mandatory Mass Vaccination that we find absolutely intolerable. We consider it pure evil, to compel everybody to irreversibly receive a particular medical product at the penalty of literally being declared *persona non-grata* in their own native community! We believe that such a move should be resisted, using all available peaceful means.

2.0. Unprecedented Moves towards Mandatory Mass Vaccination in Nigeria

This Statement is released specifically in response to the pronouncements by the governments of Edo and Ondo States, that from mid-September, people might not be allowed to public places, including hospitals and banks as well as worship centres, without showing proof of vaccination. Similarly, the Federal Government, through the Secretary to the Government of the Federation (SGF) and Chairman of the Presidential Steering Committee on COVID-19, Boss Mustapha, has declared that "the Federal Government shall, very shortly," be requiring "every employee in its service" to be compulsorily jabbed with the COVID-19 experimental vaccines.

We consider these statements as exceedingly outrageous, insensitive, and excessive response to the COVID-19 situation. The statements have no basis in law, logic, ethics, or science; and we hereby call for their immediate retraction. This call is based on the following fundamental and incontrovertible premises:

1) ethics of mandating a no-liability experimental medical product,
2) issue of effectiveness and duration of efficacy,
3) the critical issue of safety, and
4) the nagging question of motives and ultimate long-term consequences, even beyond health.

2.1. Ethics of Mandating a No-liability Experimental Medical Product

The vaccines which are being mandated for all by Edo and Ondo State governments (Moderna, Astra Zeneca, and Janssen) are, up to the present moment, all known to be experimental in nature, having been authorized only for Emergency or Experimental use. Also well known is the fact that virtually every party involved in administering the shots (from the manufacturers to the donors and the medics, including State and Federal governments in Nigeria) are all indemnified from all liabilities in case of any adverse effects from the vaccine. It is therefore not only unconscionable to make the jab mandatory for free citizens, it is particularly obnoxious and vexatious to link it with their fundamental right to assemble and worship in the presence of the Almighty God.

2.2. Issue of Effectiveness and Duration of Efficacy

Contrary to the oft-parroted phrase that the "vaccines are safe and effective", publicly-available records clearly indicate otherwise. For instance, it is no secret that Gibraltar, with literally 100% vaccination status, has become the world's COVID-19 capital and is rated at the highest Level 4. A recent advisory from the US CDC warns US citizens to stay off Gibraltar, adding that "Because of the current situation in Gibraltar, even fully vaccinated travellers may be at risk for getting and spreading COVID-19 variants." The same situation of extremely high infection rates in highly vaccinated societies and communities is infamously repeated in Seychelles and Israel. In theory, these territories should have hit herd immunity with their impressive high vaccination statuses. Even amidst a tough political climate which compels him to extol the virtues of vaccines, Israeli's PM, Naftali Bennett, still had to concede that: "We don't know exactly to what extent the vaccine helps, but it is significantly less….. We all hope to see a slowdown, but the facts at the moment are that there isn't a slowdown — not here and not around the world."

Results from actual scientific studies have however been less equivocal than the words of a politician. A new CDC study shows very clearly that 74% of people infected with COVID, and 80% of those hospitalized in Massachusetts, in the United States were fully vaccinated. A similar report from Israel showed that 60% of hospitalized patients were fully vaccinated. However, an enraged Medical Director of the Herzog Hospital in Jerusalem insisted that the recent figures were even much worse. According to Dr Kobi Haviv, "95% of the severe patients are vaccinated" and "85 - 90% of the hospitalizations are in fully vaccinated people". While all these depressing figures convincingly corroborate predictions made by several experts on the possibility of the vaccine making vaccinated people more vulnerable to the disease (via mechanisms such as Pathogenic Priming and Antibody Dependent Enhancement), vaccine proponents have kept dreaming up new and frequently contradictory theories to explain the embarrassing situation.

In a similar vein, several well-respected experts, including Robert Malone (acclaimed inventor of the mRNA vaccine technology), Luc Montagnier (Nobel Prize winner for Medicine), and Geert V. Bossche (top executive in the vaccine industry) have passionately warned of the possibility of the virus progressively mutating to more deadly variants under "selection pressure" of mass vaccination in what is known as "immune escape." Even though this prediction is now plainly playing out before us with the emergence of new virus "variants of

concern", vaccine pushers have continued to operate in denial, desperately concocting some exotic alternative narratives to obfuscate the data!

In any case, such incontrovertible data, of the vaccines not having any discernible benefit to either individuals or the general public, have formed the basis for emerging exasperating guidelines requiring fully vaccinated people and communities to continue a religious observation of COVID protocols such as masking and social distancing.
Based on this very apparent lack of (sustained) effectiveness of the vaccines, several first-world nations are already talking of "booster" third and even fourth doses. The government of the United Kingdom however has admitted that there might be no end to the number of "booster" doses that will be required. That government has consequently announced a new policy requiring the country to "move away from legal restrictions and allow people to make their own informed decisions about how to manage the virus". Still in that country, the Director of the Oxford Vaccine Group frankly warned, at a Parliamentary Panel on August 10, that "herd immunity" for COVID-19 is a mirage that can never be attained!

With all these publicly-available uncontroverted data, it is a big wonder that Governors Obaseki and Akeredolu would think that it is this same clearly unprofitable path that their people must thread. Moreso, when it is well-acknowledged, (and officially backed up by statistics from the Nigeria Centre for Disease Control) that the COVID-19 threat is by far benign in Nigeria, relative to the above-cited countries. That minimal threat is even further considerably downgraded by the finding by an eminent team of Nigerian scientists, of the effectiveness of the cheaply available and extremely safe drug, Ivermectin, especially when administered early.

2.3. The Critical Issue of Safety
Beyond the issue of efficacy, however, the safety profile of the vaccines being mandated by the state governments of Edo and Ondo is even more frightening! With no publicly accessible database on adverse effects associated with the vaccine in Nigeria, it is very easy for government officials to continue mouthing their mantra of a "safe" vaccine. It is on record, shamefully, that at a time when the administration of Astra Zeneca jabs, for example, was being paused in many nations over safety concerns, officials here in Nigeria had insisted (and still insist) that there is nothing to worry about with the product. Indeed, there are indications (despite official secrecy on the matter) that the one million doses of Astra Zeneca vaccine rejected by South Africa were transferred mainly to Nigeria!

It is simply bewildering to note that up till the present time, no independent testing of safety has been conducted by the Nigerian authority on these vaccines that governments in Nigeria are insisting must be taken by everybody as a condition to be allowed to gather and worship the Almighty God and live normal lives in their own communities. The National Agency for Food and Drug Administration and Control (NAFDAC) freely admits that all it did was adopt a new protocol developed with funding from the Bill and Melinda Gates Foundation (a key advocate and promoter of the vaccines!) Termed "Reliance", the new *ad hoc* protocol excuses the NAFDAC from carrying out any independent tests on the vaccines, and encourages her to rather make pronouncements on safety, simply based on tests and pronouncements made by more "matured [sic] regulatory authorities" elsewhere! This, of course, is in contravention of the laws establishing the NAFDAC, yet nobody has challenged the situation, and officials continue to give clean safety bills to products they have not tested!

Meanwhile, records of adverse reactions to the vaccines are kept in other climes. And the official figures are truly frightening. In the US, records from the publicly-accessible Vaccine Adverse Events Reporting System (VAERS) show that between December 14 2020 and August 27 2021, there have been 13,911 deaths, and over half a million serious injuries and other adverse events associated with the use of COVID vaccines in the

United States. A whistleblower at the CDC further averred under oath that the System is under-reporting deaths occurring within 3 days of vaccination by a factor of at least 5! Similar frightening reports are available from the UK, Israel, Canada, Europe, etc. However, in Nigeria, the Med Safety App available for reportage of adverse effects associated with vaccination only compiles Adverse Drug Reaction data submitted to the WHO's Uppsala Monitoring Centre and lumps up data for 15 countries. As for adverse reactions occurring specifically in Nigeria, government officials continue to insist that, essentially, there are none!

It should be noted that the discussion so far has been limited only to acute effects. No one knows for sure at this early stage what the mid- and long-term effects will look like!

2.4. The biggest issue of all: What is all this really about?

This brings us to the real bewildering question in this utterly bizarre matter: Given that all the above facts are incontrovertible and well-known even to the proponents of the "vaccine"; why are they nevertheless pushing it so hard and playing blind?

It is at this juncture that the Church in particular (and all liberty-loving Nigerians in general) must discern the apocalyptic dimension of the issue at hand. In our Memorandum to the House of Representatives last year, we showed with full references cited from publicly-available scientific materials, how emerging nanotechnology could provide unrestricted access to the minds, emotions, and physiological processes of recipients of products such as have been packaged into these entirely novel "vaccines". We also observed in that memorandum that a "spirit… of mandatory vaccination" permeated the entire Bill under consideration. Even though many felt that the suggestion was far-fetched at that time, current developments have proved us right.

Fellow Nigerians, we might indeed be at the brink of a neo-enslavement of such intricacy and dimension hitherto inconceivable and for which, if carelessly allowed, posterity and our future generations will never forgive us! We would like all Nigerians to realize that there is a HUGE GAP between mandating external measures (such as donning of masks and social distancing) and an internal one mandating the irreversible injection of a medical product still undergoing trials, into people's bodies, *en masse*.

3.0. Conclusions

COVID-19 is real and it can be fatal. However, compared to the myriads of several of other health challenges confronting us in Nigeria (with many of them peculiar to us), the current response to COVID is absolutely excessive and mind-bogging. Not only are there credible therapeutic options, data from the Nigeria CDC itself document that 185,159 out of 196,487 people (as at 8th Sept, 2021) have recovered from the disease, without recourse to vaccination. These (and certainly hundreds of thousands more cases undocumented) have therefore acquired natural immunity. Impeccable results from several parts of the world are now confirming what has always been known in conventional epidemiology, that natural immunity can be a lot more robust and effective than any vaccine-induced immunity. In any case, it is well established that the vaccines now on the verge of being mandated in Nigeria do not provide sterilizing immunity, by which is meant that they neither prevent transmission nor infection of the virus responsible for COVID-19.

It is therefore of utmost importance that Nigerians across all ethnic, political, and religious divides arise to oppose this illegal, reckless, and extremely dangerous moves being test-run in Edo and Ondo States, with the Federal Government waiting in the wings. It is public knowledge that the Bill and Melinda Gates Foundation, with deep involvement in vaccine manufacturing and marketing, is a primary funder of our NAFDAC. It is therefore not surprising that the Piper should seek to dictate the tune with respect to Nigeria's response to COVID-19, even if such is not in the best interest of the nation. It is also abundantly evident that the current unprecedented push for mandatory vaccinations in Nigeria, through coercive executive orders, is merely an

effort to achieve what the globalists failed to achieve in their previous efforts through the legislature. We call on Nigerians from all sectors to stoutly resist these dastardly moves, even as we resisted and checkmated the previous one at the legislature.

God bless Nigeria.

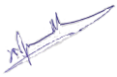
Rev Tony Akinyemi (Chairperson)



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Rev Linda Tokuta (2nd Vice Chairperson)



Mr Osazee Isonarae (General Secretary)



Dr Patrick Ijewere (Public Relations Officer)



Lagos, 9th September, 2021

Note: This is an updated version of the Press Statement released by our Alliance in Lagos on Monday 30th August, 2021. To access the hyperlinks providing full references to the cited statements and figures, together with the list of 77 participating members of the National Covid-19 Response Alliance, please download an e-copy of this Statement from our website: https://covidvaccineunmasked.com. The hyperlinks are underlined in this document.

REFERENCES

Memorandum
http://blog.lsfnigeria.org/wp-content/uploads/2020/06/SUBMISSION-TO-THE-JUNE-2020-PUBLIC-HEARING-AT-THE-HOUSE-OF-REPRESENTATIVES-.pdf

Press Statement
http://blog.lsfnigeria.org/wp-content/uploads/2020/06/Joint-Press-Statement-AFD-NMVNMay-15-2020FV.pdf

Edo
https://www.channelstv.com/2021/08/23/covid-19-edo-govt-imposes-restriction-on-mass-gathering/
Ondo
https://thenationonlineng.net/ondo-makes-covid-19-vaccination-compulsory/
has declared
https://guardian.ng/news/fg-moves-to-make-covid-19-vaccination-mandatory-for-civil-servants/
indemnified
https://covidvaccineunmasked.com/blog/nigeria-signed-idemnification-certificate-in-case-of-severe-side-effects-ehanire

advisory
https://wwwnc.cdc.gov/travel/notices/covid-4/coronavirus-gibraltar)
Seychelles
https://www.nytimes.com/2021/05/12/business/economy/covid-seychelles-sinopharm.html
concede
https://www.timesofisrael.com/bennett-protection-afforded-by-vaccines-weaker-than-wed-hoped-against-delta/

CDC study

https://www.cnbc.com/2021/07/30/cdc-study-shows-74percent-of-people-infected-in-massachusetts-covid-outbreak-were-fully-vaccinated.html
similar report
https://www.beckershospitalreview.com/public-health/nearly-60-of-hospitalized-covid-19-patients-in-israel-fully-vaccinated-study-finds.html
Dr Kobi Haviv,
https://www.visiontimes.com/2021/08/08/israel-hospital-vaccinated.html
found that
https://nationaldailyng.com/study-reveals-alarming-findings-of-covid-vaccine-rollout/
*[The authors have refuted this interpretation of their work [STILL A PRE-PRINT]; but confirmed that other studies found no differences in the nasal viral loads from vaccinated and unvaccinated subjects https://apnews.com/article/fact-checking-275980853664) updated 31/08/21

Pathogenic Priming and Antibody Dependent Enhancement
https://covidvaccineunmasked.com/blog/pathogenic-priming-vaccine-worsening-the-disease

Robert Malone
https://childrenshealthdefense.org/defender/robert-malone-fauci-unvaccinated-covid-variants/

Luc Montagnier
https://greatgameindia.com/covid-19-vaccines-creating-variants/
Geert V. Bossche
https://childrenshealthdefense.org/defender/interview-rob-verkerk-vanden-bossche-mass-covid-vaccinations/

immune escape
https://childrenshealthdefense.org/defender/rob-verkerk-vanden-bossches-warning/

"booster" third doses
www.reuters.com/world/europe/french-president-macron-third-covid-vaccine-doses-likely-elderly-vulnerable-2021-08-05/
fourth
https://www.wionews.com/world/new-normal-israels-health-expert-says-fourth-shot-of-covid-vaccine-needed-410904
announced
https://www.abc.net.au/news/2021-07-06/boris-johnson-masks-covid-19-restrictions-england/100269566

frankly warned
https://www.telegraph.co.uk/global-health/science-and-disease/herd-immunity-mythical-goal-will-never-reached-says-oxford-vaccine/

well-acknowledged
https://qz.com/africa/2049407/why-has-covid-19-had-less-of-an-impact-in-africa/

the finding
https://www.premiumtimesng.com/news/top-news/436322-nigerian-scientists-brief-osinbajo-on-potential-drug-for-coronavirus.html

indications
https://www.rfi.fr/en/africa/20210322-south-africa-gets-rid-of-1-million-surplus-astrazeneca-vaccines-but-why
new protocol
https://www.nafdac.gov.ng/wp-content/uploads/Files/Resources/Guidelines/DRUG_GUIDELINES/Guidance-document-on-Covid-19-vaccine-preparedness-finalized.pdf
freely admits
https://www-nafdac-gov-ng.cdn.ampproject.org/v/s/www.nafdac.gov.ng/safety-of-covid-vaccines-what-nafdac-wants-the-public-to-know/amp/?amp_js_v=a6&amp_gsa=1&usqp=mq331AQKKAFQArABIIACAw%3D%3D#aoh=16310481567276&referrer=https%3A%2F%2Fwww.google.com&amp_tf=From%20%251%24s&ampshare=https%3A%2F%2Fwww.nafdac.gov.ng%2Fsafety-of-covid-vaccines-what-nafdac-wants-the-public-to-know%2F

matured regulatory authorities

https://www.nafdac.gov.ng/safety-of-covid-vaccines-what-nafdac-wants-the-public-to-know/

show that
https://www.medalerts.org/vaersdb/findfield.php?TABLE=ON&GROUP1=AGE&EVENTS=ON&VAX=COVID19&DIED=Yes

averred under oath
https://img1.wsimg.com/blobby/go/3c6a0774-cfad-46fa-aa97-af5aa5e74f00/Jane%20Doe%20Declaration.pdf

UK
https://coronavirus-yellowcard.mhra.gov.uk/

Israel
https://govforms.gov.il/mw/forms/CovidVaccinationSideEffectsReport@health.gov.il?displang=en

Canada
https://www.phac-aspc.gc.ca/im/pdf/raefi-dmcisi-eng.pdf

Europe
https://vaccination-info.eu/en/vaccine-facts/monitoring-vaccine-safety-and-reporting-side-effects

Med Safety App
https://www.nafdac.gov.ng/opening-address-by-professor-mojisola-christianah-adeyeye-adeyeye-at-the-virtual-launch-of-the-med-safety-mobile-app-for-adverse-drug-reactions-reporting-in-nigeria/

none!
https://nairametrics.com/2021/03/16/covid-19-no-recorded-adverse-effect-to-astrazeneca-vaccine-in-nigeria-nphcda/

figure from Nigeria
https://nairametrics.com/2021/03/16/covid-19-no-recorded-adverse-effect-to-astrazeneca-vaccine-in-nigeria-nphcda/

Memorandum
http://blog.lsfnigeria.org/wp-content/uploads/2020/06/SUBMISSION-TO-THE-JUNE-2020-PUBLIC-HEARING-AT-THE-HOUSE-OF-REPRESENTATIVES-.pdf

packaged
https://www.frontiersin.org/articles/10.3389/fmed.2021.648005/full

now confirming
https://www.medrxiv.org/content/10.1101/2021.08.24.21262415v1

sterilizing immunity,
https://www.bbc.com/future/article/20210203-why-vaccinated-people-may-still-be-able-to-spread-covid-19

primary funder
https://www.devex.com/organizations/national-agency-for-food-and-drug-administration-and-control-nafdac-nigeria-146235


and for nation building.
SION STATEMENT


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