

# CHIKA EJIKEUGWU (Ph.D)

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## EDUCATION, QUALIFICATIONS & INSTITUTIONS ATTENDED

2023-2026 **Postdoc**, Helmholtz Zentrum für Umweltforschung (UFZ), Leipzig, Germany.  
2021 **Postdoc**, Federal Institute for Materials Research and Testing (BAM), Berlin, Germany.  
2018 **Postdoc**, Kyoto University, Kyoto, Japan.  
2013-2017 **Ph.D.**, Pharmaceutical Microbiology & Biotechnology, Nnamdi Azikiwe University, Awka, Nigeria.  
2010-2012 **M.Sc.**, Pharmaceutical Microbiology & Biotechnology, Nnamdi Azikiwe University, Awka, Nigeria.  
2005-2008 **B.Sc.**, Applied Microbiology, Ebonyi State University, Abakaliki, Nigeria.  
1998-2003 **O' Levels (WAEC & NECO)**, Army Day Secondary School (ADSS), Awkunanaw, Enugu State, Nigeria.  
1992-1997 **First School Leaving Certificate (FSLC)**, Idaw River Primary School, Awkunanaw, Enugu State, Nigeria.

## AWARDS, PRIZES, FELLOWSHIPS RECEIVED, & RESEARCH FUNDING HISTORY

2023 Alexander von Humboldt (AvH) Fellowship, Helmholtz Zentrum für Umweltforschung (UFZ), Leipzig, Germany.  
2023 Hamburg Institute for Advanced Study (HIAS) Fellowship.  
2023 Rising Star Postdoctoral Fellowship, Freie Universität (FU) Berlin, Germany [unutilized].  
2022 The World Academy of Sciences (TWAS) Young Affiliateship Award [2022-2027].  
2021 Young Investigator Award on Antimicrobial Resistance, Institute Mérieux, France.  
2021 DAAD Postdoctoral Fellowship Award, BAM Institute, Berlin, Germany.  
2021 AAS Affiliate Membership Award from the African Academy of Sciences (AAS).  
2021 Speakers Fund Scholarship from Institut de Recherche pour le Développement, France.  
2020 DAAD Postdoctoral Fellowship Award, Germany [Unutilized due to COVID-19].  
2020 National Researchers Prize in Microbiology, from Nigerian Young Academy (NYA).  
2020 Elected Member of Global Young Academy (GYA), Germany.  
2020 Elected Fellow of Africa Science Leadership Programme [ASLP], South Africa.  
2019 Travel Grant, Tertiary Education Trust Fund (TETFund), USA.  
2019 Travel Grant, Association of Commonwealth Universities (ACU), Scotland, UK.  
2019 Travel Grant, Bill & Melinda Gates Foundation, British Columbia, Canada.  
2018 Matsumae International Foundation (MIF) Postdoctoral Fellowship Award, Kyoto University, Kyoto, Japan.  
2018 TETFund Institutional Based Research (IBR) Grant for Early Careers, Nigeria.  
2010 Millennium Development Goals (MDGs) Award of Excellence, Kaduna State, Nigeria.

## EMPLOYMENT HISTORY I (TEACHING EXPERIENCE)

Current position I: **AvH Senior Postdoc Research Fellow**, Helmholtz Zentrum für Umweltforschung (UFZ), Leipzig, German  
Current position II: **Senior Lecturer & Researcher on AMR**, Enugu State University of Science & Technology, Nigeria.  
2019-2021: Adjunct Senior Lecturer, Coal City University (CCU), Enugu, Nigeria.  
2019-2021: **Lecturer I**, Ebonyi State University (EBSU), Abakaliki, Nigeria.  
2017-2018: **Lecturer II**, Ebonyi State University (EBSU), Abakaliki, Nigeria.  
2014-2016: **Assistant Lecturer**, Ebonyi State University (EBSU), Abakaliki, Nigeria.

## EMPLOYMENT HISTORY II (RESEARCH EXPERIENCE)

2023-2026 **AvH Senior Postdoc Research Fellow**, Helmholtz Zentrum für Umweltforschung (UFZ), Leipzig, Germany.  
2021 **DAAD Postdoctoral Research Fellow**, Federal Institute for Materials Research and Testing, Berlin, Germany.  
2018 **MIF Postdoctoral Research Fellow**, Kyoto University, Kyoto, Japan.  
2013-17 **Doctoral Candidate**, Faculty of Pharmaceutical Sciences, Nnamdi Azikiwe University, Awka, Nigeria.

## SELECTED RESEARCH OUTPUTS (TOTAL OF 132 PEER-REVIEWED JOURNAL PUBLICATIONS)

- Ejikeugwu C**, Obum-Nnadi C, Onu E, Adonu C, Ujam N, Iroha C, Nwakaeze E, Edeh C, Udu-Ibiam O, Afiukwa N, Ugwu M, Iroha I, Adikwu M (2022). Livestock and Poultry Environments as Non-Hospital Sources of Extended Spectrum Beta Lactamases (ESBLs) - and AmpC- Producers in Southeast Nigeria. *International Journal of Pharmaceutical and Phytopharmacological Research*, 12(5):1-7. <https://doi.org/10.51847/Wqp7ER4CHP>
- Ejikeugwu C**, Nworie O, Saki M, Al-Dahmashi HOM, Al-Khafaji NSK, Ezeador C, Nwakaeze E, Eze P, Oni E, Obi C, Iroha I, Esimone C, Adikwu MU (2021). Detection of metallo- $\beta$ -lactamase and AmpC genes in *Escherichia coli*, *Klebsiella* species, and *Pseudomonas aeruginosa* isolates from abattoir and poultry origin in Nigeria. *BMC Microbiology*, 21(124):1-9. <https://doi.org/10.1186/s12866-021-02179-1>
- Ejikeugwu C**, Hasson SO, Al-Mosawi RM, Alkhudhairy MK, Saki M, Ezeador C, Eze P, Ugwu M, Duru C, Ujam NT, Edeh C, Udu-Ibiam O, Iroha I, Adikwu M (2020). Occurrence of FOX-1 AmpC Gene among *Pseudomonas aeruginosa*

isolates in abattoir samples from south-eastern Nigeria. *Reviews in Medical Microbiology*, 31(2):99-103. <https://doi.org/10.1097/MRM.0000000000000201>

4. **Ejikeugwu C**, Saki M, Nwakaeze E, Eze P, Chinedu O, Carissa D, Edeh C, Esimone C, Iroha I, Adikwu M (2019). Characterization of *bla*<sub>IMP-1</sub> MBL genes among *Klebsiella* species from abattoir samples by multiplex PCR. *Gene Reports*, 16:100428. <https://doi.org/10.1016/j.genrep.2019.100428>
5. **Ejikeugwu C**, Esimone C, Iroha I, Adikwu M (2018). First Detection of FOX-1 AmpC  $\beta$ -lactamase gene expression among *Escherichia coli* isolated from abattoir samples in Abakaliki, Nigeria. *Oman Medical Journal*, 33(3):134-140. <https://doi.org/10.5001/omj.2018.44>
6. **Ejikeugwu C**, Eze Peter, Okonkwo Eucharia, Ezeador Chika, Kenneth Ovia, Iroha Ifeanyichukwu and Esimone Charles (2017). Plasmid Curing, Beta-Lactamase Production, Antibigram and Metallo- $\beta$ -lactamase (MBL) Detection in *Escherichia coli* and *Klebsiella* Species from Non-Hospital Sources of Abattoir and Poultry. *Global Veterinaria*, 19(3):555-561. <https://doi.org/10.5829/idosi.gv.2017.555.561>
7. **Ejikeugwu C**, Esimone Charles, Iroha Ifeanyichukwu, Ugwu Chigozie, Ezeador Chika, Duru Carissa, Adikwu Michael (2016). Phenotypic detection of AmpC beta-lactamase among anal *Pseudomonas aeruginosa* isolates in a Nigerian abattoir. *Archives of Clinical Microbiology*, 7(2):1-5. [www.acmicrob.com](http://www.acmicrob.com)
8. **Ejikeugwu C**, Umeokoli Blessing, Iroha Ifeanyichukwu, Ugwu Malachy, Esimone Charles (2015). Phytochemical and Antibacterial Screening of Crude Extracts from Leaves of Wonderful Kola. *American Journal of Life Sciences*, 3(2):5-8. <https://doi.org/10.11648/j.ajls.s.20150302.12>
9. **Ejikeugwu PC**, Ugwu C.M., Iroha I.R., Eze P, Gugu T.H and Esimone C.O (2014). Phenotypic Detection of Metallo- $\beta$ -Lactamase Enzyme in Enugu, Southeast Nigeria. *American Journal of Biological, Chemical & Pharmaceutical Science*, 2(2):1-6. <http://www.ajbcps.com/>
10. **Ejikeugwu C**, Iroha Ifeanyichukwu, Adikwu Michael and Esimone Charles (2013). Susceptibility and Detection of Extended Spectrum  $\beta$ -Lactamase Enzymes from Otitis Media Pathogens. *American Journal of Infectious Diseases*, 9(1):24-29. <https://doi.org/10.3844/ajidsp.2013.24.29>

#### ONLINE PRESENCE / CITATIONS

Online Citations	Name/Identifier	Stats/Indices	Web link
<b>Google Scholar</b>	Chika Ejikeugwu	Citations: <b>1281</b> h-index: 17 i10-index: 41	<a href="https://bit.ly/30kBHRp">https://bit.ly/30kBHRp</a>
<b>Research Gate</b>	Chika Ejikeugwu	Citations: 691 h-index: 14 Total Research Interest: 970.1	<a href="https://bit.ly/2MqsK5F">https://bit.ly/2MqsK5F</a>

#### SELECTED SCIENTIFIC INTERNATIONAL CONFERENCES ATTENDED

- 2022** The World Academy of Sciences (TWAS) 16<sup>th</sup> General Assembly/Conference hosted online by Zhejiang University, Hangzhou, China, in collaboration with the Chinese Academy of Sciences (CAS) and the China Association for Science and Technology on 21-24 November 2022 [Online].
- 2022** Global Young Academy / Young Academy of Japan / Science Advice Workshop at Kyushu University, Japan held online on June 13, 2022 [Online].
- 2022** Global Young Academy's Annual General Meeting (AGM) and International Conference of Young Scientists "Harmonising Reason with Sensibility". June 14 – 17, 2022. [Online]
- 2021** Conference on Health Advances, Innovation and Research (CHAIR). Theme: COVID-19 Pandemic: Consolidating the Gains and Addressing the Shortfalls. Organized by the Nigerian Institute of Medical Research (NIMR), Yaba, Lagos, Nigeria. 8-11<sup>th</sup> November.
- 2021** Global Young Academy's Annual General Meeting (AGM) and International Conference of Young Scientists "Trust in Young Scientists". June 1 – 4, 2021. [Online]
- 2019** 8th Congress of European Microbiologists (FEMS 2019), SEC Center Glasgow, Glasgow, Scotland, United Kingdom [Poster]
- 2019** X7 HIV Vaccines conference, Fairmont Chateau Whistler, Whistler, British Columbia, Canada. [Poster]
- 2019** 42<sup>nd</sup> Nigerian Society for Microbiology (NSM) Conference, Crawford University, Igbesa, Ogun State, Nigeria. [Poster]

## **SELECTED PAPERS PRESENTED AT SCIENTIFIC CONFERENCES IN NIGERIA AND ABROAD**

1. Seroprevalence and co-infection of Human papillomavirus (HPV) genotypes among HIV patients @: the Keystone Symposia eSymposia meeting HIV Vaccines | EK42 (June 1- June 4, 2021). [Online]
2. *Schistosoma haematobium* miracidia sampling in Nigeria for population genomics analysis. Presented @: the 42<sup>nd</sup> Nigerian Society for Microbiology (NSM) Conference, tenable at Crawford University, Igbesa, Ogun State, Nigeria (September 3 – September 6, 2019).
3. FOX-1 AmpC $\beta$ -Lactamase Gene Expression in *Escherichia coli* Isolates from Abattoir. Presented @: 8th Congress of European Microbiologists (FEMS 2019), tenable at SEC Center Glasgow, Glasgow, Scotland, United Kingdom (July 7 – July 11, 2019).
4. Frequency and antibiogram of uropathogens isolated from urine samples of HIV infected patients on antiretroviral therapy. Presented @: X7 HIV Vaccines conference, tenable at Fairmont Chateau Whistler, Whistler, British Columbia, Canada (March 24 - March 28, 2019).

## **SELECTED INVITED LECTURE**

- 2021** 3 Day Symposium and Training of Unemployed Youths in Ebonyi State University (EBSU), Abakaliki in Conjunction with the Biotechnology Research and Development Center (BRDC), EBSU, Abakaliki; National Biotechnology Development Agency (NABDA); and Federal Ministry of Science, Technology and Innovation (FMSTI) held in-person at BRDC, EBSU, Abakaliki, 22-24 December, 2021. [Speaker]
- 2021** Capacity Building Workshop/Training on CV Writing for the 2021 Postgraduate Students of Ebonyi State University, Abakaliki, Ebonyi State, Nigeria. [Speaker]
- 2021** How to become Successful in Academia in Nigeria/Africa. 10<sup>th</sup> Biannual Conference of the Society of Environmental Toxicology and Chemistry (SETAC) Africa Conference. SETAC Africa Student's Event held virtually on Monday, 20<sup>th</sup> September 2021. [Speaker]
- 2020** "Mental Health Perspective in Combating COVID-19 Pandemic". The Teenz Global Foundation in partnership with the YALI Network Ebonyi State, Nigeria. [Speaker]
- 2020** "The truth about COVID-19 pandemic and how to stay safe". Hosted by KACHEM YOUNG INITIATIVE. [Speaker]

## **PROFESSIONAL MEMBERSHIPS / SOCIETIES**

1. **Member**, American Society for Microbiology (**ASM**)
2. **Member**, Applied Microbiology International (**AMI**)
3. **Member**, Nigerian Society for Microbiology (**NSM**)
4. **Member**, European Society of Clinical microbiology and Infectious Diseases (**ESCMID**)
5. **Member**, Asian Council of Science Editors (**ACSE**) – 201
6. **Affiliate Member**, Microbiology Society, Scotland, UK
7. **Member**, Global Young Academy (**GYA**), Halle, Germany [2020 – 2025]
8. **Member**, Future Earth Australia, Australian Academy of Science
9. **Affiliate**, African Academy of Sciences (**AAS**), Kenya [2021 – 2025]
10. **Fellow**, Africa Science Leadership Programme (**ASLP**), Pretoria, South Africa [2020-2025]

## **RESEARCH COLLABORATIONS / INTERNATIONAL LINKAGES ACROSS THE GLOBE**

- Currently, I have active research collaborations / linkages from across the globe as a result of the awards/grants/fellowships that I have won in the course of my evolving career. These international collaborations / linkages are currently subsisting in research institutions & universities located in the following countries:
  - Japan
  - Germany
  - UK
  - USA
  - Austria
  - Canada

## **NUMBER OF UNDERGRADUATE STUDENTS SUCCESSFULLY SUPERVISED**

- Supervised over one hundred (100) undergraduate students, resulting in several publications in international peer-reviewed journals, and most of whom have gone ahead to pursue postgraduate training under my mentorship and guidance.

## **POSTGRADUATE STUDENTS SUCCESSFULLY SUPERVISED**

Currently co-supervising two (2) postgraduate students at the Master's Degree Level.

## **BOOKS AND CHAPTERS IN BOOKS (PEER REVIEWED)**

1. Tim Sandle and **Ejikeugwu Chika** (2022). Antimicrobials: past, present and future. ISBN-13: 979-8354810505. Pp. 1-608. Published by [Amazon Digital Services LLC - Kdp](#)
2. Damian C. Odimegwu, Kenneth Ngwoke, **Chika Ejikeugwu** and Charles O. Esimone (2015). Lichen Secondary Metabolites as Possible Antiviral Agents. In: Lichen Secondary Metabolites: Bioactive Properties and Pharmaceutical Potential. A Branislav Ranković (Ed). Springer International Publishing, Switzerland. DOI: 10.1007/978-3-319-13374-4\_7. PRINT ISBN: 978-3-319-13373-7, Online ISBN: 978-3-319-13374-4. Pp. 165-177. Available from: [http://link.springer.com/chapter/10.1007/978-3-319-13374-4\\_7](http://link.springer.com/chapter/10.1007/978-3-319-13374-4_7)
3. **Ejikeugwu E.P.C** (2019). Antibiotic Sensitivity Test. In: Microbiology Practical Handbook, Ebonyi State University Faculty of Science. Edited by Iroha I.R., Orji O.J., Onwa N.C., AgahV.M., O. Ogbu. Charlietex image africa (CiAfrica Press), Abakaliki, Nigeria. Pp. 138- 152.
4. **Chika Ejikeugwu (Ph.D)**. Street Smart Book Smart. Published on [Amazon.com](#)

## **VOLUNTEERISM / COMMUNITY DEVELOPMENT SERVICE (CDS)**

During my mandatory National Youth Service Corps (NYSC) programme in Kaduna State, Nigeria (**14 July, 2009 – 13 July, 2010**), I volunteered as a **Development Knowledge Facilitator (DKF)** under the Millennium Development Goals (MDGs) CDS Scheme of the NYSC. The opportunity allowed me to train over 2000 community people including students, parents, market women, artisans and young people in Jagindi-Tasha, Kafanchan, Jema'a Local Government Area of Kaduna State – where I did my primary assignment as a Corps Member (**Teacher**) in a Community Secondary School (**GOVERNMENT SECONDARY SCHOOL (G.S.S), JAGINDI – TASHA**). Furthermore, I went ahead to carryout and implement some **Personal Community Development Projects (PCDPs)** which had tremendous impact in the education, welfare, environment, health and social lives of the good people of Jagindi-Tasha community that hosted me during my one year mandatory NYSC in Kaduna State, Nigeria. These PCDPs earned me an Award as the **Best Corps Member in Northwest Geopolitical Zone of Nigeria** – in terms of the implementation and stepping down of the MDGs programme in the local community level. The projects that I implemented as a Corps Member during my NYSC in Kaduna State are:

1. Deworming of 630 indigent pupils in Kaduna State Primary Education Board (KSPEB) Model Primary School, Jagindi-Tasha, Kaduna State.
2. Deworming of 450 indigent pupils in St. Patricks Nursery and Primary School, Jagindi-Tasha, Kaduna State.
3. Screening and immunization/vaccination of 200 indigent students and staff of Government Secondary School (G.S.S), Jagindi-Tasha, Kaduna State, against hepatitis B infection.
4. Distribution of 800 writing aids/materials (400 exercise books, 300 biros, & 100 pencils) to indigent students of G.S.S. (Junior), Jagindi-Tasha, Kaduna State.
5. Upgrading of the school library in G.S.S. (Senior), Jagindi-Tasha, Kaduna State with 30 science textbooks (Biology-10, Chemistry-10, Physics-10).
6. Donation of 10 classroom desks to indigent pupils in primary one class of Kaduna State Primary Education Board (KSPEB) Model Primary School, Jagindi-Tasha, Kaduna State.
7. Donation of 10 treated mosquito nets to Bethesda Comprehensive Health Center, Jagindi-Tasha, Kaduna State.
8. Construction and building of two room's ablution block for indigent staff and students of G.S.S., Jagindi-Tasha, Kaduna State.
9. Donation of one unit fuel-powered electricity generating set to the Corps Members Lodge in Jagindi-Tasha Community, Kaduna State.

## **SELECTED TRAININGS, MEETINGS AND WORKSHOPS ATTENDED WITH DATES**

1. 22<sup>nd</sup> – 24<sup>th</sup> November, 2023: Network Conference of the Alexander von Humboldt Foundation held in Stuttgart, Germany.
2. 30<sup>th</sup> September - 3<sup>rd</sup> October, 2023: 20<sup>th</sup> Annual Meeting of Science and Technology in Society *forum* (STS) held in Kyoto, Japan.
3. 15<sup>th</sup> October, 2020: Antimicrobial Resistance (AMR) in the Light of COVID-19 Webinar Series held via Webcast: Webinar 2: Prevention is Stronger than a Cure.
4. 24<sup>th</sup> September, 2020: Webinar on Big Data and the Future of Research in Africa held via Zoom (online), and sponsored by the Nigerian Young Academy (NYA).
5. 16<sup>th</sup> September, 2020: Webinar on Vitae Connections 2020 | ACU Session | Developing the Next Generation of Researchers – International Perspectives held via Zoom (online), and sponsored by Association of Commonwealth Universities (ACU), UK.
6. 27<sup>th</sup> August, 2020: Webinar by Nigerian Young Academy (NYA) on 'Strategies for Impactful Research in a Resource-Constrained Environment in the Midst of COVID-19 Pandemic' held via Zoom (online).



7. 8<sup>th</sup> – 12<sup>th</sup> June, 2020: Global Young Academy (GYA) Annual General Meeting (AGM) held virtually via zoom (online).
8. 28<sup>th</sup> – 30<sup>th</sup> January, 2020: Workshop for Academic Staff on Researcher Development Framework (RDF), held at the Auditorium of Faculty of Science, & Sponsored by ACU-CIRCLE, Ebonyi State University, Abakaliki.
9. 15<sup>th</sup> February, 2018: One Day Sensitization Workshop on Academic Integrity and Research for Academic Staff Organized by ACU-Circle, held at Law Auditorium, Faculty of Law, Ebonyi State University, Abakaliki, Nigeria.
10. 26<sup>th</sup> May, 2017: One Day Sensitization Workshop on Vitae Researchers Development Framework (RDF) and Mentorship held at the Auditorium of Faculty of Health Sciences, Ebonyi State University, Abakaliki, Nigeria.
11. 2<sup>nd</sup> June, 2015: One Day TETFUND Proposal Development Training Workshop for Academic Staff Held at the Law Auditorium, Ebonyi State University, Abakaliki, Nigeria.
12. 15<sup>th</sup> December, 2015: A Two Day Training Workshop for University Academic Staff on the Nigerian Universities Electronic Teaching and Learning Platform Organized by Spectrum Engineering Limited in Collaboration with the Nigerian Universities Commission (NUC) and Tertiary Education Trust Fund (TETFUND) at Law Auditorium, Ebonyi State University, Abakaliki, Nigeria.

## **SELECTED PROFESSIONAL SERVICES / JOURNAL EDITORIAL & REVIEWER RESPONSIBILITIES**

1. Assistant Editor-in-Chief I, *EBSU Science Journal*, an institutional Journal of Faculty of Science, Ebonyi State University, Abakaliki, Nigeria [2019 - 2021]
2. Reviewer for *Gene Reports*
3. Reviewer for *Nigerian Journal of Microbiology* (Nigeria)
4. Reviewer for *Journal of Clinical Laboratory Analysis* (USA)
5. Reviewer for *Journal of Paediatrics and Child Health* (USA)

## **RESEARCH INTERESTS**

1. One Health.
2. Antimicrobial resistance (AMR) in animals, poultry, hospital milieus & the general environment.
3. Application of metagenomics and whole genome sequencing for AMR detection and surveillance.
4. Soil microbiome: effect of antibiotic mixtures on the functions of soil bacteria.
5. Role of biocide resistance and biofilm tolerance for the control of biological corrosion by sulfate reducing bacteria.

## **RESEARCHER PROFILE**

ORCID: <http://orcid.org/0000-0002-3506-2346>  
 Google Scholar ID: <https://bit.ly/30kBHRp>  
 Research Gate ID: <https://bit.ly/2MqsK5F>  
 Researcher ID: <https://bit.ly/3PL58Gz>  
 LinkedIn: <https://bit.ly/2YYMnpb>  
 Loop ID: <https://rb.gy/cc4tmm>  
 Web of Science ResearcherID: [AHI-0555-2022](https://orcid.org/0000-0002-3506-2346)  
 LiveDNA ID: <http://livedna.net/?dna=234.16704>  
 Amazon: <https://www.amazon.com/author/ejikeugwuchika>

## **HOBBIES / EXTRA-CURRICULAR ACTIVITIES**

- Drumming, Jogging, Walking, Travelling, Playing Football, Tisch Tennis, Blogging, Writing.

## **REFEREES**

1. **Professor Michael U. Adikwu, FAS**  
Former Vice Chancellor, University of Abuja, Nigeria [2014 – 2019],  
& Professor of Pharmaceutics, University of Nigeria Nsukka, Enugu, Enugu State, Nigeria
2. **Professor Charles O. Esimone, FAS**  
Vice Chancellor, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria [2020 – 2025]
3. **Professor Ifeanyichukwu R. Iroha**  
Professor of Pharmaceutical Microbiology, & Dean, School of Postgraduate Studies, [2021 till date]  
Ebonyi State University, Abakaliki, Ebonyi State, Nigeria
4. **Dr. Peter M. Eze**  
Senior Lecturer, Department of Environmental Health Science, Nnamdi Azikiwe University, Nnewi Campus, Anambra State, Nigeria.