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2022 Kuala Lumpur Malaysia



The Federation works to disseminate knowledge concerning environmental health and promote co-operation between countries where environmental health issues are trans-boundary. It promotes the interchange of people working in this sector and the exchange of Member's publications of a scientific and technical nature. Amongst other things, the Federation seeks to provide means of exchanging information and experience on environmental health, to hold Congresses and meetings to discuss subjects relevant to environmental science health and administration, to represent the interests of environmental health to state agencies, national governments, and international organizations and to promote field studies of environmental health control.

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Disclaimer

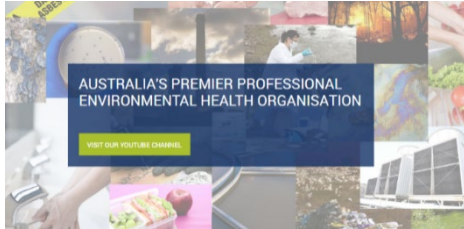
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Upcoming events

(if you want your event publicised please send the Editor a graphic and link)



26th April 2023, Australia



New York June 2023



31 June – 3 Aug 2023
New Orleans, LA

**2023 UN Climate Change
Conference
(UNFCCC COP 28)**

UAE December 2023

2024 IFEH WORLD CONGRESS, PERTH AUSTRALIA

The IFEH World Congress on Environmental Health is coming to Perth from 20th - 24th May 2024.

This is a fantastic opportunity for Australia to show case innovative solutions to a wide range of new, emerging and fundamental public and environment health challenges.

If you would like to be notified when further information becomes available for the 2024 World Congress in Perth, please click the link below and fill out the Expression of Interest Form.

[2024 IFEH World Congress - Environmental Health Australia \(Western Australia\) Inc \(ehawa.org.au\)](https://ehawa.org.au)

IFEH Immediate Past President



“Farwell but not forgotten – 2020-2022”

Professor Dr Susana Paixão

I send my best wishes and pray for a happy and peaceful new year, I offer friendship and to collaborate with each and every environmental health practitioner / academic / consultant wherever you are.

It has been my pleasure to be your president for the last two year. However, it has been an exhausting time with many challenges. Some colleagues within IFEH overly focus on process in place of progress.

As everyone who knows me knows, I am passionate about promoting and furthering environmental health around the world and wish one and all, the vision and strength to provide leadership for the better of both members and all we stand for. I dont think I can do better than the WHO definition of environmental health as, “clean air, stable climate, adequate water, sanitation and hygiene, safe use of chemicals, protection from radiation, healthy and safe workplaces, sound agricultural practices, health-supportive cities and built environments, and a preserved nature are all prerequisites for good health.” https://www.who.int/health-topics/environmental-health#tab=tab_1

This is my last act of my Presidency, to reflect on the goals I set myself, you judge if I achieved them:

- Work with all regional and national organisations to increase worldwide visibility of the Environmental Health professionals;
- Attract more members from existing Countries, new organisations and new regions;
- Proactively publicize our work and involve IFEH in more international working groups with key global partners in particular with official bodies.

I've defined this as essential for the global recognition of the Environmental Health workforce. (E&HI Volume 20 N.º1 2020)

Statement to the 75th WHO World Health Assembly (WHA75)

Through IFEH partnership with the World Federation of Public Health Associations (WHPHA) the IFEH by the IFEH president has contributed with important messages regarding EH in the statement brought forward by WHPHA supported by IFEH to the WHO World Health Assembly (WHA75) taking place in Geneva 22 - 28 May 2022 (https://extranet.who.int/nonstateactorsstatements/content/world-federation-public-health-associations-15?fbclid=IwAR3g-DH_eJaGAeUP7_Th_jw98vEdbJXh4VsyRICkqoyfDs1c3hYwNodVHSM)

On February 11, 2021, the World Federation of Public Health Associations hosted a historic meeting to initiate a coalition amongst leaders from international NGOs who share a common interest in equitable access for vaccines and treatment during COVID-19.

All these organizations, including the IFEH, call on the World Health Assembly, the G20, every government, and all organizations that engage in public health, social policy, and advocacy to make the ethical choice now for the health and the economic well-being of all populations globally, especially the most vulnerable — leaving no one behind.

IFEH has been allowed to register as a UNFCCC observer organization and was able to participate in COP 26 with the President and the secretary of the Federation in attendance. It's important to highlight the importance of this COP as it was the first where WHO had its own stand.

IFEH was also engaged at the WHO Civil Society Working Group on Climate Change and Health with

participation in the sub groups on research and the advocacy.

Even with the COVID 19 restrictions, Tartu Health Care School, showed real commitment and fortitude to organize and host the 4th World Academic Conference on Environmental Health IFEH "THE REAL SITUATION IN ENVIRONMENTAL HEALTH - CHALLENGES AND SOLUTIONS". This was held, with huge successes from 4 till 8 May 2021. It's important to highlight that all the conference was recorded and is available online. On a personal note, I believe these academic conferences should continue.

World Environmental Health 2021, with the theme "Prioritizing Environmental Health for healthier communities in global recovery", shared knowledge and information with our members. We had a Preparatory/Information webinar, on 24 July. We invited our colleague Chris Day to present his book "COVID 19: The global Environmental Health Experience (ISBN 9780367743161 Published June 14, 2021, by Routledge 146 Pages) and had regional representatives and a great brainstorming session.

During the presidency, on your behalf I took part in virtual conferences in Mozambique, Thailand, Malaysia, Spain, Iran, Portugal, Namibia, Ethiopia, Costa Rica, Brazil and Argentina, among others. It's important to highlight the events in different countries from Latin America, where the Federation is not yet represented. With the support of the Iberoamerican congress on Environmental Health, organized by the Iberoamerican Society of Environmental Health. I presented and was accompanied (virtually) by the America Regional representative (who also presented).

As president I was also represented IFEH, in person, at the 2nd International Students' GREEN Conference 2022, Osijek, Croatia, 2nd June 2022. Note that previous year (2021), the organization of this conference, our academic member Josip Juraj Strossmayer University of Osijek, Faculty of Food Technology Osijek, Croatia, reward IFEH with an award in recognition of the work developed in favor of global Environmental Health, at the celebrations of its 50th anniversary.

As president I was also be able to be present at the 16th IFEH World Congress on Environmental Health, held in Kuala Lumpur – Malaysia.

I send my personal greetings to each of you and your family in the hope that we will be able to reconnect, face to face in Perth at the next world congress watchout for abstract calls.

Susana Paixão

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Photo of Incoming President Dr Bruno *Bruno Cvetkovic*, World Congress organising Chair TEE Eng Ong and Susana, Outgoing President.

IFEH President's Address - Dr Henroy Scarlett



Let us be recognized by the quality of our work and professionalism

Let me start by extending best wishes and good health for 2023 and beyond to all members of the IFEH family and especially to the Board of Directors for guiding the organization during a challenging period. I want to raise the issue of the apparent lack of recognition of the work and worth of environmental health practitioners who go by various names in different jurisdictions. No doubt, there are many reasons for this, which can be summarized as internal and external.

This lack of recognition of EHPs was aptly demonstrated in the WHO et al (2022) publication entitled "National workforce capacity to implement the essential public health functions including a focus on emergency preparedness and response. Action plan (2022–2024) for aligning WHO and partner contributions", in which EHPs were placed in the category labelled as Group 3 (**Personnel from other allied occupations**) and which included road safety personnel, food supply chain personnel and agricultural personnel. Group 2 (**Health and care workers who perform one or more public health functions**) included community health workers, traditional and complementary medicine personnel, and ambulance drivers.

This categorization of the global health workforce gives the erroneous impression that EHPs do not perform essential public health functions (EPHFs). EHPs perform more EPHFs than any of the health care personnel listed by the WHO and EHPs are probably the only health personnel who enforce public health legislation (one of the EPHFs). The WHO should be required to justify its categorization of the global health workforce because at a glance EHPs seem to have been dealt a hard and inexplicable blow.

As indicated before, there are many issues that may contribute to the global lack of recognition of the work of EHPs and I do not intend to explore these issues here, as important as they are. What I want to do instead to point to areas of work where EHPs may want to place more emphasis to enhance their visibility, recognition, and value. All the following things are being done to a greater or lesser extent and a gentle reminder to intensify efforts could prove invaluable.

The areas of work I allude to are:

- The need to improve our academic qualifications in some countries with the goal of having all EHPs being required to obtain as their entry qualification, a BSc in Environmental Health, or its equivalent.
- The consistent performance of excellent work and be always professional about it.
- Intensified advocacy for better working conditions and remuneration for EHPs.
- The sharing of environmental health best practices with colleagues locally and internationally.
- More EHPs should become members of professional EH organizations and work to strengthen these organizations.
- More EHPs should strive for management/leadership positions in their work and other community/civic organizations.
- EHPs should build greater alliances with the mass and social media and communities to publicize their work and improve the image and standing of their profession.

- Continuing professional education including undergraduate and graduate courses in specialized areas of environmental health must be a prerequisite for upward mobility in the profession.
- Professional registration of EHPs in all countries must be pursued as a priority.
- EHPs should work with local politicians in a non-partisan manner and community leaders to improve environmental health at the community level. Community participation is a prerequisite for successful performance of EHPs.
- EHPs must develop more expertise in conducting research and publishing papers on areas of environmental health, to provide the profession and policy makers/politicians with data to form the basis for planning programmes and projects and influencing environmental legislation/policy.
- EHPs should develop more expertise in health promotion, programme planning & evaluation, policy development and implementation, negotiation, communication, information technology and social media to enhance the effectiveness of coordination and service delivery.
- More effort should be made by workplaces/organisations and professional EHPs' organizations to recognise and reward excellent work through awarding of certificates of appreciation, plaques, employee of the month/year, scholarships/bursaries to pursue short courses and higher education and other incentives to promote and enhance workplace morale, healthy competition, and self-actualization.
- For its part, the IFEH needs to work assiduously to strengthen its regional bodies making them more organized, visible, and effective in recruiting more members from Central and South America, the Caribbean, Asia, and parts of Africa. More of the global environmental workforce need to be affiliated with the IFEH, making it a more robust global organization.
- Lastly, the IFEH need to forge more partnerships with local and regional organizations, NGOs, and with international organizations such as the WHO, ILO, UNICEF, UN, UNESCO, and others.

The list above is not all-inclusive, and members should feel free to add to it and more importantly to initiate discussions on these areas in their work settings and provide feedback on any measure(s) implemented to enhance the recognition and image of EHPs and their profession. The IFEH stands ready to play a central coordinating role in these endeavours.

IFEH Incoming Honorary Secretary - DAVID NEMAKONDE



David NemaKonde is a qualified Environmental Health Practitioner who completed his National Diploma in 1994 at the then Technikon Northern Transvaal which now known as Tshwane University for Science and Technology. He then further his studies by acquiring Bachelor in Technology: Environmental Health in 2000 and thereafter completed his Master's degree in Environmental Health in 2019, both from Tshwane University of Technology.

As part of personal professional development he undergone many short courses like Safety, Health and Environmental Management Training Course in 2011 offered by NOSA; Environmental Risk Assessment and Management in 2009 with University of North-West; Occupational Health and Safety Law for Managers in 2007 with University of North-West; Integrated SHEQ Internal Auditors Course in 2007 with Advantage A.C.T. Pretoria; EPWP and Labour Intensive Construction Technology for Technical Managers in 2007 by Limpopo Public Works Department; Contract Management by University of Pretoria in 2006 and Healthcare Waste Management Training conducted by Health Advance Institute in 2015.

In 2008, he was offered an opportunity by then Deputy President of South Africa, to go for training on Environmental Pollution Control Technology at Hebei University for Science and Technology in People's Republic of China, for two months, covering areas such climate change; remote sensing; global warming; land, water, and air pollution.

Being a practicing Environmental Health Practitioner on the ground for full 27 years, he has fully experienced the challenges within the community and understand the plight in which Environmental Health Practitioners are facing daily. Despite all the challenges, he has developed a character of assisting the under privileged communities by running Environmental Health Projects aimed at improving the lives of the communities and conducting informal research. In the process he has already run several community projects and in some cases contributing financially towards the success of the projects, as he is aware that Environmental Health problems do not affect just one person or group but are problem for the whole community.

Amongst the many projects he initiated in rural communities, some of them include:

- a. Construction of food preparation and storage facilities at a local school
- b. Filtration Membrane Technology for Low-Cost Production of Safe Water
- c. Waste management project team within the rural community
- d. Sustainable Development Goals' smart village concept pilot project

His dedication to the profession was noted by then National Minister of Health and appointed him as a member of Professional Board of Environmental Health within the Health Professional Council of South Africa (HPCSA), from 01 April 2010 to July 2020. This is a regulatory body that deals with matters pertaining to Environmental Health Practitioners in South Africa.

IFEH ENGAGEMENT

He joined the South African Institute of Environmental Health (SAIEH) in 1996 at an early age of his career. He served under many leaders and in 2010, he revived the provincial branch which was dysfunctional and get elected as the provincial chairperson up to 2014 and thereafter elected as the provincial secretary up to date. The branch has a membership of 178 and it is one of the most effective provincial branches of SAIEH.

In 2018, he was elected as the National General Secretary and ever since, he was responsible in

writing all the correspondences to the members and to the IFEH. This has given him an opportunity to serve as an IFEH councillor. He developed a programme of reviving other provincial branches that are not effective so that all Environmental Health Practitioners can form part of the IFEH program through SAIEH. In the same year, 2018, he attended the World Congress on Environmental Health in New Zealand at his own cost due to the love of the profession.

In December 2020, he was elected as the Secretary for the IFEH-Africa Region. Ever since he took the position, IFEH-Africa Region has regular meetings and new member countries are coming in. The position has given him an opportunity to interact with IFEH-Africa Regional members, being responsible in ensuring that all the correspondences from IFEH reaches all members' countries in Africa.

He also contributed to the development of IFEH magazine by writing articles and submitted two articles which are found on pages 74 and 78 of the April 2022 Magazine.

IFEH Honorary Editor + Honorary Treasurer + Chair IEHFF



Dr Andrew Mathieson

International Environmental Health Faculty Forum
(IEHFF)



As editor this congress edition has been a challenge but some 3 months late here it is. I would like to express my personal thanks to Rachel, Mr Tee, the WCEH organising committee and MAEH for putting together a very successful conference. From my perspective (having attended 5 from memory) it was one of the most welcoming and engaging conferences with a great range of high-quality papers, demonstrating the significant contribution environmental health as a profession has in Malaysia. The professional practitioners I met were honest, modest, technically proficient and keen to share ideas. We all could learn something from our colleagues in Malaysia.

I plan another magazine in the next few months so please have a think and put together best practice stories, how EH contributes to disaster remediation and resilience, impact of climate change, food security, water security etc.

As chair of the IEHFF I worked with Rachael and Mr Tee and the board of IEHFF to arrange what we believe was our first in person and online forum. We had a number of presentations from academics around the world both in person and online. The IT worked and the presenters were able to be seen and be heard both in the room and online. The IEHFF is always looking for supporters so if you are an academic or interested in academia, please contact me or anyone on the board (listed above). We hope to run a virtual academics conference toward the end of 2023 ... watch this space.

I was also elected Hon Treasurer and while I am still getting me feet under the table, I shall work with the BoD to make what little income we have reach as many as possible. As I now sit on the BoD as Hon Treasurer, I have asked the board members of IEHFF to select another chair to sit on IFEH main board. When this is decided we will of course let you know via the minutes of IFEH BoD. One of my first actions was to get the agreement of IFEH BoD to set up a Finance and Governance subcommittee to advise the IFEH BoD on good financial management and to help draft guidance on spending policy, again to ensure our limited funding is more accountable, transparent and can reach as many as possible. I am pleased to say the President Elect has agreed to chair the Finance and Governance subcommittee and he will be joined by myself, David (Hon Sec) and Jesse (Chair N Americas).

As Jesse pointed out (and I am sure other colleagues from the board will point out), we all do this as volunteers and for the betterment of environmental health. Take our past president as an example and you really should! Susanna is not just a nice person she is an amazing academic and indeed ambassador for all environmental health. She gives her time freely often travelling at her own expense and always thinking of promoting IFEH and the wider environmental health professionals. I know her career has far to go, and we should do all we can to support her. I also want to mention I work as an academic at Australian National University teaching and supervising on the health science degree. I do this part time and run two companies. The first is affiliated with Highfield (see the advert at the end) and my desire is to work with EHOs around the world to develop local platforms for the delivery of Highfield courses. So, if you are that entrepreneur drop me a line and let's see if we can make it happen! Me second company produces Glow2Show a new way to train people in Hand and surface Hygiene. Pop onto my website if you want more information (www.firstfortraining.com.au). We can ship all over the world ... modest shipping applies. Let's have a great 2023!!

PS Any errors are mine alone ... let me know and I will correct them.

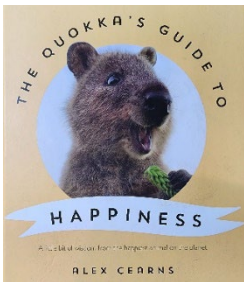


Welcome to Vic Andrich,
Chair of the Asia and Pacific Regional Group.
victor.andrich@health.wa.gov.au

Vic is the current President of Environmental Health Australia (Western Australia) Inc. [EHA (WA)] and has been for 10 years. He has been and is an active member of EHA over a number of years holding positions as Director on both the National and WA Boards.

Employed at the WA Department of Health within the Environmental Health Directorate. Vic is also Secretary of the WA EHO Professional Review Board which accredits qualifications to practice as an EHO in Western Australia. Vic has been an EHO for many years and has worked in a range of local governments (both metropolitan and country, large and small), in Department of Environment (Waste Management) and in the private sector.

As Chair of the Asia and Pacific Group, Vic hopes to foster greater communication and cooperation between regional partners to further environmental health. Vic keen to hear from environmental health professionals throughout the region to discuss initiative and other cooperative projects that would help build capacity in member countries.



Vic also did a presentation at the IFEH World Congress 2022 and introduced us to The Quokka. Take a moment and look up what a Quokka (<https://www.pinterest.com.au/pin/767934173943440456/>) is and enjoy some of the photos of this amazing animal.

See call for expressions of interest for the next IFEH World Congress to be held in Perth, Western Australia in 2024. Check the IFEH and EH website for more information.

Review of World Congress 2022 by Jesse Bliss, *NEHA(USA)* chair.americas@ifeh.org



Colleagues,

Throughout my nearly two-decade academic and public health/environmental health practice career, I have overseen or been part of over a dozen regional, national, and international conferences and conference planning committees. As a result, I am well aware of the incredible work of planning and running these events, from pre-planning and logistics to developing and scheduling the scientific and educational programming, creating, hosting, and successfully managing a truly global event is a monumental feat.

This past August, as the Director and Chair of the International Federation of Environmental Health (IFEH) Americas Region, I was privileged to attend the 16th IFEH World Congress 2022 (WCEH 2022) in Kuala Lumpur, Malaysia. From the moment we landed through the day we departed, my new colleague (whom I now call friend), Mr. Tee Eng Ong, WCEH 2022 Organising Chairman, and his colleagues showed genuine hospitality to my fellow IFEH Regional Directors, Board members, and I. This incredibly kind and devoted group of professionals worked tirelessly to provide for our professional organizational needs and to ensure our personal comfort while simultaneously and successfully running one of the most amazing conferences I have had the pleasure of attending.

Hosting this event amidst the COVID-19 pandemic was an incredible challenge, yet the organizing and scientific committee leads and members, along with an incredibly dedicated small team of support staff, successfully brought together environmental public health organizations, leaders, scientists, and practitioners from around the globe. Indeed the Congress was both professionally rewarding and a profound honor for me to learn first-hand about many of the challenges, response interventions, and innovative solutions designed, implemented, and evaluated by environmental public health professionals from every continent. And so it is with great pleasure and admiration that I commend each and every one of the organizers, presenters, delegates, and attendees that made the event possible. Well done!

If you could not attend this year's Congress, I invite you to learn more about this event in this edition of the IFEH Magazine, where you will find some of the abstracts and extracts from the presentations so you can catch a glimpse of what you missed. I hope it inspires you to begin planning and saving for the 17th IFEH World Congress in Perth, Australia, in 2024.

I would also like to invite you (YES, YOU!) to consider writing to the Honorary Editor and submitting articles or research for publication in upcoming editions of this Magazine. The Magazine is intended to be informative and accessible to the global environmental public health workforce, and we would love to hear from you about your experience and from your perspective. For those who may think that you don't have enough time to write for the Magazine, please note that since I just did so, I am confident you can too! Why am I so sure of this? Because currently, in addition to serving as IFEH Regional Director and Chair of the Americas, I work full-time as the Director of Programs for the National Environmental Health Association (NEHA) in Washington D.C., where I lead a team of environmental health professionals to deliver training and to provide resources and technical guidance in support of the nation's 3,500+ local, tribal, and territorial environmental public health agencies. At the same time, I am a full-time P.h.D. candidate at the University of Utah, School of Medicine, Division of Public Health, for which I am currently working on analyzing data and writing my doctoral dissertation. I defended my doctoral dissertation on November 14th. All the while remaining committed to maintaining quality time for my wife and two young boys. For those that have been down this road before me, you know that I am living and breathing data and falling asleep each night writing and need all the positive thoughts, prayers, and energy that any readers may collectively send my way! (friends, please understand if I've not responded to any recent correspondence and know I will be happy to reconnect once I have, by the grace of God, successfully defended 😊).



TITLE: Examination of the Incidence of COVID-19 Among White-tailed Deer and Potential for Interspecies (Zoonotic) Transmission in Georgia

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BACKGROUND ON AUTHOR: Dr. Kehinde Kupolati holds a Medical Doctors degree (MD) from the American International School of Medicine. He has recently completed a master's degree in public health with a Concentration in Environmental Health (MPH). He has served as a Medical Safety Officer in Nigeria and is currently enlisted in the United States Navy at the rank of Petty Officer 3rd Class.

ACKNOWLEDGEMENT: Appreciation to Tifton Diagnostic Laboratories, University of Georgia, and Dr. Hermant Nakare for assuming the total costs associated with the testing of all COVID-19 samples collected during this project. Further appreciation to the Fort Valley State University, Stallworth Agricultural Research Station for the receipt of a NIFA Evans-Allen Grant in financial support of the students Thesis research project.

ABSTRACT:

Zoonotic diseases occurring in wildlife are concerning due to potential for transmission to humans with the added negative impact of a lack of research and development into methods of treatment and prevention. A research study was conducted in the State of Georgia (USA) to investigate the potential of White-tailed Deer (*Odocoileus virginianus*) to harbor COVID-19 and potentially spread to domestic livestock during grazing and humans (i.e., hunters, taxidermists, and wild-game processors) that routinely encounter the animals during the federally recognized hunting season. The objective of this study was to test White-tailed Deer for COVID-19 during 2022-23 hunting season to determine if there are COVID infected deer within the states borders.

The documentation of COVID-19 in White-tailed Deer while important encourages the question of the route of transmission of the disease between the wildlife species and humans as well as domestic ruminants. Are White-tailed Deer a natural reservoir for the disease, capable of passing it to other animals and/or humans OR are the White-tailed Deer being infected by other mammalian species as an “end-host” species. Determining if White-tailed Deer are infected with COVID-19 within the State of Georgia is the first step in answering these questions.

KEYWORDS: White-tailed Deer, COVID-19, wildlife, hunters, taxidermists, wild-game processors

INTRODUCTION:

Environmental public health has long been associated with studying human influences on the environment around them; both urban and rural. In the wake of diseases such as COVID-19, there is now a need for the public health community to turn its attention to the possible negative influences that may be perpetuated on environments and the non-domestic animals that inhabit these areas.

Currently, the emergence of COVID-19, also known as a Coronavirus (2019-nCoV), has initiated a Pandemic in the United States since January of 2020. This evolving pandemic of Coronavirus disease 2019 (COVID-19) is caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). It was first identified in December 2019 in Wuhan, China (CDC; 2019). The virus has been associated with transmission from bats to humans either directly or through intermediate hosts.

White-tailed Deer (*Odocoileus virginianus*) have been documented in several states as being infected with COVID-19. There has been a lack of testing for SARS-CoV-2 by the state of Georgia on deer or other wildlife species until roughly Fall of 2021. Currently there is a need for more aggressive testing of White-tailed Deer in the state of Georgia to ascertain the extend of the prevalence of COVID-19 within the species.

The need for testing has been partially addressed as part of a research project seeking to identify zoonotic diseases seen in Georgia wildlife species that may endanger hunters, taxidermists, and wild-game processors. Testing of White-tailed Deer in Georgia for COVID-19 was carried out through the collaborative effort of researchers and graduate students at Fort Valley State University, Department of Veterinary Science and Public Health, Tifton Diagnostic Laboratory, University of Georgia, and Georgia Department of Natural Resources technicians.

White-tailed Deer in Georgia:

The Georgia Department of Natural Resources is responsible for managing quota hunts throughout the state of Georgia during the scheduled hunting seasons each year in what is commonly referred to as “deer season”. The season generally runs from October until early January each year. Quota hunts are scheduled on land which normally is regarded as a “no-hunting” zone such as state or national parks, wildlife management areas or other forested recreational areas. These hunts are conducted in an effort to control the overall number of White-tailed Deer within the state. As of 2017, there were a reported 1.27 million deer living within the borders of the state of Georgia. The number has decreased slightly but is still above 1 million (DNR, 2017; Bowers, 2022).

Testing of White-tailed Deer During State-Sanctioned Hunting Season:

Testing of White-tailed Deer carcasses presented at Department of Natural Resources (DNR) quota hunts during the 2022-23 hunting season was carried out via collection of nasal and rectal swab samples from both nares (i.e., nostrils) and the rectal opening. Hale, et. al (2022) documented the appropriateness of using exudate obtained via nasal swabs to test for COVID-19 via Polymerase Chain Reaction (PCR) testing. His research demonstrated positive results in deer in Ohio in four different locations. Likewise, Barau, et. al (2022) demonstrates the use of fecal swabs to test for gastrointestinal viruses in humans and Wang et al (2021) demonstrated the use of rectal swabbing as a means of identifying presence of COVID-19 in human patients.

The collection of fecal and nasal samples is an approach that is convenient, as it ensures that each sample has an equal chance of representation. In doing so, it reduces the chance of bias. Furthermore, all other suspected zoonotic health issues encountered that lie beyond the scope of the study will be noted and testing recommended as a possible case for further investigation.

DISCUSSION:

Transmission of SARS-CoV-2 via Nasal Secretions and Feces of White-tailed Deer to Cattle in Rural Georgia Through Shared Environments

Different host species, such as White-tailed Deer (WTD) and beef cattle, often share the same habitats and resources, including grazing pasture and water sources. The sharing of such environments can influence the transmission of the virus due to increased contact rates and pasture contamination. The infective stages of the Coronavirus disease are reliant upon both environmental and climatic conditions for persistence, propagation, and transmission into suitable hosts (Chintoan-Uta, et al., 2014). The virus as an airborne disease may be dispersed to the pasture environment via expelled nasal secretion, contaminated fecal matter and direct contact with other species while grazing. It may also potentially be spread through airborne means during processing of deer carcasses by hunters, wild-game processors or taxidermists.

How SARS-CoV-2 in White-tailed Deer May be Transmitted to Beef Cattle or Humans through Shared Environs

In Georgia, Coronavirus disease is a concern as a potential zoonotic disease to be carried by White-tailed Deer which could create a common source of infection for beef cattle and subsequently humans encountering these species of animals. Determining the rate at which cross-species transmission events occur on epidemiological timescales is of central importance in understanding disease emergence. Managing the damage to the species that such pathogens may cause to White-tailed Deer, and the potential spread of diseases, can be divided into short-term redistribution approaches

and long-term population and habitat management approaches. Short-term approaches focus on redistribution and dispersal of White-tailed Deer to limit their ability to cause continual damage or disease transmission. Short-term redistribution approaches may include prohibiting feeding, the use of pyrotechnics, propane cannons, effigies, adverse noise, erecting access barriers such as fencing, and use of taste aversion chemicals to encourage avoidance of an area by the animal. Population reduction by limiting survival or reproduction, through removal of White-tailed Deer or through hunting is also a mode of control. Habitat modification would be considered a long-term solution to managing damage caused by wildlife through decreasing or shifting populations to areas where they cannot do as much damage (Miller, et al., 2013).

Georgia as a Habitat for White-tailed Deer and COVID-19

In Georgia, White-tailed Deer are increasing in abundance and range. The annual increase in the White-tailed Deer population is 0.3%, with the surge in population attributed to habitat re-establishment, increased protection, absence of natural predators, and land-use changes (DNR, 2017). Consequently, the White-tailed Deer population is a key reservoir for various infections/infestations of cattle in shared grazing environments and possible human infection. It is not known currently whether COVID-19 can survive and spread via long chains of infection among deer, or whether deer-to-human transmission could spark outbreaks. However, researchers have grown increasingly concerned about wild animals, including deer serving as a viral reservoir, as a recalcitrant source of outbreaks, and potentially breeding new variants (Mallapaty, 2022).

Within the Southeastern United States, and within the state of Georgia precisely, where livestock seamlessly interact with White-tailed Deer (*Odocoileus virginianus*), a prototypical example may be found. According to the Department of Natural Resources (DNR, 2017), the estimated rural population of deer in the State of Georgia is approximately 1.27 million, and geographically is widespread across the state, including within urban and suburban areas. White-tailed Deer shares many resources with humans and farm animals, including grazing fields and water resources. This scenario could be a source for various diseases to be transmitted and lead to interspecies infections. For example, White-tailed Deer possess the angiotensin-converting enzyme 2 (ACE2) and the SARS-CoV-2 receptor, a striking similarity to that of humans, making them highly susceptible to the virus (Palmer, M. 2021).

Infection of White-tailed Deer may have occurred via several mediums, either through fecal material or nasal secretions containing viral properties dispersed during grazing or hydration. Viral RNA has been detected in fecal and nasal secretions of some animals. It has also been noted that infection may occur through direct contact, for instance in the case of White-tailed Deer that are kept as research, pet, or hand-fed animals. The species is found near people in towns and cities across the

Southeastern United States — with deer living near houses, roaming streets, and exploring communities all while grazing and defecating freely. “They’ve done very well to adapt to the human-dominated landscape,” says Michael Tonkovich, who oversees the deer program at the Ohio Department of Natural Resources in Athens (Mallapaty, 2022).

The wildlife-livestock interface as a potential for disease transmission as well as later zoonotic transmission to people working with infected livestock presents several questions. What could be the actual scenario in the case of Georgia? Could the activity of SARS-CoV-2 virus mutation over time result in genetic variations in the population of circulating viral strain over the course of COVID-19 pandemic among White-tailed Deer? In late December 2021, researchers found the highly transmissible Omicron variant in White-tailed Deer living in Staten Island, a part of New York (Martin, 2022).

Biologically speaking, how does the virus infect deer? Are the animals being infected (i.e., contaminated) by people, the environment, or other deer? In deer that are infected, what happens to the animals regarding symptomology as it spreads among the species, and finally, what risk do these infections constitute for other wildlife and humans encountering these animals. Clinically, whether the deer are symptomatic or asymptomatic, is it possible to test them to detect antibodies to variants of the virus? These are all questions to answer through continued research. To begin addressing the likelihood of transmission to domestic animal species and/or humans, it must first be determined if the disease is indeed present in White-tailed Deer populations in the State of Georgia.

Population and Site Selection

The population that was studied was that of White-tailed Deer harvested by hunters during the 2022-2023 Georgia Department of Natural Resources (GDNR) quota hunts. The sample is one of “convenience” as a) only deer that are hunted legally during GDNR sanctioned hunts will be utilized, b) only deer presented by hunters taking part in GDNR quota hunts will be utilized and c) only hunts that are geographically accessible to FVSU collection teams will be visited. The dates during which carcasses will be sampled will correspond to the publication entitled: Georgia Department of Natural Resources (GDNR) Hunting Regulations 2022-2023 which is published/released in September 2022. The state's scheduled “quota hunts” are listed within this manual as “Specific WMA, PFA and State Park Hunting Regulation Dates” (DNR, 2022). Only hunts occurring on dates listed in this section will be utilized for collection of blood, feces and nasal swab samples from carcasses presented by hunters. There are hunts scheduled throughout the state and should provide ample opportunity for a robust and diverse sampling of the White-tailed Deer population of Georgia. The population sampled were in Baldwin, Berrien, Burke, Clayton, Colquitt, Cook, DeKalb, Glascock, Hancock, Jefferson, Talbot,

Taylor, Tift, Warren, Washington, Wilcox, and Worth counties. These 16 counties represent approximately 11.95% of the total number of counties in the state.

The sites for collection included two places that are associated with the quota hunts: DNR check-points and wild-game processors located within ten miles of the quota hunt location. The initial site will be at the physical site where GDNR representatives are set up to weigh, tag and release all carcasses that have been hunted within the site of the quota hunt (i.e., identified state parks, wildlife management areas, etc.). This is an ideal site as the location is conducive to sample collection of blood, feces and nasal swabs which can be ascertained easily and quickly when hunters unload the carcasses. Because all animals must be presented at the state-manned checkpoint, researchers are assured that the carcasses are "quota hunt related". The second site for collection will be at local deer processing houses within a ten-mile radius of the quota hunt site. Once animals are released by GDNR, hunters most often rely on commercial processors to process the meat for human consumption. During quota hunt dates, all carcasses presented at commercial processors must have a GDNR tag attached which certifies that it was killed at a local quota hunt. In cases where there are multiple hunts occurring on the same weekend, this allows the researchers to spread out and collect from as many quota-hunted rendered carcasses as possible by covering both sites.

Sample Collection

To determine the incidence of Coronavirus disease among White-tailed Deer in the State of Georgia, feces, and nasal secretions were collected under the direction of Dr. Oreta M. Samples, PI. Collection of nasal and rectal samples were done using a 6-inch sterile cotton tip swab which was inserted into the nares for deep collection at the point of resistance to the swab before rotating gently and withdrawing. Rectal swabbing was done by inserting swab approximately 1 inch into the rectum and rotating the swab to collect exudate. Both nasal and rectal swabs were individually stored in Viral Transport Media for chilled transport back to the laboratory for analysis. Samples were labeled to reflect the county where the animal was killed and given a numerical identifier, as well as differentiating the nares to be swabbed/rectal sample. All testing was completed at the University of Georgia - Tifton Veterinary Diagnostic Laboratory in Tifton, Georgia under supervision of Dr. H. Naikare.

Sampling Size

Attempts for sampling was completed on a total of 187 animals during the 2022-23 hunting season. Of the total number, 82.35% (154) were successfully sampled via nasal and rectal swabs for COVID-19.

Testing Protocol for COVID-19 in Wildlife:

All samples received at the Tifton Veterinary Diagnostic and Investigational Laboratory, University of Georgia during the 2022-23 season (rectal swabs, R&L nasal swabs) were pooled for testing in groups

of no more than five animal samples per pool. The following demonstrates how testing is achieved and results.

Nucleic Acid Extraction:

Nucleic Acid Extraction is defined as a variety of techniques used to transform or render a sample appropriate per analysis requirements for specific testing methodologies such as Reverse Transcription (RT) or Polymerase Chain Reaction (PCR). The nucleic acid was purified from 200µl of pooled samples (deep nasal swab samples or rectal swabs) received in transport media with the "MagMax™ Viral/Pathogen II (MVP II) Nucleic Acid Isolation Kit" (Thermo-Fisher catalog number: A48383R) as per the manufacturer's instructions. An internal process control for nucleic acid purification (MS2 phage control) was spiked with each sample prior to extraction of the nucleic acid.

qRT-PCR amplification:

The qRT-PCR was performed with the purified nucleic acid using the TaqPath™ COVID-19 Combo Kit (Thermo-Fisher catalog number A47814). The RT-PCR was carried out using the Applied Biosystems™ QuantStudio™ 5 Real-Time PCR Instrument, (96-well, 0.2–mL block). The TaqPath™ COVID-19 Combo Kit includes positive control material for ascertaining the correctness of the procedure.

Nasal Swab Results:

A total of 154 samples from White-tail Deer were tested during the 2022-2023 season and represented a total of nineteen counties in Georgia. This number represents 11.95% (16) of the counties in the State of Georgia of which there are a total of 159 counties. A total of 154 samples were reported by the UGA-Tifton Diagnostic Laboratory to be negative for COVID-19. There were no positive samples detected.

Significance of Results:

The finding was not sufficient to confirm that White-tailed Deer in the state of Georgia do not host the virus based on the 154 negative samples. Though multiple diseases may be prevalence in certain regions, because White-tailed Deer often form social groups, a contact composition that supports intraspecies transmission of multiple pathogens, the rate of infection may vary based on environmental factors such as temperature, humidity, and geographical distribution of White-tailed Deer.

White-tail Deer (*Odocoileus virginianus*) are one of the most abundant family of the wild cervid, ruminant species with worldwide distribution, especially in the United States, with a value number of 25 to 30 million. The species has been substantiated to have angiotensin-converting enzyme 2 (ACE2)- the SARS-CoV-2 receptor and shares a high degree of similarity to that of humans, are highly

susceptible to infection. Notably, the deer ACE-2 receptors allow efficient binding by the spike protein for viral entry and enables easy transmission of SARS-CoV-2 in white tailed deer and among these species (Wan Y, Shang J, Graham R, Baric RS, Li F. 2020).

Conclusion

In as much as these findings did not demonstrate that White-tailed Deer in the state of Georgia are positive for COVID-19, neither does it suggest that the state population of White-tailed Deer are to be considered negative for the disease. Research has demonstrated a high prevalence of SARs-CoV-2 infection among White-tailed Deer in other areas which do have proximity to human populations. Therefore, a negative reporting could lead to a false sense of security and is actually an indication of further need for testing throughout the state in larger numbers. This is especially important as wild animals, notably migrating wild ruminants such as deer and elk do not respect state boundaries and often cross between states and over borders with regularity. Therefore, the deer that is indicated as positive for a disease may not necessarily have been born in that state but could have migrated there. With Georgia being bordered by no less than five states, the chances of a positive animal being found here are favorable.

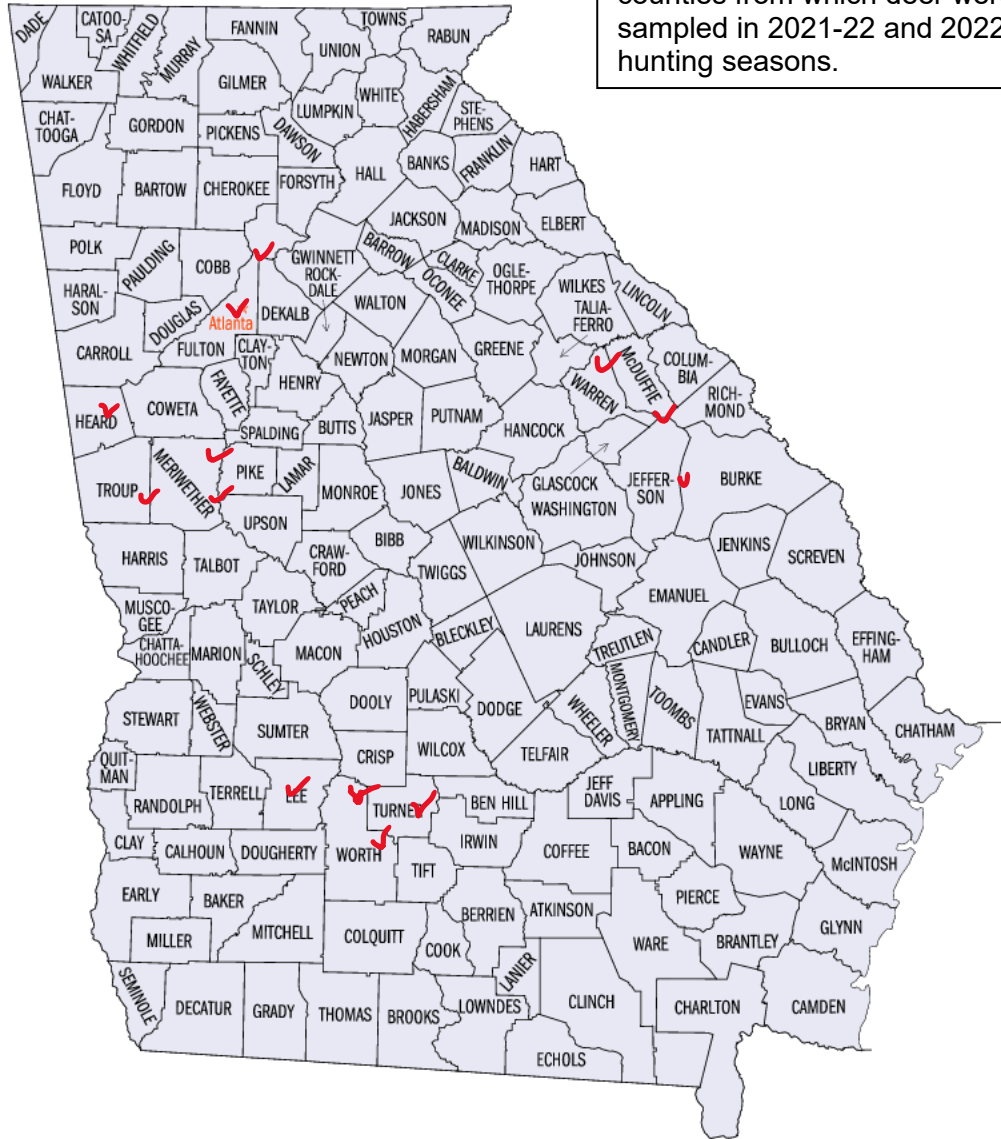
A survey of White-tailed Deer in the US has found evidence of both human-to-deer and deer-to-deer transmission of the virus that causes COVID-19. Studies found that 40% of deer sampled across four states: Michigan, Pennsylvania, Illinois, and New York during the timeframe between December 2020 and March 2021 demonstrated the presence of COVID-19 antibodies and in Iowa, 80% of the deer sampled between November 2020 and January 2021 were said to be carrying the COVID-19 virus. Researchers from the U.S. Department of Agriculture (USDA) evaluated 624 serum samples of White-tail Deer– 385 samples from January to March 2021 and 239 archived samples from 2011 to 2020 – from wild deer in Michigan, Illinois, New York, and Pennsylvania (Chandler, 2021). They found that 152 samples from 2021, three samples from 2020 and one sample from 2019 carried antibodies for SARS-CoV-2. None of the samples from 2011 to 2018 were observed as carrying the antibodies. This high seroprevalence among White-tailed Deer during the peak time of COVID-19 from 2019-2021 suggests the need for further investigation of the spread of COVID-19 among White-tailed Deer throughout the United States to include the state of Georgia.

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Location of Deer Testing in Georgia During 2021-2022 and 2022-2023 Hunting Seasons

The red check marks indicate the counties from which deer were sampled in 2021-22 and 2022-23 hunting seasons.





Is that product 'Fit For Food'?

New industry resource to identify suitable cleaning and hygiene products for food contact applications

Hygienic practices are essential in all food premises to ensure that food is safe for consumption and of suitable quality. And, of course, cleaning and sanitising products are essential in achieving this.

But as well as effectively achieving their cleaning or sanitising function, it is also essential that cleaning and sanitising products themselves do not make food unsafe or unsuitable for consumption.

FitForFood is a new, publicly available resource—launched in August 2022—on cleaning and sanitising in food premises. Its key purpose is to provide an approach, including detailed resources, for determining the suitability of commercial cleaning and sanitising products for food contact applications. This is done in the context of food law in Australia.

Developed with environmental health officers and product suppliers in mind, **FitForFood** provides a comprehensive and tiered approach for verifying or providing assurance that a product is indeed suitable for food contact applications. Both in terms of its efficacy and any residues remaining on a surface.



So, product suppliers can see what kinds of assurances to provide, check the list of widely used chemistries and access a comprehensive suite of external resources to support a food contact claim.

Environmental health officers can use **FitForFood** to help them assess the evidence provided of product suitability for food contact, such as a manufacturer's claim/Vendor Declaration. Or consider the product formulation against the list of widely used chemistries, 'red flags' and external resources on efficacy and chemical residues.

The **FitForFood** content and site structure were developed by Accord Australasia, with input from member companies in the commercial food hygiene sector. The content and site were also reviewed by experts in environmental health/food safety—Dr Andrew Mathieson (First for Training), Andrew Davies (NSW Food Authority) and Chris Healey (NSF International). Accord thanks everyone involved in helping put together this comprehensive resource.

Food safety is a shared responsibility and Accord member companies take seriously their obligations for product quality and correct use advice. Accord has developed and funded this new website in

keeping with this commitment. There is no cost, branding or commercial interest associated with using **FitForFood**—it is simply a tool to assist our industry in upholding its performance and reputation as a trustworthy supplier of essential products.

Please explore and make use of **FitForFood** at www.fitforfood.org.au and specifically its sections on:

- Hygiene in the food industry
- Food law in Australia
- Identifying a **FitForFood** product (the heart of the resource)
- Using products correctly

Accord is the national industry association for manufacturers and suppliers of all types of cleaning, hygiene, disinfectant and specialised products for use in commercial, institutional and industrial applications. www.accord.asn.au



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Thanks to Jan Hommer Chair of IFEH Euro group for linking IFEH and University of Applied Sciences Velika Gorica (Veleučilište Velika Gorica) for what looked an amazing conference.

See <https://dku.hr/2021/09/16/conference-programme/?lang=en> for more information.

I have taken the liberty of copying the concluding remarks to share with colleagues around the world. My hope is that you will follow Veleučilište Velika Gorica and continue to support them in partnership with IFEH.

Conclusions of the 15th Crisis Management Days:

– We live in the time of the global uncertainty and unpredictability mainly due to traditional threats, changes in environment, climate change, new threats and risks. It is evident that the modern world is faced with a different form of threats that require new joint methods of action. The ever-increasing complexity of the contemporary threats are presenting a new form of challenge before Civil protection System. Prevention and joint responses through integrated approach to crisis management at the global or national levels require a systemic response. Also, some of the states have begun to adapt their foreign policies to a new architecture of international relations.

– Renewable energy sources contribute to the green transition, but they are insufficiently represented in the neighboring countries as well as in the Republic of Croatia. There is a rising awareness of the necessity to debate how civil protection could be directed towards solving the problems of the climate change. Ecological crisis is changing the basics of economic activities, both the behavior of the consumers and the producers.

– Information technologies help in the detection of crisis events, facilitate and improve risk assessment methods, with constant development of the modern protocols in the field of computing and information technologies. There is a high rise of awareness indicated on the roles and functions of information and communication systems in today's society. The importance and role of adequate, secure and resilient infrastructure, activities that are necessary to achieve and maintain to ensure an appropriate level of

information and cyber security are required. Autonomous systems based on artificial intelligence recognized the risk of false alarms caused by such systems as the biggest threat to the successful implementation of such systems. Systems that generate (and send to users) false alerts had resulted in users ignoring those notifications. The human supervision of such systems is still necessary. But even with their shortcomings they greatly facilitate detection and reduce response time to a crisis event. In matters of data protection, the most important engagement is the employees themselves. Interesting was the simple remark that we don't like complex passwords, so we are an easy target for hackers.

– There is an ongoing progress in education on skills and mental health of the first responders and 112 system operators. Despite all the education and training it's challenging to prepare to operate in a traumatic situation therefore measures aimed at eliminating the source of stress and preventing negative consequences should be taken. There is still insufficient education in crisis management among employees of hospitals which however differ from hospital to hospital. During the COVID pandemic the Sisters of Mercy hospital's crisis headquarters formed a multidisciplinary team for psychological support for its employees.

– The road traffic safety strategy adopted by the government of Republic of Croatia in 2021 has led to a trend of reducing the number of people killed, as much as three times compared to 1994. The knowledge acquired on the medical response to major accidents course is crucial, along with the skills of the staff in the intensive care units of the hospital that cares for the injured.

– Technological improvement has been made in the field of UGV – unmanned ground vehicle development. The evolution of chemical, biological, radiological and nuclear (CBRN) disasters and the potential threat has led Member and Participating States to agree on initiating a CBRN stream of work to increase the level of EU preparedness to CBRN disasters. UGVs and associated technical and logistical support will be able to operate in extreme conditions of CBRN accidents dangerous to the life and health of first responders and thereby reduce the victims, material damage and environmental pollution. There is still ongoing progress in the field of developing early warning systems, especially for the earthquakes, which are now using modern technologies such as mobile phones and its data.

– The common denominator of all the presented papers was lack of the safety culture among citizens and corporate subjects, which is the problem that should be more addressed in the future on a higher level.

– Emphasis was placed on understanding the importance of strategic documents for defining development priorities and goals that can be implemented through a project financed by the European Union.



An original Croatian plastic reuse project



Thank you to Professor Sanja Kalambura for providing this article sanja.kalambura@vvg.hr



Green Optics is a project initiated by the University of Applied Science Velika Gorica in cooperation with partner organizations, with the aim of reducing waste disposal and increasing the percentage of reuse of everything produced in one optical store or your home. It is a unique example of a circular economy and the prevention of pollution of the natural environment with plastic from a specific source, such as contact lenses and glasses made of polymer. We wanted to show how the seemingly small amounts of polymer waste from each of our households and the production and sales chain create significant local and global environmental problems if not adequately disposed of.

By painting spectacle lenses, we wanted to make a unique souvenir that will permanently speak to our concern for the environment. In collaboration with the Association for Promoting Inclusion, we painted and made brooches.

Our partner in this project is the Association for Promoting Inclusion. It is a non-governmental organization established in October 1997 in Zagreb, Croatia. API's activities are based on the philosophy of inclusion where persons with

intellectual disabilities have the right to be equal and active members of the society. The association operates throughout the Republic of Croatia. Its mission is to support the deinstitutionalization of persons with intellectual disabilities through the development of community-based services which assist them in realizing their right to participate in the community and to achieve social inclusion. The vision is a society in which persons with intellectual disabilities have equal opportunities, their contributions are valued, and their human rights are respected.

We are proud winners of the
Yellow Frame Award - National Geographic Croatia

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16th IFEH World Congress on Environmental Health Day 1 - 23.08.2022

Keynote Address

Tears to Motivate Us

Dr David T. Dyjack

Plenary 1

Chairperson: Dr Amir Kamaluddin

Rapporteur: Dr Khairul Nizam Mohd Isa

Emerging and re-emerging infectious diseases and climate change: Global impact and sustainability

Prof. Datuk Dr. Lokman Hakim Sulaiman

Plenary 2

Chairperson: Dr Subramaniam Karuppanan

Rapporteur: Dr Nur Faseeha Suhaimi

Climate Change & Environmental Health: How the World Can Adapt to Climate Change Through Lessons Learnt from COVID-19

Prof. Jamal Hisham Hashim

Plenary 3

Chairperson: Prof. Jamal Hisham Hashim

Rapporteur: Dr Khairul Nizam Mohd Isa

- **Built Environment: A Paradigm Shift to Combat Indoor Respiratory Infection**

Dist. Prof. Lidia Morawska

Symposia 1 - Emerging & Re-emerging Infectious Diseases Related to Environment

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Rapporteur: Dr. Noor Haziqah Kamaludin

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Dr. Balvinder Singh Gill Pradhman Singh

- **Challenges in Disease Management during the Pandemic**

Datuk Dr. Norhayati Rusli

- **Artificial Intelligence: A New Era for Spatial Modelling and Interpreting Climate-induced Hazard Assessment**

Dist. Prof. Dr. Biswajeet Pradhan

Symposia 2 - Air Quality, Climate Change & Environmental Health & Pest and Vector Control

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Rapporteur: Dr. Nur Faseeha Suhaimi

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Prof. Dr. Budi Haryanto

- **Planetary Health: A New Paradigm for the Era of COVID-19 and Climate Change**

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Judge: Prof. Dr. Zailina Hashim

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Yuvaneswary A/P Veloo

- **Multiple Antibiotic Resistance (MAR) index from poultry environment in Selangor, Malaysia**

Sakshaleni Rajendiran

- **Knowledge, practice in hand hygiene and level of hand microbial contamination on food handlers hand: a satay processing factory case study**
Siti Sahara Zulfakar
- **High prevalence of self reported respiratory symptoms among students exposed secondhand smoke (SHS) in academic institutions in Gaborone: Implications for interventions**
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Samuel Yaw Agyemang-Badu
- **Integrated malaria prevention in low- and middle-income countries: a systematic review**
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ORAL PRESENTATION



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Existence of Multidrug-Resistant ESKAPE Pathogens in The Environment of Poultry Farms

Yuvaneswary Veloo^{1*}, Syahidiah Syed AbuThahir¹, Sakshaleni Rajendiran¹, and Rafiza Shahrudin¹

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Abstract:

Introduction: ESKAPE is an acronym for six pathogens (*Enterococcus Faecium*, *Staphylococcus Aureus*, *Klebsiella Pneumoniae*, *Acinetobacter Baumannii*, *Pseudomonas Aeruginosa*, and *Enterobacter Spp.*), which are referred as “superbugs” due to their diversity in exhibiting multidrug-resistance (MDR) and high virulence. Persistent use of antibiotics in animal husbandry is a global public health concern as they have the capacity to acquire resistance to most of the available antibiotics and pose the foremost challenges in treating infectious diseases in both humans and animals. This study aimed to determine the pervasiveness of MDR among ESKAPE pathogens in poultry farm environments.

Methods: A total of 131 ESKAPE bacterial isolates were retrieved from soil and effluent samples in 33 poultry farms that were registered under the Department of Veterinary Services, Selangor. VITEK®2 system was used for bacterial identification and susceptibility testing of isolates. In the laboratory, serial dilution and spread plate method were performed for isolation and enumeration of the desired isolates, while VITEK®2 system was used for bacterial identification and susceptibility testing of isolates.

Results: Results showed all *Enterobacter spp.* isolates (n=38) were MDR, followed by *Enterococcus faecium* (n=35) with 54.3% having MDR. *K. pneumoniae* showed 15% (7/46) of the isolates having MDR. High resistance was detected in particular antibiotics including tetracycline (78.5%, 33/42), erythromycin (73.8%, 31/42), amoxicillin-clavulanic acid (50.6%, 43/85), cefazolin (55.1%, 49/89), and cefoxitin (50.6%, 43/85). It was found all *K. pneumoniae* isolates (n=46) were resistant to ampicillin, and 8.7% (4/46) exhibited resistance to penicillin, cephalosporins, and monobactam, labeled as Extended-Spectrum Beta-Lactamase (ESBL)-producing strains.

Conclusion: The high rate of MDR-bacteria and presence of ESBL-producing *K. pneumoniae* indicate the presence of MDR genes in the environment, which pose an advancing threat to effective management of infectious diseases. Therefore, more comprehensive guidelines and a coordinated holistic approach involving all stakeholders are vital in combating the development of antibiotic-resistant bacteria and preventing the spread of the diseases.

Keywords: ESKAPE, multidrug-resistant, environment, farm

Saving Carbon Emissions Via Tele-Rehabilitation – The Green Solution

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Abstract:

Introduction: Tele-rehabilitation is the delivery of rehabilitation services using information and communication technologies (ICT) to clients. It is the go-to solution to increase access in rehabilitation services, while saving travelling time, costs and carbon emissions. To describe the estimated carbon emission savings and travelling cost of patients receiving tele-rehabilitation in a rural hospital in Malaysia.

Methods: An audit was performed on all patients who received tele-rehabilitation at the Rehabilitation Medicine clinic at Hospital Tuanku Ampuan Najihah, Kuala Pilah, Negeri Sembilan, Malaysia from June 2021 to December 2021. Distance from the patients' home address to the hospital and travelling time were calculated using Google Maps. Carbon dioxide emission was calculated using the formula 120.4g/km (return trip). The travelling cost was set at RM 0.50 per km.

Results: A total of 110 out of 316 (34.8%) patients received tele-rehabilitation services during the audit period. The estimated total carbon emission savings were 865,989 g (median 7,994.5 g; min 228.8 g, max 21,310.8 g). The estimated total travelling cost savings were RM 3,596.30 (median RM 33.20; min RM 0.95, max RM 88.50). The estimated travelling time saved in total was 136 hours and six minutes (median 1 hour 12 mins; min 6 mins, max 3 hours 10 mins).

Conclusion: Tele-rehabilitation may prove to be a green solution to reduce carbon emissions, travelling costs and time.

Keywords: Tele-rehabilitation, carbon emission, travelling cost, time, green solution.

Community-Based Rehabilitation as A Strategy to Achieve Sustainable Development Goals – An Experience from CBR Batu Kikir

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Abstract:

Introduction: The World Health Organisation (WHO) outlined 17 sustainable development goals (SDGs) to eradicate poverty, hunger and disease. Community-based rehabilitation (CBR) Batu Kikir, Negeri Sembilan, Malaysia; is a social enterprise founded in 2021. It aims to empower the local community into building an age-friendly and sustainable future by adopting the SDGs in its endeavors. To describe CBR Batu Kikir activities based on SDGs during the Covid-19 pandemic in Malaysia.

Methods: CBR Batu Kikir projects were divided into three main themes: education and gender equality, quality health and social security and lastly sustainable environment and energy consumption. A pilot project called *Adopt-an-Orang Asli-student* was launched in June 2021 to overcome barriers to online education faced by the indigenous community in Kampung Orang Asli Chergun, Batu Kikir, Negeri Sembilan, Malaysia. The *Balai Raya Kampung Chergun* (community hall) was refurbished as an information and technology (IT) hub and recreation centre. Electricity was installed to three Orang Asli (OA) homes. Twenty-one self-employed OA rubber-tappers were registered with the Social Security Organisation (SOCSSO) and Employee Provident Fund (EPF) in September 2021. More than 90% of the OA and Malay communities received two doses of Covid-19 vaccinations by December 2021. Experiential learning workshops were held at the CBR Batu Kikir rehabilitation centre to create awareness on environmental access, stroke care, wheelchair skills and crisis-preparedness. Locals were encouraged to recycle instead of burning their waste products.

Conclusion: CBR may be used as a strategy to achieve SDGs through social wellness and engagement.

Keywords: Community-based rehabilitation, CBR, SDG, WHO.

Effectiveness of Common Nasopharyngeal Masks: An Experimental Assessment on Reduction of Respirable Atmospheric Aerosol in Kathmandu, Nepal

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Abstract:

Introduction: The experimental set-up (Mannequin head) was fabricated to test the filtering efficiency of randomly collected (N=36) inexpensive cloth masks (CMs), (N=13) surgical masks (SMs), and (N=7) N95 filtering facepiece respirators (FFRs) against ambient aerosols (PM_{2.5} and PM₁₀ µg/m³) at two different airflow rates (55LPM and 10LPM).

Methods: Commercial facemasks are widely used worldwide to reduce the inhale of airborne particulates (PM) and viral exposures.

Results: The average efficacy against PM₁₀ particulates at a 10 LPM airflow rate was 52% for CMs, 58% for SMs, 81% for N95 FFRs, and 80% for Prototype cloth masks (PTCMs), and 82% for PTCMs with tissue paper as a filter (TPaF). The average efficacy against PM_{2.5} particulates at 10 LPM airflow rate was 48% for CMs, 57% for SMs, 80% for N95 FFRs, 78% for PTCMs, and 81% for PTCMs (TPaF) respectively. The filtering efficiency of facemasks followed the order N95 FFRs > SMs > CMs in which efficacy of PTCMs or TPaF was found almost equivalent to N95 FFRs potent to substitute in the time of emergency. The eco-friendly PTCMs can protect human health from fine particulate matter < 2.5 µm and can reduce the risk of microplastic pollution incurred from the use of polypropylene (PP) commercial masks.

Conclusion: The primary objectives were to measure the efficacy of different commercial facemasks considering their surface morphology and develop prototype cloth masks whose efficacy can be equivalent to commercial facemasks and provide stagnant performance in different drying and washing cycles.

Keywords: Respirable atmospheric aerosol, nasopharyngeal mask, effectiveness.

Multiple Antibiotic Resistance (MAR) Index from Poultry Environment in Selangor, Malaysia

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Abstract:

Introduction: A total of 33 farms were selected randomly from the registry provided by the Department of Veterinary Services, Selangor. Soil and effluent samples were collected from three different areas in each farm. Identification and susceptibility testing were performed using the vitek-2 system. MAR index was calculated by dividing the total antibiotic resistance with total antibiotic tested. The tested antibiotics were selected based on World Health Organization (WHO) AWaRe classification.

Methods: The implication of antibiotic resistance is well discerned with growing public health concern. Recently, research involving the environment has attracted attention since the domain plays an important role in the emergence and dissemination of resistant bacteria to humans.

Results: A total of 511 isolates were recovered with 24 farms (72.7%) having MAR index value above 0.2, which is a high-risk source of contamination. All farms that had MAR index value 0.3 and above (n=8) belong to the commercial chicken production system. Isolates recovered from the environment of commercial chicken production were significantly higher in MAR index compared to village chicken production ($p < 0.001$). All five farms that recorded antibiotic usage had a high MAR index value.

Conclusion: This study concentrated on determining MAR index, which tracks the source of antibiotic resistant bacteria, of the poultry environment in Selangor, Malaysia since this industry has conquered the majority of livestock activity.

Keywords: MAR index, poultry, environment.

Lead Aggravates The Diabetic Induced Renal Dysfunction and Reno-Protective Effect of Eugenol

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Abstract:

Introduction: Diabetic Nephropathy is the most common cause of end-stage renal disease. Therefore, novel therapies for the suppression of diabetic nephropathy must be developed. Diabetes, an unresolved metabolic disorder and lead contamination are prevalent problems in contemporary society. Previously, reports suggested that either diabetes or lead exposure resulted in renal dysfunction in male rats. The aim of this study was to evaluate whether diabetic rats exposed to lead demonstrate a higher degree of hepatotoxicity when compared with lead-exposed control rats.

Methods: Diabetes was induced by injecting a single dose of Streptozotocin (40 mg/kg body weight). Control and diabetic rats were exposed to lead through oral gavage for a period of 21 days and assessed for hepatic and oxidative end points.

Results: Treatment of diabetic rats with eugenol decreased the values of blood glucose and creatinine. The serum lipids like LDL, TC and TG, were decreased and HDL was increased in D-C rats when compared with those of diabetic rats. Significant reduction in blood antioxidant enzyme activity, metabolic enzymes, Na⁺-K⁺ ATPase levels and glutathione levels were observed in diabetic rats. Further, lead-exposed diabetic rats showed additional deterioration in renal function and inflammation endpoints and noteworthy elevation in oxidative toxicity suggesting that treatment with lead exacerbates nephrotoxicity in streptozotocin-induced diabetic rats.

Conclusion: The ameliorative efficacy of eugenol was observed in diabetic rats exposed to lead. The present study shows that the eugenol protects against the development of diabetic nephropathy and ameliorates renal function via improving the oxidative status and regulating the expression of IL-6 and TNF- α .

Keywords: Environmental pollutant, diabetes, nephrotoxicity, anti-inflammation, phytochemicals

Sustainable Development Goals' Smart Village Concept Pilot by South African Institute of Environmental Health in a Rural Community

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Abstract:

Introduction: Many of the household practices use firewood for food preparation with the risk of causing permanent health damage and increasing the risk of disease, due to poor indoor air quality. The South African Institute of Environmental Health applied funding from Swiss Embassy to conduct a pilot study project through research for the adoption of applied technology and innovation as a cleaner, safer, healthier and affordable model project to demonstrate the adoption of appropriate technology together with a change in community behaviour to have a cleaner, safer, healthier and affordable household model.

Methods: Five households will be supplied with a smart household appliance called the African PowerQueen which also connects to the internet. The South African Institute will be providing those equipment to improve health and hygiene while providing an alternative cooking method to burning local wood on an open fire indoors. Each of the five households will receive the following: First, a solar panel and Li Ion Battery; second, a water storage container with a Katadyn filter; third, a basic kitchen equipment that will be made by the community; fourth a biomass cooking stove with a fan to improve combustion efficiency; fifth a retained heat cooker bag to reduce energy use for longer cooking tasks; sixth an accessory kit comprising four LED lights, seventh a torch and a radio; eighth a smart communications device to provide connectivity and; lastly, a TV connectivity from a connected platform comprising a WIFI router/GSM connection, an Android TV processor, and connectors.

Results: To sustain the project, the entire model is designed to be installed, maintained and operated with the community itself, with special focus on creating jobs and empowering women. The financial structure intends to create income and ongoing jobs through servicing the model, incentivizes behaviour change to perpetuate the model, not require any special skills or training outside of the village and runs on a simple and accessible local economy that requires no additional income or funding.

Conclusion: The key objectives of the pilot project are to prove that the interventions have a measurable and positive impact; to determine the willingness and affordability by the community to adopt and contribute to a new approach to energy and connectivity poverty; Reduce Carbon emissions while generating an ROI; to improve human health and hygiene; and to determine the adoption of media services: entertainment and e-education

Keywords: SDG, smart village, rural, community

Home Remedies for Treatment of Dermal, Oral and Other Ailments in Selected Areas in Botswana, Implications for Public Health Interventions and Research

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Abstract:

Introduction: Traditionally home remedies involved the use of medicinal plants. However, non-food products such as industrial chemicals have been reported by few studies. This study documents the use of potentially harmful substances for treatment of dermal, oral and other ailments and the motivations for use in selected areas in Botswana.

Methods: A cross-sectional survey study design was adopted comprising 231 participants aged 18 years and above from Botswana's capital city, Gaborone and surrounding areas. A pretested questionnaire was used to collect data on the types of therapies, the purposes and motivation for use. Descriptive statistics were computed using SPSS software, V27.

Results: Industrial chemicals, tobacco snuff and cigarettes were the most commonly used products. Methylated spirit was used by most (76%) participants to treat bruises, wounds, aftershave rash and bites from snakes and insects. Alum was used by 62% of participants, to treat throat infections whilst paraffin was used by over a third of respondents to treat psoriasis, burns, snake and insect bites. One third of participants used tobacco snuff to treat nose bleeding, toothache and stress whilst 28% of respondents used more than 3 products at a time.

Conclusion: This study revealed a high prevalence of potentially hazardous substances used as home remedies likely to result with adverse effects as well as interfering with medical management of diseases. Health workers need to be aware of the products patients and the public use in order to raise relevant awareness. Further research is needed to study potential effects of these products on their users.

Keywords: Home remedies, dermal, oral, ailment, intervention

High Prevalence of Self reported Respiratory Symptoms Among Students Exposed Secondhand Smoke (SHS) in Academic Institutions in Gaborone: Implications for Interventions

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Abstract:

Introduction: The World Health Organization Framework Convention on Tobacco Control (WHO/FCTC) preamble gives 'priority to the right to protect public health.' The WHO/FCTC recognizes that exposure to second-hand smoke (SHS) can lead to cardiovascular, respiratory, cancer and other severe diseases. Preventing SHS exposure therefore remains a key health priority particularly among the youth. The prevalence of SHS and associations with respiratory symptoms among non-smoking students was assessed.

Methods: A cross-sectional survey was carried out among students in randomly selected universities in the city of Gaborone. Smoking status, exposure to SHS and self-reported respiratory symptoms were evaluated among students aged ≥ 18 years. Ethical approval and student consent were sought prior to conducting the study. Logistic regression was used to analyse respiratory symptoms among non-smoking students.

Results: Out of 450 students surveyed, current smoking was reported by 142 (32%) with males (68%) smoking the most. Exposure to SHS was highest on campus and in public places ($\geq 90\%$) compared to home (47%). Non-smoking students were 2.7 times (OR: 2.66, 95% CI: (1.76 – 4.00) and 3.3 times (AOR: 3.34, 95% CI: (2.21 – 5.05) more likely experience respiratory symptoms such as cough or flu-like symptoms and headaches respectively after exposure to tobacco smoke. Additionally, non-smoking students were 6 times (AOR: 5.52, 95% CI: (3.42 – 8.90) more likely to feel irritated by tobacco particles in a place/car someone previously smoked than smokers. Students believed SHS would increase their chance of developing cancer ($>70\%$) and adversely affect their academic performance ($>20\%$). Over 50% of students would support a ban on smoking in their institution.

Conclusion: SHS exposure and self reported respiratory symptoms are alarmingly high among students despite undisputed evidence of no safe level of exposure to SHS. The students' fundamental right to health is violated and anti-smoking programs and policies are needed to reduce smoking and exposure to SHS.

Keywords: Second-hand smoke, current tobacco smoke, respiratory symptoms, students, interventions

Heavy Metal Contamination, Its Associated Health Risks and Awareness Level of Drinking Water Quality from Negeri Sembilan State, Malaysia

Satheeswaran. D^{1,2}, S.M Praveena¹, N.E Ezani¹, Mariappan. S², Zuraida M², Rosmala M², W.Hafizah.W.A.², M. Faid A. R².

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Abstract:

Introduction: Water has an important part in human health and well-being which should be free from any substances that can cause harmful effects to humans. Drinking water source in Negeri Sembilan mostly originated from river water. Frequent river pollution from industrial and agricultural runoff is one of the major sources of heavy metal contamination in rivers in Negeri Sembilan.

Methods: This study was focused to evaluate the concentration of heavy metal (Al, Hg, As, Cr, Cu, Fe, Pb, Zn and Cd) in drinking water from auxiliary point from the secondary data in Drinking Water Quality Surveillance System Database, Ministry of Health for ten consecutive years (2010 – 2020) and to estimate the health risks (non-carcinogenic and carcinogenic) in Negeri Sembilan. The study also aims to identify the possible sources (natural and/or anthropogenic origin) of heavy metals contamination in drinking water together with the awareness levels (knowledge, attitude, and practice) in the community regarding heavy metal contamination in drinking water.

Results: Results showed that the heavy metal concentrations in drinking water at auxiliary points in Negeri Sembilan from 2010 to 2020 were found to be within the permitted levels. The health risks estimation indicated that Lifetime Cancer Risks for Pb exceeds the permission limit for adults and children. The correlation and Principal component analysis output showed a significant correlation between the heavy metals which justify the origin from both natural and anthropogenic factors. The questionnaire survey shows that, community of Negeri Sembilan has a good knowledge (65%), a less favorable attitude (56.7%), and a good practice (72%) when it comes to heavy metal contamination of drinking water.

Conclusion: The estimated risk exposure level along with KAP findings involving Negeri Sembilan population can be utilized by the Negeri Sembilan Health Department to improve the integrated drinking water quality management.

Keywords: Drinking water, heavy metal, health risks, awareness level

Knowledge, Practice in Hand Hygiene and Level of Hand Microbial Contamination on Food Handlers Hand: A Satay Processing Factory Case Study

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Abstract:

Introduction: Increasing cases of foodborne illness in Malaysia show that food handlers still fail to maintain food safety. Therefore, this study was conducted to compare knowledge and practices regarding hand hygiene and assess hand microbial contamination of food handlers as indicators of hygiene practices in food premises.

Methods: This study involved 16 food handlers who work at a satay processing factory in Malaysia. Food handlers' knowledge and hand hygiene practices (n = 16) were assessed using the questionnaire form, while hand swabs (n = 16) were tested for total plate count, coliform, *Escherichia coli*, and *Staphylococcus aureus*. A Handwashing Technique Observation Tool (HTOT) was also developed to monitor the food handler's hand washing techniques.

Results: Food handlers had a good hand hygiene knowledge score of 89.69 ± 6.45 and an excellent self-reported practice score of 92.5 ± 7.46 . Statistical analysis showed that there was no significant correlation between knowledge score ($r = -0.045$, $p > 0.05$) and practice ($r = -0.347$, $p > 0.05$) with hands' total bacterial count. However, there was a strong negative correlation between hand washing scores and the level of microbial contamination on the workers' hands ($r = -0.653$, $p < 0.05$). It was also observed that most respondents do not comply with the 7-step hand washing techniques proposed by the Malaysian Ministry of Health.

Conclusion: In conclusion, theoretical hand hygiene knowledge and monitoring of the actual technique practised by the food handlers are essential in ensuring good hand hygiene practices for safe food production.

Keywords: Food handler, KAP, microbiological assessment, hand hygiene, hand washing technique

Survey of Mosquito Breeding Sites in The Sunyani Municipality, Bono Region, Ghana

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Abstract:

Introduction: The main objective of this study is to assess mosquito breeding sites within the Sunyani Municipality in Ghana. We hypothesized that mosquito breeding sites within the Sunyani Municipality are mainly naturally induced.

Methods: A survey for mosquito breeding sites along with sampling of mosquito larva were undertaken within the Sunyani Municipality between the periods of December 2019 to February 2020. Mosquito species breeding sites were diagnosed following a guideline provided by Service (2008) and the mosquito larva collected were diagnosed to the genera level as per the taxonomic keys of Knight and Stone (1977). The breeding sites of the mosquito genera were also characterized as anthropogenic and naturally induced.

Results: Of the 1421 possible mosquito breeding sites identified in the municipality, 69.5% (987) of the sites were anthropogenic induced and 30.5% (434) were natural based breeding sites. 28.2% (401) of the sites were possible breeding sites of *Anopheles* species with 174 of the *Anopheles* possible sites positive for *Anopheles* species. 27.7% (111) of the *Anopheles* sites were associated with wetlands (swampy/marshy areas). *Aedes* mosquito breeding sites constituted 19.1% (272) with the majority 65% (177) constituting container receptacles and lorry tyres. Of all 52.6% (748) identified as possible breeding sites for *Culex* mosquito species, the majority 73.1% (547) were anthropogenic induced. 55.6% (79) of the breeding sites were associated with waters emanating from bath houses.

Conclusion: Mosquito breeding sites during the dry season between December and February in the Sunyani Municipality were mainly anthropogenic induced. Residents of the Sunyani municipality require education on health risks associated with producing mosquito breeding sites. Larva control during the dry season (between October and March annually) should be considered as an essential aspect of mosquito control programmes in the study area.

Keywords: Mosquito, breeding sites, survey, anthropogenic, Sunyani Municipality

Prevalence, Perception of Knowledge, Attitude and Practice of Workplace Second- Hand Smoke Within the Smoke-Free Workplace among University Employees

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Abstract:

Introduction: Since 2005, Malaysia's Educational institutions have been gazetted with a smoke-free policy. However, the National Health Morbidity Survey 2015 recorded that one-third of Malaysians were exposed to workplace second-hand smoke. Hence, this study aimed to identify the prevalence of WSHS and the associated perception of knowledge, attitude and practice among University employees.

Methods: A convenience sampling technique was used to recruit 336 employees at the University of Malaya between October 2018 to January 2019 in a cross-sectional study. The findings were analysed by the Man-Whitney test and Kruskal-Wallis using SPSS IBM software.

Results: Three hundred five participants completed the questionnaires (91 % response rate). The mean age was 37.95 (SD: 9.98). 69% of the participants were female, 67% of them were married, and 5.9 % of them were a smoker. 37% reported exposure to WSHS. 94.8% of the participants "agree to strongly agree" with the perception of SHS Knowledge. 56% of them reported "to always" shows a negative attitude towards WSHS, and 53.4% of them recorded "always" practice WSHS protection, respectively. The gender ($p < 0.001$), marital status ($p = 0.004$), Smoking status ($p = 0.001$) and Perception of SHS Knowledge ($p = 0.021$) were significantly associated with the exposure to WSHS.

Conclusion: These findings highlight that WSHS exposure exists within the educational institution despite a smoke-free policy. Understanding the associated factors of WSHS can help the policymaker or the employer tighten the policy enforcement and protect their employees from the risks of second-hand smoke.

Keywords: Workplace, second-hand smoke, KAP scale

The Truth is Out There: How to Effectively Communicate and Promote Resilience to Misinformation

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Abstract:

Introduction: We live in an information-rich environment, and social media has become an engaging source for information, especially if the event is a crisis, is unique, and has its followers' interest. Social media allows people to express their thoughts, opinions, and share information with their friends, family, and others. These social media messages come with content and guidance from different sources. Because misinformation can spread quickly via social media, it's especially important to speak first, communicate first, and engage first with your audience.

Methods: Promoting public health requires effectively communicating guidance and recommendations to a variety of audiences. However, the public receives an overwhelming amount of information from many channels. In order to encourage healthy behaviors in communities, it has become imperative to help the audience navigate the overload of information and promote resilience to the glut of misinformation abundant in various forms in society. Examples of environmental health issues and solutions will be discussed.

Results: Participants will learn how to use resources, tools, and methods to help overcome misinformation and effectively communicate with their communities.

Conclusion: Participant will be able to apply the six principles of Crisis Emergency and Risk Communication (CERC), resources, and tools for effectively communicating

Keywords: Communication, misinformation, disinformation, communication outreach

Personal Protective Equipment Usage and Risks of COVID-19 Infection among Clinical Students at University Hospital

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Abstract:

Introduction: Healthcare workers should wear appropriate personal protective equipment (PPE) due to their susceptibility to COVID-19 infection. Thus factors that may influence the effectiveness of PPE are essential to explore whether these can contribute to COVID-19 infections. This study aimed to investigate the association between PPE effectiveness and risks of COVID-19 infections.

Methods: 61 clinical students (medical and nursing) in Hospital USM were involved (20% response rate) in this cross-sectional study through simple random sampling. The data were collected through the online survey and analysed using SPSS version 26. Data were analysed using Pearson Chi-Square and Logistic Regression tests.

Results: 23% of the students were infected with COVID-19 and 67% became close contact 1 (CC1) of COVID-19. Significant associations were found between the importance of wearing PPE ($p=0.011$) and uncomfortableness of PPE ($p=0.038$), with COVID-19 infection. Mobility of PPE ($p=0.031$), non-breathable PPE material ($p=0.024$) and comfortableness of PPE ($p=0.043$) were the significant factors associated with the risks of becoming CC1. Students who wear non-breathable PPE materials might have 2.6 times higher risk of becoming CC1 than those who wear breathable PPE. Students who wear their PPE all time during the clinical could be 70% less likely to become infected compared to students who take off their PPE during the practical.

Conclusion: The study findings suggested that education is an essential factor that can affect the effectiveness of PPE in preventing the risk of COVID-19 infection. More training programmes on the importance of proper use and care of PPE is recommended.

Keywords: PPE, COVID-19, clinical, University Hospital

Integrated Malaria Prevention in Low- and Middle-Income Countries: A Systematic Review

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Abstract:

Introduction: The aim of this systematic review was to collate and summarise the impact of integrated malaria prevention in low- and middle-income countries on malaria burden.

Methods: Several databases including PubMed, CINAHL, and Web of Science were searched for literature. Integrated malaria prevention was defined as the use of two or more malaria prevention methods holistically. The primary outcome variables were malaria incidence and prevalence, while the secondary outcome measures were human biting and entomological inoculation rates, and mosquito mortality.

Results: After screening 10,931 studies, 57 articles were included in the review. Various interventions were used, mainly combinations of two or three malaria prevention methods including insecticide treated nets (ITN), indoor residual spraying (IRS), repellents, insecticide sprays, microbial larvicides, and house improvements including screening, insecticide treated wall hangings, and screening of eaves. The most common methods used in integrated malaria prevention were ITNs and IRS, followed by ITNs and repellents. There was reduced incidence and prevalence of malaria when multiple malaria prevention methods were used compared to single methods. Mosquito human biting and entomological inoculation rates were significantly reduced, and mosquito mortality increased in use of multiple methods compared to single interventions. However, a few studies showed mixed results or no benefits of using multiple methods to prevent malaria.

Conclusion: Use of multiple malaria prevention methods was effective in reducing malaria infection and disease, and mosquito density. Results from this systematic review can be used to inform future research, practice, policy and programming for malaria control in malaria endemic countries.

Keywords: Integrated approach, malaria prevention, multiple methods, low- and middle-income countries

Environmental Health and its Contribution to One Health

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Abstract:

Introduction: Environmental Health is a discipline that focuses on physical, chemical and biology factors in the environment that can impact on human health.

Methods: The One Health approach, that promotes collaborative efforts for human health, animal health, and the environment, has continued to grow in recent years. However, there is limited literature on the contribution of Environmental Health to the One Health strategy.

Results: This paper describes Environmental Health and its contribution to One Health particularly from a low- and middle-income perspective. Key Environmental Health roles that support the One Health approach include: food (including meat) safety and hygiene; control of vectors and vermin; prevention of environmental pollution; water, sanitation and hygiene; enforcement of legislation; and health promotion and education.

Conclusion: Environmental Health has a major role to play regarding the interaction between humans, animals and the environment hence should be considered a key profession in One Health initiatives.

Keywords: Environmental health, one health, environmental health practitioners, humans, animals, environment

Timely and Effective Termination of Prolonged Dengue Outbreaks

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Abstract:

Introduction: Despite the adoption of the WHO Global Strategy for Prevention and Control of Dengue, member countries continue to experience prolonged episodes of uncontrolled dengue outbreaks. The economic and productivity implications for failing to break arboviral transmission within the 14 days target is related to the burden of dengue in Malaysia costing USD13 million per 10,000 cases in 2013.

Methods: Field studies on transmission dynamics confirmed the crucial finding that “dengue infections were being acquired away from home” mentioned in the Report of the Expert Committee on Dengue to the Government of Singapore in 2005. Japan in 2014, Hawaii in 2015 and Hong Kong in 2018 terminated epidemics by eliminating the epicentres of outbreaks.

Results: In 2003, field investigations were pioneered in Sitiawan, indicating that identification and elimination of a few active epicentres can concurrently shut down many distributed outbreaks. Pilot projects were carried out by the author in Setapak and Seri Iskandar. In 2014, a pilot carried out in KL led to the elimination of “hotspots” for 53 consecutive weeks, concurrently in all the 11 operational zones of DBKL.

Conclusion: The outcome demonstrates that eliminating epicentres can effectively interrupt dengue transmission with minimum community participation to end uncontrolled and prolonged outbreaks to save lives, productivity, and human capital.

Keywords: Epicentre, cluster, hotspot, prolonged, uncontrolled outbreaks.

Unregistered Food Premises Hygiene Management in Urban City Ampang Selangor

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Abstract:

Introduction: Rapid development in Ampang, Selangor area has a impact on the environment. The increase in the number of immigrants from outside with food operators from neighbouring countries demands dynamic and quality food premise management.

Methods: A total of 145 unregistered food premises were detected to operate without food hygiene monitoring by the Local Council and District Health Department in the study area. The quality of food presented to customers is plays an important role in curbing the spread of epidemics such as food poisoning, diarrhea, leptospirosis, salmonellosis and other foodborne illnesses.

Results: The analysis result of Pearson Coleration showed that all the variables between knowledge had a significant relationship with the attitude of the food operator ($p < 0.05$). The findings showed a significant relationship between knowledge and attitude ($r = 0.310$, $p < 0.05$). The results showed that the presence of unlicensed food premises would damage the scenery 71.9 percent and destroy the aesthetic value of the city 28.1 percent.

Conclusion: The development speed should be in line with the hygiene of food premises, especially in the rapidly developing township.

Keywords: Food hygiene management, food operators, safety food

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E-POSTER PRESENTATION



**Environmental
Health Issues, Challenges
and Sustainability:
Covid-19 Pandemic**

POSTER PRESENTATION

ID	Name	Titles
1.	Kishwen Kanna Yoga Ratnam	Emerging issues and challenges in managing water related diseases : A descriptive review
2.	Bontle Mbongwe	Healthcare waste management during the COVID-19 pandemic in healthcare facilities in Greater Gaborone, Botswana
3.	Azizah Mat Hussin	A Study on knowledge, attitudes and practices (KAP) on food hygiene and safety among the community in Bandar Enstek, Negeri Sembilan
4.	Noor Haziqah Kamaludin	Quarry respirable dust pollutant on fractional exhaled nitric oxide (FENO) and interleukin-8 (IL-8) concentration
5.	Nurul Hidayah Abdullah	Waste separation among household in malaysia : a systematic review
6.	Nur Azalina Suzianti Feisal	Indoor pollutants and its impact on respiratory health symptoms and lung functions among school children exposed to bauxite mining
7.	Rozaini Abdul Rahman	Risk factors associated with blood cholinesterase level among health workers of Kuala Lumpur City hall
8.	Mohd Faridz Mokhtar	Soap-making from waste cooking oil: A review

Emerging Issues and Challenges in Managing Water Related Diseases : A Descriptive Review

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Abstract:

Introduction: Access to safe water is a birthright, and not a privilege. It is the elixir life, and the sustenance of the human race. According to the estimation of the World Health Organization (WHO), 4,000 children die every day from water-borne diseases and this condition is the worst in developing and under-developed countries.

Results: Water related illnesses fall into 4 major categories which are water-borne diseases, water washed diseases, water based diseases and water related insect vectors. Although a significant proportion of this immense burden of disease is caused by 'classical' water-related pathogens, such as typhoid and cholera, newly-recognized pathogens and new strains of established pathogens are being discovered that present important additional challenges to both the water and public health sectors. Developing nations are experiencing rapid expansion in economies, meaning booming industries, commercialization and urbanization, altering the natural landscape and ecosystem. New environments may favour the proliferation of pathogens or their vectors and bring about contact with a previously-unexposed population. Furthermore, climate change due to anthropogenic activities such as deforestation, and rapid industrialization has introduced a host of novel issues, many of which contribute to the increase in water related diseases.

Conclusion: Water should serve as a reservoir of sustenance and not for pathogens. Goal 6 in the United Nations Sustainable Development Goals targets to achieve universal and equitable access to safe and affordable drinking water for all by year 2030. Prevention measures that are inclusive and deal with a problem holistically will succeed. In order to accomplish this mission, world leaders, governments, captains of industry, local communities, and individuals must join forces and fulfill their roles.

Keywords: Water related diseases, issues, challenges

Healthcare Waste Management during The COVID-19 Pandemic in Healthcare Facilities in Greater Gaborone, Botswana

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Abstract:

Introduction: Healthcare waste management, a critical component of infection control in healthcare facilities continues to be a challenge in developing countries. The possible adverse effects of healthcare waste that is poorly managed include transmission of communicable diseases such as HIV, hepatitis B and A, needle-stick injuries and burns. Research shows that due to COVID-19, healthcare waste (HCW) has increased due to high usage of personal protective equipment as well as chemicals for disinfection. We assessed the implementation of the WHO interim guidelines on the management of healthcare waste during COVID-19 in five health care facilities and an isolation center in greater Gaborone.

Methods: A descriptive cross-sectional study design was followed. Study population included clinical healthcare workers and support staff from 5 health facilities and one COVID-19 isolation center. Questionnaires were used to collect data and SPSS version 27 was used to generate descriptive statistics. The research proposal was submitted to the University of Botswana and Ministry of Health and Wellness Institutional Review Boards (IRB) for ethical approval.

Results: Two hundred and fifty five participants responded to the study and two thirds (158) were females with an average working experience of 4 (± 1.9) years. Nursing staff formed the majority (161,63%) followed by doctors (56,22%). Almost all participants (99%) had adequate general knowledge on COVID-19. Over 90% (233) of participants reported a $\geq 100\%$ increase on HCW since COVID-19 and 42% (108) felt the increase was caused by the use of Personal Protective Equipment. About a quarter (24%) of participants showed poor knowledge on HCW colour coding and a third were not trained on risks associated with HCW. Poor compliance to WHO guidelines included COVID-19 waste collection bags that were not labelled 162(64%) and storage bins not always locked. Most participants (92%), showed the need for extra HCWM workshops and training on WHO COVID-19 guidelines.

Conclusion: Whilst participants reported that their facilities had adopted WHO COVID-19 HCW management protocols, poor knowledge among workers and partial compliance of WHO COVID-19 HCW guidelines were observed. To address these gaps, there is need to provide training on WHO guidelines.

Keywords: COVID-19, health care waste, healthcare workers, WHO guidelines

A Study on Knowledge, Attitudes and Practices (KAP) on Food Hygiene and Safety among the Community in Bandar Enstek, Negeri Sembilan

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Abstract:

Introduction: This study involved 96 respondents from various educational backgrounds, all of them were over the age of 18 with 78.1% of them were male. Each KAP section had 20 sets of questions, which were distributed in 3-week time intervals using Google Forms survey. The questionnaire was highlighted on the FH&S principle at home which is handling, preparing, storing the food in the right manner including cross-contamination and personal hygiene principle.

Methods: Food hygiene and safety are really important in humans' daily life. Poor knowledge, attitudes, and practices (KAP) on food hygiene and safety, may cause food-borne diseases to people, and worst it may cause death. Statistically, there are huge numbers of food-borne disease cases happening worldwide including in Malaysia.

Results: The results indicate that overall respondents had sufficient knowledge on FH&S as the mean score on the knowledge was 14.7 ± 1.934 (73.3%). Meanwhile, the respondents also had positive attitudes and practices toward FH&S as the mean score for the attitudes section was 14.8 ± 2.531 (73.9%), and the practices section was 14.3 ± 2.984 (71.7%). The results also indicate there were statistically significant between all three KAP variables as a p-value is less than 0.05 ($p < 0.05$). However, there were no statistically significant for the respondent's education level and the KAP variables due to the p-value being higher than 0.05. It indicates that the respondent's education level was not associated with their KAP on food hygiene and safety.

Conclusion: The purpose of this descriptive cross-sectional study was to analyze the knowledge, attitudes, and practices of the community in Bandar Enstek, Negeri Sembilan regarding food hygiene and safety (FH&S) that have been applied at home.

Keywords: Knowledge, attitudes and practices (KAP), food hygiene, food safety

Quarry Respirable Dust Pollutant on Fractional Exhaled Nitric Oxide (FENO) and Interleukin-8 (IL-8) Concentration

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Abstract:

Introduction: The respirable dust from quarry sites may contain harmful minerals that can penetrate deep into the lungs. Mineral dust contains a variety of carcinogenic and non-carcinogenic substances. This study was to investigate the impact of exposure to quarry respirable dust on respiratory health performance by interpreting Fractional Exhaled Nitric Oxide (FENO) and Interleukin-8 (IL-8) concentrations.

Methods: A cross-sectional study was carried out among 173 school staff who have been exposed within a 10km radius of the quarry sites. An air sampling pump was used to collect personal exposure to quarry respirable dust. A human ELISA test-kit was used to analyze IL-8 concentrations, whereas NIOX MINO and Chestgraph H1-105 spirometers were used to measure FENO levels and lung function.

Results: The mean and standard deviation of quarry respirable dust was 1.19 ± 0.77 mg/m³. The FVC% predicted and FEV₁% predicted had normal lung function levels of 90.46 ± 13.21 and 95.71 ± 11.60 . The geometric mean (GM) concentration of IL-8 was 121.12 ± 2.38 pg/mL. The geometric mean (GM) concentration of FENO was 20.96 ± 7.71 ppb. FENO concentrations among study respondents have poor significantly relationship with the exposure to quarry respirable dust ($r=0.27$, $p=0.046$). Quarry respirable dust exposure have low relationship with wheezing ($r=0.18$, $p=0.015$).

Conclusion: The public is at high risk of lung impairment by developing respiratory health symptoms, reducing lung function levels and increasing high levels of FENO cause of their exposure to quarry respirable dust.

Keywords: Quarry respirable dust, Fractional Exhaled Nitric Oxide (FENO), lung function, Interleukin-8.

Waste Separation among Household in Malaysia : A Systematic Review

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Abstract:

Introduction: Almost 95% of food waste goes to landfill in which food waste is converted into methane and other gasses that affect climate change. This scenario will affect our safety, health & environment.

Methods: A systematic literature review method was used to collect and analysed related works on household waste management in Malaysia. Literature has been compiled based on two major databases including, Google Scholar and Scopus. Literature was searched based on several relevant keywords. A total of 15 articles met the requirements set, and 12 of them are reviewed in this paper.

Results: The study on household waste separation is limited. From the literature, many factors contribute to the waste separation practice among households in Malaysia.

Conclusion: In conclusion, the community has moderate awareness of household waste management, especially in waste separation. Further study on the food waste policy is to stop the habit of wasting food in society.

Keywords: Waste separation, waste management, household waste

Indoor Pollutants and Its Impact on Respiratory Health Symptoms and Lung Functions among School Children Exposed to Bauxite Mining

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Abstract:

Introduction: Exposure to indoor dust pollution is one of the public health concerns especially in children. Children are more vulnerable in terms of exposure by virtue of their susceptibility and the doses of the receiving. The uncontrolled mining activities in Pahang has created a dusty environment that leads to health impacts especially respiratory health.

Method: A comparative cross-sectional study was conducted on 270 students randomly selected from the Primary 4 and 5 clusters. Questionnaires were used to collect the information on their background and their respiratory health symptoms. Lung function test was performed for each student using a spirometer according to the American Thoracic Society standards. Environmental sampling for particulate matter (PM₁₀) and indoor air and dust of heavy metals pollutants samples from each of the eight classes were collected using a Gillian Personal High-Volume Air Sampler and 400W vacuum cleaner that consists of a special filter. The heavy metals concentrations were analysed using ICP-MS.

Result: The concentration of PM₁₀ and heavy metals (As, Cd, Ni and Pb) in indoor air and dust was significantly higher in the studied area ($p < 0.001$). Highest reported symptoms in studied group was cough with flu (48.0%), nasal congestion (45.9%), runny nose (42.6%) and headache (41.2%). Symptoms such as diagnosed asthma ($p = 0.033$), runny nose ($p < 0.001$), nasal congestion ($p < 0.001$), sore throat ($p < 0.001$), dry throat ($p < 0.001$) and chest tightness after outdoor activities ($p < 0.001$) showed significant differences between two groups. This study also showed students in studied area have significantly lower ($p < 0.01$) of FEV₁, FVC, and FEV₁/FVC ratio compared to the comparative group. Students from studied area have 68.2% of FEV₁ abnormalities, 50% of FEV₁/FVC abnormalities and 38.5% of FVC abnormalities. Higher pollutants concentration of PM₁₀ and heavy metals in environmental samples were significantly associated with all reported health symptoms except for cough and chest tightness at night. PM₁₀ and heavy metals exposure were significantly associated with reduction of lung functions ($p < 0.05$). Lower values of FEV₁, FVC and FEV₁/FVC were found to be significantly associated with runny nose, nasal congestion, dry throat, chest tightness, chest tightness at night and chest tightness after outdoor activities

Conclusion: The elevated or increasing concentrations of these pollutants in the school investigated should be one of our cause for concern especially for stakeholders in the education sector.

Keywords: Indoor pollutants; respiratory health; school children; Bauxite mining; lung functions

Risk Factors Associated with Blood Cholinesterase Level among Health Workers of Kuala Lumpur City Hall

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Abstract:

Introduction: Health workers of the vector control unit are always at risk of being exposed to danger due to the handling of hazardous organophosphate pesticide which may cause poisoning throughout mixing, spraying, loading and cleaning up of containers and machine. The use of pesticides in pest management has increased rapidly and occupational exposures had adversely affected human health. This study was aimed to determine the risk factors associated with the blood cholinesterase level (BCL), an indicator of pesticide exposure, among health workers of Vector Control Unit of Kuala Lumpur City Hall

Methods: A cross-sectional study was carried out from October 2021 to February 2022 at the Department of Health and Environment of Kuala Lumpur City Hall (DBKL). The study samples consisted of 2 groups, exposed (fogging workers, n=200) and comparison group (general health workers, n=200) from the Vector and Control Unit. Data obtained were the BCL, and background information of workers which include socio-demographic, duration of employment, smoking status, personal hygiene, PPE usage, fogging direction, and general health status of the workers. All data were analysed by using IBM SPSS version 22.

Results: Only 3 out of 400 workers showed abnormal BCL of less than 4620 uL. The BCL of the exposed was significantly lower than the comparative group ($\chi^2 = 21.077$, $p < 0.001$). Among the exposed, health symptom was the risk factor of BCL ($b=0.176$, 95% CI: 0.028, 0.325)

Conclusion: The result showed that pesticide exposure among the exposed worker was low and those who reported health symptoms were not among those who highly exposed. This may indicate the good practice among workers who handle the pesticides. Compulsory yearly medical surveillance and health monitoring is strongly recommended to assure the good health and well-being of the workers.

Keyword: Organophosphate, blood cholinesterase level, health workers

Soap-Making from Waste Cooking Oil: A Review

Mohd Faridz Mokhtar^{1*}, Khairil Anuar Mohamed¹, Siti Mariam Abdullah¹, Siti Wahidah Puasa¹

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Abstract:

Introduction: Waste Cooking Oil (WCO) is known as a hazardous substance to the environment as it tends to damage and pollute the water body through direct disposal, reduce the treatment capacity of water treatment plant and tend to deposited in pipeline system and causing a blockage and damage the sewerage pipeline system.

Methods: As a waste product, WCO contain high level of free fatty acid, glycerol, monoglycerides, diglycerides and other oxygenated substance which is undesired and degrading the quality and made unsuitable and hazardous in food preparation. Through this parameter, the content of WCO can be identified and determined its quality and availability to be used as raw material.

Results: The acid value provides the amount of free fatty acid (FFA) exist in WCO as the FFA is one of important source require to produce material such as biodiesel component (Fatty acid Methyl Esther or FAME) and soap. The production of soap from WCO is one of the most economical and environmental ways as its production create no harm and waste with minimal energy required thus giving a prospect upon green product. The formation of soap is produced as the substance of free fatty acid react with base and forming carboxylic salt known as soap while the glycerol remain as it is.

Conclusion: Transformation from WCO to soap through saponification undergo cheap and non-complicated phase provide alternatives in production of new product from WCO. Further study is suggested in application for optimizing the correct formulation in producing soap from WCO and identify the additional ingredient in order to obtain high quality soap as end product.

Keyword : Waste cooking oil, saponification, soap-making process

THE ROY EMERSON AWARD - INTERNATIONAL FEDERATION OF ENVIRONMENTAL HEALTH 2022 WINNER - Emmanuel Kakraba.

The Roy Emerson Award was established to honour one of the IFEH founding fathers. Students who are affiliated with IFEH Member Countries or our Academic Association members are INVITED to submit an essay on a theme. The winner this year will be funded by IFEH to receive the prestigious Award in Kuala Lumpur, Malaysia and to present the Award Winning Essay as a Conference Presentation.

The IFEH called for submissions re the above award. We had around 40 applications almost exclusively from Africa. The IFEH BoD set up a scrutiny panel who carried out an initial sort and produced a short list for further review. The panel read all the submissions and after considerable discussion, recommended the submission by **Emmanuel Kakraba** to the IFEH Board. The IFEH Board sat and after further discussion confirmed the panels selection. The prize involved return flights, accommodation, meals, attendance, and the opportunity to present on the main stage of the World Congress. **Congratulations Emmanuel Kakraba**

The editor had the opportunity to meet and interview Emmanuel and to hear a little about his story. Emmanuel was accompanied (and mentored) throughout this amazing experience by Samuel Yaw Agyemang- Badu, National Vice President, HeSEHPAG, Ghana. Emmanuel is a Diploma student studying at the School of Hygiene, Ho, Volta Region, Ghana. Fellow EH professionals and students from around the world are asked to write to Emmanuel at the email address below. Perhaps offering congratulations or offering to help him and his fellow students in collaborative research.

The title of the winning submission was “strengthening environmental health systems for the implementation of the sustainable development goals (sdgs).”



Photos of School of Hygiene, Ho, Volta Region, Ghana



Photos of local village where Emmanuel originates and where his family still stay ... last photo is of the villages primary water source.

Name: Emmanuel Kakraba

Date of Birth: 23/07/1991

Place of Birth: Lolobi.

District: Hohoe.

State: Volta Region

Hometown: Lolobi-Kumasi

Language(s) Spoken: Guan, Ewe, Twi, English

Current School: School of Hygiene, Ho

Date to complete: August 2023

Program of Study: Diploma in Environmental Health

Short – term goal: To graduate this year successfully with first class.

Long – term goal: To obtain PHD in Environmental Health or in any other related program

Future Research interest:

❖ Control and management of plastic wastes: To cause decay of plastic rubber bags in particular

❖ Control of stench or foul smell emanating from domestic and public sanitary centres.

Contact: (233) 0241421716 / 0202150109

Email Address: kakraba.o.emmanu@gmail.com



IFEH Board would like to express its ongoing thanks to Hedgerow Software who provide a travel bursary to help those attend who otherwise would not be able to do so. Hedgerow Software is an amazing company providing bespoke solutions to improve the practice of environmental health. They have a large number of customers in Canada and the USA. Give them a call if you want to know more.

These photos show Neil and Miranda at the World Congress demonstrating Hedgerow Software

Once again thank you Hedgerow Software for supporting IFEH and EH practitioners from around the world.

The winner of the 2022 Hedgerow Software bursary were:

- Stephen Musarapasi, Zimbabwe
- Our colleague from Zambia had to withdraw due to visa/travel restrictions
- Samuel Yaw, Ghana
- David, Musoke, Uganda
- Jerry Chaka, South Africa (5 awarded only 4 were paid out)

The Hedgerow Bursary www.hedgerowsoftware.com enabled the IFEH to welcome participants from developing countries to take part in in our Council Meeting and AGM. These sponsorships are very important to the work of IFEH. The IFEH BoD would like to thank the past IFEH President Robert Bradbury for his great efforts in ensuring continuing sponsorships

The Federation wishes to thank and recognize Hedgerow Software for their generous support in the creation and establishment of this Bursary; the agreed purpose of this funding is to support members from developing countries to attend IFEH Council Meetings and International Congress.

Eric Foscett Award 2022 - Awarded to Dr. Selva Mudaly

This is the Citation from the IFEH Website submitted by SAEH and copies verbatim



CITATION TO THE 2022 WINNER OF THE ERIC FOSKETT AWARD – DR SELVA MUDALY

Dr. Selva Mudaly qualified as an Environmental Health Practitioner in 1974 and went on to obtain various certificates and diplomas in various fields of Environmental Health. He obtained the B. Tech Degree in Environmental Health. He worked in Local Government for 43 years, before retiring in 2013. He was the first person in South Africa to be awarded an Honorary Doctorate in Environmental Health, the PhD, Environmental Health.

Appointments

Throughout his long and illustrious career, Dr. Mudaly received numerous work and professional appointments, inclusive of:

- Appointment by the National Minister of Constitutional Affairs and Planning of South Africa to serve on the National Local Government Training Board for a period of 5 years (1992-1997).
- Deputy Chairperson of the Professional Board for EHPs of the Health Professions Council of South Africa (2002 - 2008).
- President of the South African Institute of Environmental Health since 2010.
- President of the International Federation of Environmental Health from 2018 to 2020.
- KZN representative on the South African Local Government Association on the National Health Technical Working Group (1994- 2002)
- Responsible for drafting and developing the Scope of Practice for the Profession of Environmental Health in South Africa.
- Performing the first Municipal Health Services (Environmental Health) audits in South Africa in 2013, 2014, 2015, 2016, 2017 and 2018 on behalf of SALGA.
- Drafted a set of MHS (Environmental Health By-laws) for the country on behalf of SALGA.
- He was appointed by the National Department of Mineral and Energy Affairs and the Civil Engineering Research Foundation (Africa Region) as part of the South African delegation to the USA to draft a document for the phasing out of lead from fuel and make recommendations to the Ministry of Energy and Mineral Affairs.
- He was integrally involved in the development of the South Durban Basin Multi-Point Plan.
- Appointment by the National Minister of Environmental Affairs as a member of the Inter-Governmental Coordinating Committee.

Attendance and participation in national and international conferences and meetings

Dr Mudaly attended, participated in, or organized the following International Conferences on Environmental Health:

- Represented South Africa at the International Conference on Health and Environment in Africa on the 8-11th September 1997.
- Represented South Africa at the International Federation of Environmental Health (IFEH), World Congress in Stockholm, Sweden in 2000.
- Represented South Africa at the IFEH World Congress in San Diego in 2002.
- Organized the 8th World Congress on Environmental Health in Durban in 2004.
- Represented South Africa at the IFEH World Congress in Dublin in 2006.
- Presented at the 2nd All Africa Congress in Malawi in May 2010, paper entitled, "THE ROLE OF THE PROFESSIONAL BOARD FOR ENVIRONMENTAL HEALTH PRACTITIONERS IN CONTINUOUS PROFESSIONAL DEVELOPMENT, CURRICULUM DEVELOPMENT AND QUALITY ASSURANCE".

- Organized the 3rd All Africa Congress on Environmental Health at the I.C.C. in Durban in November 2012.
- Represented South Africa in Las Vegas in 2014
- Represented South Africa and IFEH President at the IFEH World Congress in Jamaica in 2017.
- Represented South Africa at the IFEH World Congress in Auckland in 2018.

Significant Contributions to the IFEH

- He was elected the IFEH President – Elect in 2016 and became IFEH President in 2018-2020.
- During his term as IFEH President, he canvassed support which led to the changing of the IFEH logo to the new, smart-looking, and modern logo of the IFEH.
- He tirelessly campaigned for changes of the IFEH Procedures Manual, which resulted in member organisations identifying several outdated policies and the IFEH Procedures Manual was revamped, making it easier to be understood by all members, and it became a modern document and more practical to implement.
- He campaigned for a break-away strategic session, which he chaired and resulted in major changes to IFEH operations which place them more in line with international organisations' operations and best practices.
- He spearheaded the writing of the history of the IFEH, which forms the foundation of the IFEH and will be updated at regular intervals. This document was adopted by IFEH Council.
- He developed IFEH Strategic Plan/Objectives which were adopted by IFEH Council as a road map that could be used by the IFEH to evaluate its performance and relevance in serving its stakeholders. This plan is expected to be subject to ongoing review to make it more responsive to the needs of the organization.
- He served the IFEH at all its council meetings.
- He was also invited by the Jamaican Association of Public Health Inspectors (JAPHI) as a guest speaker during his term as IFEH President-Elect.
- He was invited by the Zambian Institute of Environmental Health to make presentations at their National Environmental Health meetings.
- He played a major role in the development and promotion of the IFEH Environmental Health Day themes for three successive years (2018 to 2020).
- He continues to serve on the Board of Directors of IFEH, representing the Africa Region as Chairperson where he is contributing meaningfully to the development of the IFEH.
- Currently, the Chairperson of the Africa Group of the International Federation of Environmental Health and Acting Secretary of the IFEH since 2022.

Awards received

- Most Outstanding Jaycees of the Year – Verulam Chapter in 1982.
- Won the National Jaycees Achiever Award from Jaycees South Africa in 1982 for Community Projects and service rendering.
- First recipient of the Alfred Nzo Award for outstanding contribution in the field of Environmental Health in 2002, awarded by the National Minister of Health of South Africa.

We celebrate and salute Selva for his vision, decorum, astuteness, brilliance, dedication, commitment, sober approach, firmness, and infectious smile as he worked tirelessly with colleagues at the local, national, regional, and international levels to achieve the ideals of environmental health. He represents a giant among environmental health practitioners and a most deserving recipient of the Eric Foskett Award. The following quotation aptly summarizes his approach to his life, work, and success, **“A lot of people failed at what you accomplished, simply because they were busy finding problems while you were busy finding solutions”**.



EHA (WA) to host the 2024 Environmental Health World Congress

Connecting Environmental Health Professionals from around the world in Perth

Perth, Western Australia, August 22nd 2024

Environmental Health Australia (WA) Inc have officially been 2024 awarded the rights to host the 17th World Congress on Environmental Health (WCEH) in Perth

The council members of the International Federation of Environmental Health (organisers of the WCEH) voted yesterday at the 16th WCEH in Kuala Lumpur to support the bid by EHA (WA) Inc to hold the next congress in Perth from the 20th to 25th of May 2024.

“We’ve been working towards this for some time and we’re so pleased to have had our bid approved for the 2024 World Congress,” said EHA (WA) Inc President, Vic Andrich.

“It’s a great opportunity to welcome Environmental Health Professionals from around the world to Perth and we’re honored to have been selected as hosts.”

The WCEH is a bi-annual event that is held with the purpose of providing a forum for Environmental Health Practitioners to discuss and tackle challenges and problems faced in the environmental health sector around the world.

“EHA National fully support the bid by EHA (WA) Inc to host the 2024 World Congress and think it’s a great opportunity to promote environmental health in Australia on a global platform,” Said EHA President, Philip Swain.

Environmental Health Australia is committed to the enhancement of environmental health standards and services to the community through advocacy, promotion, education and leadership.



The International Environmental Health Faculty Forum (IEHFF)

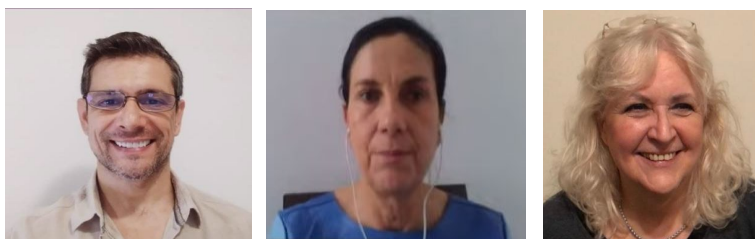
It was my honor as Chair IEHFF, to work throughout the year with colleagues from MAEH to coordinate and organize what we believe was the first blended meeting of the faculty forum (Zoom + participants in the room). We had some 25 academics in the room and 12 online for what proved to be a collegial and productive meeting. Thank you all who attended both in person and online especially our colleagues from South America where the local time was approx. 0300.



Photo from Right to left

Stephen, Andrew, David and Sam attending the IEHFF.

Integrating Lessons Learned in Human Resource Development: The Role of Postgraduate Program in Environmental Sciences



Julio A Navoni^{1,2}, Liliana Pena Naval^{2,3}, Susana Garcia^{2,4}

¹Federal University of Rio Grande do Norte (Brazil). PRODEMA Network - Postgraduate Programs in Development and Environment of Federal Universities of Brazil,

²Ibero-American Society for Environmental Health (SIBSA).

³Coordination for the Improvement of Higher Education Personnel (CAPES) Coordination of Professional Programs in Environmental Sciences (Brazil). Federal University of Tocantins (Brazil).

⁴University of Buenos Aires (Argentina), National Technological University (Arg), University of Panama.

This brief presentation discusses the challenges that the Ibero-american Society of Environmental Health (SIBSA) undertakes in order to contribute to the development of human resources in the field of environmental sciences.

One of the SIBSA's pillars is its engagement in the formation of prepared human resources in the socio-environmental sector working together in different educational scenarios with the goal of democratizing the availability of excelsior experience-based environmental health knowledge. To achieve this goal, we will draw on our staff's riches of experience and expertise in environmental health issues, as well as our energy and enthusiasm.

Our educational staff includes professionals from a variety of environmental-related fields from around 20 universities and institutions in Latin America, the United States, and European Union countries, such as Portugal and Spain.

Furthermore, it is important to recognize the generous assistance provided by the Pan-American Health Organization and the United Nations through the active participation of some of their members in SIBSA.

As a result, the SIBSA encourages and facilitates international interaction and integration on issues related to environmental health issues.

To achieve this goal, we emphasize the importance of innovative educational activities.

For instance, in November of last year, we held the First Ibero-American Virtual Congress on Environmental Health.

It is worth noting that the event was completely open to the public. As a result, anyone interested in environmental health issues had and continues to have access to a huge source of high-quality information freely available on our YouTube channel.

Thus, this type of activity aided us in democratizing knowledge in this highly relevant and particular historical chapter, which was and still is the COVID-19 pandemic period.

Aside from that, the goal of this event was to create an appropriate space for the institutional strengthening of postgraduate programs on a global scale.

It is crucial to highlight the essential importance of postgraduate programs in environmental sciences aimed at generating trained human resources committed to promoting environmental and human well-being on a global scale through internationalization activities, agreements, and direct interaction with specialists from this transdisciplinary field.

In this regard, the congress featured a session on the Internationalization of Professionalizing Programs in the Environment, Sustainability, and Environmental Health, in which the initiatives and institutional strategies of post-graduation programs from universities in Portugal, Brazil, Paraguay, and Mozambique were shared.

As a result, the purpose of this brief presentation was to provide an overview of some of the activities that the SIBSA performs as an academic formation source in environmental sciences.

Key lessons learned about internationalization of professionalizing programs in the environment, sustainability, and environmental health

In November 2021, the First Ibero-American Virtual Congress on Environmental Health was held, where we had a session about the Internationalization of professionalizing programs in the environment, sustainability, and environmental health, in which the initiatives and institutional strategies of the Federal Institute of Rio Grande do Norte (Brazil), the NOVA University of Lisbon (Portugal), through the Postgraduate programs from the National University of Asunción's Faculty of Chemical Sciences and the Postgraduate in Mozambique Programs were described and shared. For more information, the recording of the session is available at: <https://www.youtube.com/watch?v=-wMZsLcXok&t=227s>.

NOVA University has established partnerships with other countries in Europe and Latin America to internationalize Master's and Doctoral Postgraduate programs, and it hopes to expand to other regions such as China and the Middle East.

The Environment and Sustainability Research Center already has a large number of foreign researchers on their staff, and they are working to provide postgraduate programs in languages other than Portuguese (English and Spanish in general). The campus of NOVA University will be built in Cairo, Egypt.

The main goal of internationalization at the National University of Asunción is carried out through the activities of the Faculty of Chemical Sciences' Research Department regarding the strengthening of analytical capacities in the area of environmental physical chemistry (soil, water, and atmosphere), in the Departments of Physical Chemistry, Industrial Applications, Biological Chemistry, and Phytochemistry.

In the case of postgraduate programs in Mozambique, the advantages for the country were highlighted, mainly due to the possibility of inviting professors to teach specialized subjects, since highly qualified professors are scarce in that country.

It emphasized the importance of understanding each country's legislation, signing cooperation agreements, considering technology transfer, access to digital libraries and teaching and learning platforms, taking steps towards beginning research, and mobilizing scientists to solve universal societal issues.

Actions in the short and medium term were also discussed, along with the possibilities of internships, coordination, co-tutoring in thesis projects; double degree (immediate advantage), fees to pay or use of reciprocity, and confrontation of general and institutional criteria of each program.

Thus, the Ibero-American Society for Environmental Health promotes and facilitates international interaction and integration on issues related to environmental health.

We emphasize the significance of events of an innovative nature, such as this congress, not only helping to democratize knowledge in this highly relevant area but also creating the appropriate space for the institutional strengthening of postgraduate programs on a global scale.

It is pivotal to highlight the fundamental role of postgraduate programs in environmental sciences aimed at developing trained human resources dedicated to promoting environmental and human well-being on a global scale through internationalization activities, agreements, and direct interaction with specialists from this transdisciplinary field.

Toxicology Network of Latin America and the Caribbean (RETOXLAC)



Amalia Laborde García^{1,2} and Susana Isabel García^{2,3}

¹ Toxicological Information and Advice Center (CIAT) of Montevideo, Uruguay. Department of Toxicology of the Faculty of Medicine of the University of the Republic. PAHO/WHO Collaborating Center in Human Environmental Toxicology.

²Ibero-American Society for Environmental Health

³University of Buenos Aires (Argentina), National Technological University (Arg), University of Panama.

The Toxicology Network of Latin America and the Caribbean (RETOXLAC) links toxicologists in the Region, doctors, pharmacists, chemical-pharmaceuticals, biochemists, veterinarians, chemists, agronomists, and also the Poison Control Centers, the Clinical Toxicological Analysis Laboratories, the Toxicology Societies, the Local Toxicology Networks, the University Chairs of Toxicology, the Information Centers on certain toxic risks (chemical, toxins, occupational, fetal, etc.) or specific intoxications (botulism, poisoning, etc.), other Laboratories and Research Institutes, and institutions that provide auxiliary services for the identification of toxic substances. The first schools of toxicology in the 19th century were linked to forensic laboratories, but in the middle of the 20th century, Toxicology Centers began to be created in hospitals, and over the years, their objective has transcended that of providing the best therapeutic assistance, to assume commitments in poisoning prevention activities, communication and alerting the community and the authorities about the risks derived from a detected contamination, as well as in the analysis of risks of chemical products and environmental toxicology. They also carry out teaching, research and intervention in contingency plans for chemical disasters. Over time, both the Centers and the Laboratories acquired an important “sentinel” role in the epidemiological surveillance of intoxications.

The objectives of RETOXLAC are to improve the exchange of specific information, to contribute to the harmonization of records of consultations and analytical determinations, to improve the notification of intoxications in order to optimize toxicovigilance, to normalize the activity of the CIATs and LACTs in order to guarantee the quality of the service they provide, promote the expansion of the network to places where there are no specialized centers and laboratories, develop multicenter research, training and prevention activities and analytical quality control programs, as well as the creation of virtual medication banks antidote and laboratory standards, with a view to improving both the management of risks arising from contact with poisons of natural or anthropogenic origin, and the treatment of affected people.

Periodic clinical conferences are currently being held, work is being done on regional consensus on issues of common interest: antidote kit, initial management of the poisoning patient, decontamination, management of poisoning due to animal venom, management of fire smoke victims, and based on these consensuses, in the assembly of self-study courses in the virtual classroom that will be available on the website www.retoxlac.org.

RETOXLAC members communicate through the email group retoxlac@googlegroups.com which requires prior subscription, which can be requested by sending an email message to retoxlac@gmail.com, from a RETOXLAC Telegram group to which you can enter through the link <https://t.me/joinchat/Vu1bdlaBY7DVb-IO>

Health, Human Rights and Environmental Sciences



Mauricio León¹, Fernando Díaz-Barriga^{1,2}, Susana García^{2,3}

¹Division of Higher Studies for Equity. Faculty of Medicine of the Autonomous University of San Luis Potosí, Mexico. Collaborating Center for Risk Assessment in Children's Environmental Health (PAHO/WHO).

²Iberoamerican Society of Environmental Health (SIBSA).

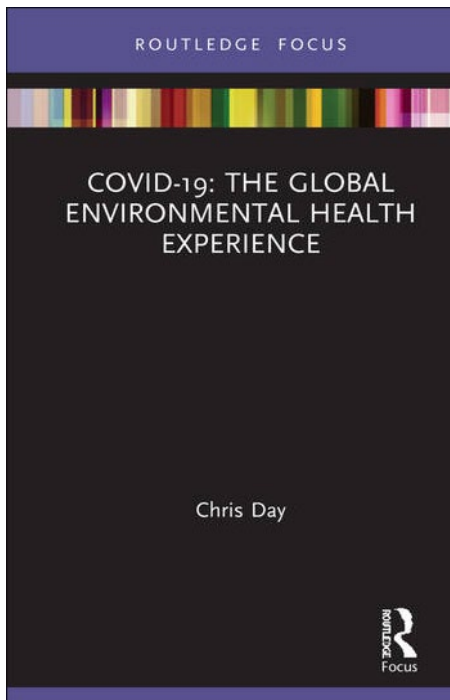
³University of Buenos Aires (Argentina), National Technological University (Arg), University of Panama.

Health is linked to integral development. Therefore, different social, economic, political and environmental factors need to be attended and tackled, specially considering health as a human right. In this scenario, the construction of health should be seen as a process that integrates all those factors that are related to the origin of diseases and affect the wellbeing of the population. Thus, its study should be analysed from an innovative perspective that includes three elements: (i) health and environmental risks (physical, chemical, biological, ecological and social threats); (ii) the context of vulnerability (poverty, marginalization, violence, comorbidities, social security, etc.); and (iii) the most affected populations (children, adolescents, women and precarious workers). All of these, in order to generate new lines of action to build health as an element of community cohesion (human and non-human) that leads to integral development under a scheme of human rights and the rights of nature. Consequently, the creation of a new framework is required to prevent humanitarian crisis situations. This model has been called Humanitarian Scenarios and has become a strategy to prevent humanitarian crises through the attention of all threats, social, chemical, physical, biological and ecological. In addition, it can propose schemes of social innovation to prevent and address the deterioration of welfare and the construction of health for all forms of life. Taking all these elements into account we can conclude that there is a need of a new health professional as is the case of our proposal for a bachelor's degree in environmental sciences and health.

IFEH Council Meeting – face to face and online (more photos on the WCEH web pages)



COVID-19 The Global Environmental Health Experience



Colleagues should acquaint themselves with the excellent new book written by Dr Chris Day and published by Routledge, UK. ISBN 9780367743161 · 146 Pages.

This book is devoted to the efforts of Environmental Health Practitioners (EHPs), their employers and supportive professional bodies world-wide in responding to the COVID-19 pandemic.

Drawing upon the first-hand experiences and reflections of EHPs working across the professional discipline in countries around the world, the book highlights how they responded to the initial wave of SARS-CoV-2 infection as it spread globally. It explores how this impacted on their environmental health work as their wider public health skills and expertise were increasingly called upon/ The book recognises the significant contributions that EHPs have made to protect lives and livelihoods since the seriousness of COVID-19 became apparent. It also identifies shortcomings in the response and deployment of personnel and makes a series of

recommendations to inform future practice.

This book:

- captures a moment in history through the experiences of Environmental Health Practitioners in meeting the complex challenges presented by the COVID-19 pandemic.
- features the observations of front line practitioners on the practical challenges and opportunities encountered globally, suggesting the lessons learnt for current practice in infectious disease prevention and control.
- expands upon the reflections of some of the professional bodies around the world as to how the response of EHPs to the COVID-19 pandemic should result in a renewed commitment to public health through Environmental Health.

EHPs in current practice and in training, other public health professionals and those looking to build better health protection services, now, and in the future, will find this book a valuable resource to inform the case for the key role of Environmental Health in the current pandemic, in response to future challenges and crises, and in managing risks to health encountered in more usual times.

University adverts

University of Applied Sciences Velika Gorica (UASVG)

UASVG started to operate in 2003 with five professional three-year study programmes: Humanitarian demining, Pyro technology, Computer Systems Maintenance, Motor Vehicle Maintenance and Aircraft Maintenance. It was the first private university of applied sciences from the field of technical sciences in the Republic of Croatia. The founder of the UASVG is the City of Velika Gorica. The basic function of the studies is to implement the teaching activities of the approved programme and to encourage the development of all scientific- professional teaching disciplines that are represented or ought to be represented on the study, based on the science and the profession, and with the intent to approach the level of standards worldwide.

Study at UASVG

University of Applied Sciences Velika Gorica offers study programmes that are interesting to the young people from Europe, as well as from other parts of the world. From the very beginning the University of Applied Sciences has been developing mentorship approach based on the understanding and better relations between students and professors.

What are the advantages you have as a student at UASVG

High-quality acquisition of knowledge and skills in modern equipped premises, practical classes organised in cooperation with the industry, and a number of other possibilities for successful study are some of the advantages of the University of Applied Sciences Velika Gorica. The UASVG programmes have been adjusted to actual labour market needs.

Undergraduate professional study programme:

Management in Crisis Situations is a study programme intended for decision makers and/or people who provide professional support to decision makers in legal entities and units of local and regional administration, state administration units, and especially the protection and rescue system in the police and the army. Disasters, as specific crisis states, occur when accidents or crises caused by forces of nature (floods, fires, earthquakes) or human activity (environmental impacts, terrorism etc.) affect people to such an extent that the affected population cannot control the course of events and successfully deal with the inflicted blows, losses and damage. The frequency and severity of disasters can be greatly reduced, or the effects mitigated if more attention is paid to the forecasts, observations, planning the provision of aid and general preparedness for adequate crisis or disaster response in case it occurs. The competences of graduated experts from this study programme include planning and implementation of preventive measures to prevent and mitigate the effects of crises or disasters in business enterprises or human environment in general, as well as the provision of professional assistance and coordination of professional teams and equipment after a crisis or a disaster.

It is the only such study programme in Croatia and in the entire South-eastern Europe, which qualifies future experts for the needs of the crisis management system and the system of protection and rescue. By graduating, the students acquire knowledge and skills for independent solving of crisis management problems for preventive action, managing the process of collecting and processing information, proposing procedures and solutions, and performing the management process.

Professional title upon graduation: professional baccalaureus/baccalaureate engineer of

Management in Crisis Situations

Specialist diploma professional study programme:

Crisis management is a study programme intended primarily for persons who are involved in protection and security aspects of crises in the activities of legal persons, industry, local and regional administration bodies, and government administration bodies. Upon graduation the students acquire specialist knowledge and competences for independent solving of problems in crisis management, managing processes and management systems of security and protection in public and private sector, especially in industry at the national and international level, as well as harmonizing the activities with the system of managing the functional activity of the organisation.

Professional title upon graduation: professional specialist engineer of Crisis management

Contact

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e-mail: info@vvg.hr

Web site: <http://www.vvg.hr>

Facebook <https://www.facebook.com/veleucilistevg> Youtube video
http://www.vvg.hr/index.php?option=com_content&view=article&id=1275&lang=hr

Google map http://www.vvg.hr/index.php?option=com_contact&view=contact&id=1&Itemid=543&lang=hr

University of Birmingham

CIEH Accredited



Environmental Health Sciences: Postgraduate Opportunities

At Birmingham we offer a range of Environmental Health Science Masters programmes that are accredited by professional bodies. These include:

- MSc Environmental Health – CIEH accredited
- MSc Public and Environmental Health Sciences – CIEH accredited (designed for international students)
- MSc Health, Safety and Environment Management – IOSH accredited
- MSc Air Pollution Management and Control – Committee of Heads of Environmental Sciences accredited

Birmingham is an internationally recognised Russell Group university and has been awarded Gold in the Teaching Excellence Framework. The University recently invested £5 million in expanding our student employability services. Our specialist Careers Network team can offer you advice and guidance that is specifically designed to meet your needs as a postgraduate student.

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To discuss the courses in more detail please contact either Zena Lynch (z.lynch@bham.ac.uk), Surindar Dhesi (s.k.dhesi@bham.ac.uk) or Zongbo Shi (z.shi@bham.ac.uk)

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Ulster University



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1. Have you ever wondered what happens behind the scenes of restaurants, shops, businesses and government?
2. Would you like a knowledge of issues such as food safety, health and safety, housing, public health or pollution?
3. Do you want a degree that leads to a career where you are out of the office meeting people and dealing with different challenges each day?
4. A degree that has very good employment prospects, locally and internationally, in well paid graduate jobs?
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Our graduates are equipped to find employment in a wide range of environmental health activities across public, private, and voluntary sector organisations. Environmental Health Practitioners (EHPs) can take their skills into a huge variety of roles. It is a career where you are dealing with different challenges every day.

This BSc (Hons) Environmental Health programme has great strength in delivering the practical and academic skills required for a career in environmental health including problem solving, communication, research, and management skills. It also aims to facilitate the development of your own personal, communication and intellectual abilities.

The course includes the core subjects of food safety management, health and safety at work, environmental protection, housing and public health. The areas of sustainability, quality of life, health inequalities, law and spatial planning are also integrated throughout the programme.

The BSc Environmental Health course is accredited by both the CIEH and IOSH. The course scores consistently high for student satisfaction (93% student satisfaction) with 95% of graduates in work or further study 15 months after graduation. To find out more visit www.ulster.ac.uk or contact Lindsay Shaw, Course Director, at email l.shaw@ulster.ac.uk

MSc – Global Strategy in Environmental Health and Sustainability
(Distance Learning)



This new programme has a strong international theme and focuses on the global role of environmental health in protecting communities and delivering a healthy, sustainable future. A perfect choice if you are passionate about the future health and well-being of our planet and its inhabitants.

The ethos of the course reflects **critical action 3** from the 3rd International Federation of Environmental Health (IFEH) Academic World Conference on Environmental Health, April 2019, Kampala, Uganda, specifically aimed at the role of academia in providing advanced education programmes and research to help facilitate the role of Environmental Health as “*a cornerstone to achieving the Sustainable Development Goals*”.

Delivered **entirely by distance learning, as part-time or full-time options**, it will enable you to study at a time and pace of your own choosing, engage with, and learn from, a diverse pool of peers.

The core principles of environmental health are embedded throughout the programme, aligned to the CIEH Professional Standards Framework, and directly linked to the attainment of UN Sustainability Goals. It will equip you with the critical thinking and problem-solving skills necessary to make a real impact in this field. Throughout each element we link the cross-cutting themes of, policy, strategy and intervention. You will be equally at home in a strategic or operational role, in a local or global setting.

Through an engaging on-line environment, you will cover topics **including food safety and security, environmental protection, sustainable technologies, emergency planning, resilience, housing and communities, international and human rights law**. Your research module will focus on the production of a journal article.

This MSc will be attractive for personal and professional development reasons. It will be equally attractive as a route to a rewarding career in the broad discipline of environmental health.

Contacts:

Sharon Moore, Admissions

T: +44 (0) 28 90366018

E: s.moore1@ulster.ac.uk

Mr Robert Cameron, Course Director

T: +44 (0) 28 90366054

E; rj.cameron@ulster.ac.uk



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Flinders
UNIVERSITY



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Ruaha Catholic University (RUCU).



Ruaha Catholic University (RUCU) is the successor of Ruaha University College (RUCO) which was established by the Tanzania Episcopal Conference (TEC) under its Trust Deed of the Registered Trustees of Ruaha University College through the generous support of well-wishers (friends of RUCU) within and outside the country.

This is one among the university offering Bachelor and diploma of Environmental health with information Technology (BEHSIT). It is found in Tanzania in Iringa region. The university is endowed with practical and much field work to socialise the environmental health aspects such as inspection of premises.

Contact Us Through

Vice Chancellor - Ruaha Catholic University

P.O.Box 774 - Iringa

Phone: +255 27 02431

Fax: +255 27 02563

Email: rucu@rucu.ac.tz

Website: <https://rucu.ac.tz>

Cardiff Metropolitan University



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Faculty of Health Sciences, University of Ljubljana

Univerza v Ljubljani
Zdravstvena fakulteta



doc. dr. **Andrej Ovca**, dipl. san. inž.

*Oddelek za sanitarno inženirstvo / Department of
Sanitary Engineering*

Zdravstvena fakulteta / Faculty of Health Sciences

Zdravstvena pot 5, SI-1000 Ljubljana, Slovenija
/ Slovenia

T.: +386 1 3001 182

andrej.ovca@zf.uni-lj.si, www.zf.uni-lj.si

Slovenian association of public and environmental health professionals has reviewed activities through which their members fulfil their mission in the field of pandemic prevention at various professional fields and in different institutions of their employment. Our colleagues from the field selflessly shared their experiences during the COVID-19 epidemic (which is currently in middle of second wave) in Slovenia. Through their responses four major areas of their engagement were identified.

First group (employed at National institute of Public Health) is in charge or is collaborating as a member of interdisciplinary groups which plan and recommend general and specific hygienic and technical measures for epidemic management on a national level.

Second group (Employed in hospitals, nursing homes, kindergartens, food companies, companies providing service in the field of health and safety at work, drinking water supply and waste management public companies) implement these measures in individual facilities and working processes.

Third group executes various tests and measurements for their clients.

Fourth group inspects compliance with measures or recommendations as a part of official control at municipal and national level.

According to the collected responses, effectiveness of Slovenian public and environmental health professionals is reflected in the extraordinary ability to cooperate with others, either within the profession either in working groups with members of other professions.

Those of us employed at the faculty (besides transferring the pedagogical process to the virtual environment) provided professional support to all colleagues from practice who turned to us. Since the declaration of the epidemic in Slovenia, we carefully monitor the development of events at home and abroad, so that we will be able to prepare our next generations of sanitary engineers for this kind of challenges.

Our Faculty (Faculty of Health Sciences, University of Ljubljana) gives each year awards for the best final research work of students at each of the research fields. In the field of sanitary engineering programme master's thesis entitled "Fast fashion – health and social aspects on consumption habits and attitudes toward second-hand clothing among adolescents" was awarded. (See photos)



University of Michigan



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University of Copenhagen

Head of Studies Department of Public Health
Global Health Section
furu@sund.ku.dk www.pubhealth.ku.dk



Peter Furu Associate Professor,

“Experience from recent major disasters, changes in the humanitarian field, the changing nature of conflict, and climate change impact all have made it clear that a holistic approach to disasters and crisis management is needed to substantially reduce losses and deal with new challenges the current system seems ill equipped to respond to. A coherent and holistic approach to disaster risk management is not without challenges. Decisions have to be based on a politically, economically, socially, culturally, and environmentally sustainable foundation and rooted in sound development policies. Risk reduction needs to underpin and guide decisions in Preparedness, Response and Recovery planning and programmes. Professionals with an adequate knowledge base and the right skills are invaluable if these challenges are to be met.

In response to this demand, the University of Copenhagen is offering a one year master programme, based on the above philosophy – a Master of Disaster Management.

To apply, please visit www.mdma.ku.dk.

You can contact us on e-mail mdma@sund.ku.dk

Obstacles to Environmental Progress

A U.S. perspective

Peter C. Schulze

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New courses and languages on OpenWHO

New course series on the clinical management of rape and intimate partner violence in humanitarian settings

Sexual violence and intimate partner violence can be especially problematic in complex emergencies and natural disasters. In these situations, women and children are often targets of abuse, exploitation, and violence because of their sex, age and status in society. This five-course series is intended for healthcare workers providing services to survivors of rape and intimate partner violence in humanitarian settings. For a better learning experience, we recommend accessing the courses in the order listed below:

1. [Introduction to the clinical management of rape and intimate partner violence in humanitarian settings](#)
2. [Mental health and psychosocial support: Clinical management of rape and intimate partner violence in humanitarian settings](#)
3. [Management of intimate partner violence in humanitarian settings](#)
4. [First-line support: Clinical management of rape and intimate partner violence in humanitarian settings](#)
5. [Clinical management of rape](#)

New course on delivering quality health services to refugees and migrants from Ukraine

OpenWHO launched a course on [delivering quality health services to refugees and migrants from Ukraine](#), the first WHO course in video format to support health workers in hosting and receiving countries to provide quality and safe care that is responsive to the circumstances and particular health needs of people from Ukraine seeking health assistance.

Try out our new interactive features in our new course on Chemical and Biological Deliberate events

The course [CBDE Awareness: Recognizing Signs of Deliberate Release of Chemical or Biological Agents](#) aims to ensure that emergency responders recognize possible deliberate events with chemical or biological agents and know the different response types this will require compared to other emergencies. You will have the opportunity to explore interactive videos and exercises, with pop-up texts and knowledge checks across the course modules. A new OpenWHO learning experience is at your fingertips!

New courses and languages

We are pleased to announce the following courses that were also recently made available:

- [Buruli ulcer: training of health workers at national and district levels on skin Neglected Tropical Diseases \(NTDs\)](#): This course is intended to provide basic information for front line health workers to be able to implement the recommended control measures to minimize the negative impact of Buruli ulcer on populations.
- **Neglected tropical diseases: road map and sustainability framework 2021-2030: OpenWHO courses**: The learning package comprises two online courses that aim to give

participants a comprehensive overview of the overriding strategic goals and key challenges that NTD professionals and programmes are likely to face over the coming decade: 1) [NTD road map strategy](#); and 2) the [Sustainability Framework](#).

- [One Health in action against Neglected Tropical Diseases](#): This course provides practical ideas, tools and examples to enable each of us to take One Health action towards the global goal of substantially reducing the burden of NTDs by 2030
- [WHO costing and budgeting tool for national action plans on antimicrobial resistance](#): The aim of this course is to introduce the WHO costing and budgeting tool for national action plans on antimicrobial resistance (AMR). The tool is designed to support operationalization and to accelerate implementation of national action plans on AMR.
- [6 steps for sustainable implementation of national action plans on antimicrobial resistance](#): This course covers the 6 steps for sustainable implementation of national action plans on AMR from the “WHO implementation handbook for national action plans on antimicrobial resistance: guidance for the human health sector”.
- **Health inequality monitoring foundations courses**: This 5- course series addresses the need for capacity strengthening in health inequality monitoring, with courses organized according to the following topics: an [overview](#) of terminology and concepts, [data sources](#), [health disaggregation](#), [summary measures of health inequality](#) and [reporting](#).

New translations

The following 7 translations have been launched this month:

- Introduction to Monkeypox in [Arabic](#)
- Waste management in [Georgian](#)
- Mental health and psychosocial support in [Spanish](#)
- Ready4Response Tier 1 in [Arabic](#)
- Ready4Response Tier 2 in [Arabic](#)
- Empowering communities during outbreaks in [Chinese](#) and [Arabic](#)

Updates to course content

The following course materials have been revised to reflect updates to the technical content and are now up to date:

- **COVID-19 vaccine-specific resources** in [French](#): Videos and resources for the Pfizer-BioNTech, Janssen, Covaxin and Novavax COVID-19 vaccines have been updated.
- **Waste management** in [English](#).

We are pleased to announce that OpenWHO now has 46 courses on COVID-19, with a total of 177 courses spread across 65 languages. All courses for COVID-19 can be accessed [here](#). You can use the toolbar to filter courses by language. You can also access our catalogues which show all courses and languages available for COVID-19 and other health topics [here](#).

Emergency management courses accredited for Continuing Professional Development

Four OpenWHO courses have received Continuing Professional Development (CPD) accreditation, certifying that they have been independently assessed and approved for personal and professional development: Ready4Response [Tier 1](#) and [Tier 2](#), the [Public Health Emergency Operations Centre](#) and [Health Cluster Coordination](#). Certificates from officially

verified CPD courses indicate to learners and professional bodies that the learning value has been scrutinized to ensure both integrity and quality.

New countries added to the Serving Countries corner on OpenWHO

This portal offers learning resources to support a country's response to the ongoing COVID-19 pandemic and other health threats. Created in collaboration with WHO Country Offices and Ministries of Health, resources based on WHO scientific guidance are available in each country's official language(s) to empower frontline health workers, policymakers and the public. [Armenia](#) and [Poland](#) are the most recent additions to our Serving Countries portal.

Monthly newsletter

You can access the most recent newsletter [here](#). The newsletter highlights are also available in Chinese, French, Portuguese, Russian and Spanish.

Best wishes,

OpenWHO team

OpenWHO

Web: <https://openwho.org>

Mail: outbreak.training@who.int

Download the OpenWHO mobile apps for [iOS](#) and [Android](#).

OpenWHO aims to equip all frontline responders with the knowledge they need to better contain disease outbreaks and manage health emergencies. It also aims to foster discussions, feedback and sharing of expert knowledge on public health.

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Elrha's [Research for Health in Humanitarian Crises programme](#) is funded by the UK Foreign, Commonwealth and Development Office (FCDO), Wellcome and the Department of Health and Social Care (DHSC) through the National Institute for Health Research (NIHR)

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(Please email the editor, any sources/links you have found that are not on this list).

Food Safety

www.foodnavigator-usa.com

www.foodonline.com

www.foodsafetynews.com

Development Aid

coleacp.org/

devex.com

Global perspectives

worldhealthupdates@who.int

Journals/ research

marketing@lancet.com

ukehrnet.wordpress.com

[International Journal of Environmental Health Research](#) – supported by IFEH

[Journal of Environmental Health](#) – published by NEHA

[Archives of Environmental & Occupational Health](#)

[Environmental Health Perspectives](#)

[Environmental Health](#)

[International Journal of Hygiene and Environmental Health](#)

[Reviews on Environmental Health](#)

[Environmental Health Insights](#)

[Journal of Environmental and Public Health](#)

[Journal of Environmental Health Science and Engineering](#)

National / Regional information

foodauthority.nsw.gov.au/

Academy of Higher Education

communication@advance-he.ac.uk

ENVIRONMENT-DISASTERS list

<https://www.jiscmail.ac.uk>

Health & Safety (UK)

<https://www.hse.gov.uk/index.htm>

Public Health England

<https://www.gov.uk/government/organisations/public-health-england>

Sphere Project

spherestandards.org

RESEARCH FOR HEALTH IN HUMANITARIAN CRISES

<https://www.elrha.org/>

Disaster Relief information sources

[UNDRR](#)

[WHO -Preparedness environmental health emergencies](#)

[Relief web](#)

[The Health in Humanitarian Crises Centre](#)

COVID

<https://www.worldometers.info/coronavirus/>

[COVID-19 Information Dashboard](#)

Good academic/professional links

[Key journal databases](#)

[CIEH](#)

[REHIS](#)

[NEHA](#)

[EHA](#)

[NZIEH](#)

[Greg Martin via LinkedIn](#)

Disaster Management/Risk Reduction courses around the world

[The UWI, Mona has an office of Disaster Risk Reduction.](#)

OpenWHO is WHO's interactive, web-based, knowledge-transfer platform offering on-line courses to improve the response to health emergencies. OpenWHO enables the Organization and its key partners to transfer life-saving knowledge to largenumbers of frontline responders.

<https://openwho.org/>

[CDC Learning Connection](#)

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LEVEL 1 FOOD SAFETY

Food safety is a constant concern for the public. It's important your employees understand their roles and responsibilities.

Duration:

2 – 3 hours

Assessment:

Multiple-choice questions

Certificated:

Highfield Completion Certificate



LEVEL 2 FOOD SAFETY

Regulations require that anyone involved in food handling must be appropriately trained in food safety.

Duration:

4 – 5 hours

Assessment:

Multiple-choice questions

Certificated:

Highfield Completion Certificate



LEVEL 3 FOOD SAFETY

Employees working in a supervisory role, including managers, supervisors and chefs.

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Assessment:

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Certificated:

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