

# E&HI

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# A Word from the President



Hello and greetings from the city of Victoria on Vancouver Island in Canada where Fall is certainly in the air. Forecasters are predicting one of the coldest winters in decades, which should probably match nicely with the summer just past!

In September, the Council of the IFEH met in Bali, Indonesia. Unfortunately, I was unable to attend. My grateful thanks go to Dr. Peter Davey, IFEH President-Elect for chairing the meeting in my absence and for his work in assisting with the planning, coordination and agenda development for the event. I would also like to recognise and thank our colleagues from the Indonesia Environmental Health Specialists Association (IEHSA) for kindly hosting the meeting and making such excellent arrangements.

I am particularly pleased that the Council meeting coincided with the launch of the first International Summit of Environmental Health students, which took place at Udayana University in Kuta, Bali. This summit was extremely successful and has now laid the foundation for establishing a global federation of environmental health student associations. Many thanks to those persons who helped organise this outstanding event. Further information on both events is available in the IFEH October Newsletter and on our web site.

Another first was the inaugural World Environmental Health Day, which was proclaimed and celebrated in Bali and will be held annually on 26th September.

Congratulations to our colleagues in the USA - the National Environmental Health Association (NEHA), who were successful in their bid to Council to host the IFEH 13th World Congress on Environmental Health in 2014. While the venue is still to be decided, the Congress theme will be 'Environmental Health - Many Countries, One Community'.

Another development at the Council meeting was the election of Rod House from the Royal Environmental Health Institute of Scotland (REHIS) as the Honorary Secretary replacing Ray Ellard of the Environmental Health Officers Association, Ireland who stepped down after five years in the position. I would like to thank Ray for his dedication to the Federation over the years and look forward

to his continued input at Council meetings. We should never forget that these positions are voluntary and require hours of commitment, time away from family and other job related activities. We look forward to working with Rod and will miss Ray's knowledge, wisdom and expertise on the Board of Directors. Thank you Ray!

As most know, numerous environmental health programmes have not escaped the global economic slowdown. With shrinking budgets and dwindling resources environmental health programmes have to compete as never before. We in environmental health have always understood the terminology 'doing more with less' as our work programmes which are preventative in nature seldom can compete head-on with those of many other allied health professionals whose programmes are seen as essential primary care. Perhaps we once again need to 'look at old things in new ways'. Is today's geo-economic climate a challenge or an opportunity, or perhaps both?

Many programmes have to compete directly with hospital programmes, other ministerial or government programmes and in some instances the not-for-profit sector. There is no one size fits all approach to placing environmental health on a higher pedestal. However, there does exist an opportunity to be ahead of the curve by working smarter and not harder.

Generally speaking, environmental health has always been a leader in data capture, either electronically or manually. We have reams of data that correlate to various premises hazard ratings, instances of communicable disease, sustainability indicators, smoking prevalence, etc.

Yet for all this, we still tend to lag behind our colleagues. To paraphrase a more famous editorial - "Yes Virginia, the data does tell a story"; but can we better articulate this information to stem the tide of reductions? I for one believe we can.

How many environmental health programmes use a "SMART" approach to either their business or strategic plans? SMART as most know is the acronym for Strategic, Measureable, Actionable, Relevant and Timely. How many environmental health programmes use either a quality assurance or quality improvement approach? Hospitals use these processes rather effectively. We in environmental health need to take a page from our colleagues' book if we are to acquire the funds and resources on a go forward basis. How many of us actually set targets to reduce hazards or minimize risk to the public? How many programmes work directly with industry to effect change? How many organizations use a "LEAN" approach to maximizing customer value? How many environmental health leaders, directors and managers have actually taken the time to determine who their primary and secondary customers are? If we understand better what we do, then it seems we are better positioned for success.

Perhaps it is time to take the high road in some of this. Time to turn our data into something more meaningful and powerful that speaks volumes of the dedication and work environmental health professionals do on a day-to-day basis. Time to enrich our data and transform that information into a transparent, strategic action plan that cannot be ignored by key decision makers. Today's environmental health leader must utilize an accountability framework that encompasses clear objectives, effective strategies, aligned management systems, performance management and reporting, and real consequences. We must be prepared to answer the following questions...what did we know, when did we know it and what did we do about it if we are to advance environmental health?

No one ever said it would be easy, however the opportunity is here and it is ours to take. Carpe diem! Seize the day! We in environmental health need to share in information better and improve knowledge transfer if we are attract the necessary funding and resources.

In closing, I look forward to meeting with you in May in Vilnius, Lithuania at the IFEH 12th World Congress on Environmental Health. Registration is now available on-line and I would encourage attendees to visit the website and register early.

Continued best wishes to one and all.

A handwritten signature in black ink, reading "Robert W. Bradbury". The signature is written in a cursive style with a large, stylized initial "R".

Robert W Bradbury, President

# Editorial

Hadrian Bonello



This is my last editorial for Environment & Health International (E&HI) after three years and 6 issues. Regrettably I am unable to dedicate quality time to IFEH's magazine. It has been a wonderful experience taking care of this prestigious publication and in itself it was truly a challenging one as well.

I must thank some people for their kind assistance namely Mike Halls for his proof reading, Henning Hansen for his patience, Bernard Forteath for his guidance and advice and Ray Ellard for his wise suggestions and also for keeping in line! Last but not least I must thank all those persons who contributed material for the 6 issues because without them nothing would have been done. At first I thought it was not going to be easy to get articles for each issue but the constant flow of material that was coming in was unbelievable. In fact this issue is a rather longer one than the previous editions. I had promised everyone that I would include their article in a following edition so everything had to go into this last one. There are quite a number of different articles which will be of interest to everyone including stakeholders.

Of particular interest are the articles coming from Africa namely how the African Academy for Environmental Health has evolved and its future. The article 'Developments in Environmental Health Education and Professional Practise in Malawi' is also very interesting. IFEH also welcomes Rod House as the new Honorary Secretary who has taken over from the never tiring Ray Ellard. The 2011 IFEH Council and Annual General Meeting was held in Bali, Indonesia in September. This coincided with the International Summit of Environmental Health and IFEH members were actively involved giving presentation.

2012 is now with us and I am sure this year will be an exciting one for the Federation namely because of the forthcoming IFEH World Congress which is due to be held in Vilnius, Lithuania. I wish both IFEH and the organising committee all the success they truly deserve.

# IFEH Report from Bali

Bernard Forteath, Honorary Public Relations Officer, IFEH



The 2011 IFEH Council and Annual General Meetings took place on the 25 and 26 September and were held in Bali, Indonesia. Bali is located in the westernmost end of the Lesser Sunda Islands, lying between Java in the west and Lombok to the east. It is one of the country's 33 provinces.

The island is 3.2 km east of Java and is approximately 8 degrees south of the equator. Bali is Indonesia's largest tourist destination and is renowned for its highly developed arts, including traditional and modern dance, sculpture, painting, leather, and music. Bali has been an important tourist destination for decades and has recently experienced a further increase in tourist numbers over the last few years. The largest city is the provincial capital, Denpasar, which lies to the south of the island and the meetings took place in the Discovery Kartika Plaza Hotel, South Kuta Beach, on the outskirts of the capital. The invitation to hold the meeting in Bali came from our colleagues in the Indonesia Environmental Health Specialist Association (IEHSA) who made the arrangements locally. Prior to the start of the IFEH an International Summit of Environmental Health by students took place at Udayana University, Kuta on Saturday 24 September. A number of attendees at the forthcoming Council meeting, including Peter Davey, Steve Cooper and Bernard Forteath, made presentations at this highly successful event.

It was agreed at the Summit to set up an Indonesian Environmental Health Student Association as a precursor to establishing an international federation consisting of environmental health student associations from around the world. At present any student association can join as an Associate Member but a proposal to establish an Environmental Health Youth Chapter of the IFEH is likely to be presented to the next Council meeting in Vilnius next year. The Council and Annual General Meetings were chaired by Peter Davey, President Elect in the absence of the President who was unable to travel to Bali. The Council meeting, as is the norm, started with presentations from member organisations concerning environmental health issues within their own country. Sadly a recurring theme was the current financial problems facing many countries resulting in funding for environmental health being reduced, in some cases drastically.

However, there were also many positives, particularly the proposal for setting up Student Environmental Health Associations to link with one another. Another positive is a proposal to mark the memory of Roy Emerson, the first President of the IFEH, who died at the end of last year. It is proposed that we introduce an award for student environmental health professionals through an essay competition. A small panel is to be established to set the essay subject and organise the competition with the aim of presenting the first award at the 2014 World Congress. The winner will be invited to the Congress to receive their award.

The Council accepted a bid from the National Environmental Health Association (NEHA) to host the 2014 World Congress. The venue has yet to be decided but the Congress will be held in June or July 2014 and will have the theme 'Environmental Health – Many Countries, One Community'. The Council also accepted an invitation from the Royal Environmental Health Institute of Scotland (REHIS) to host the 2013 Council meeting and AGM in May at a venue in the west of Scotland. A call for nominations for President Elect from member organisations is to take place in the next few weeks. Nominations should come from representatives to the Federation who must be supported financially by their own member organisation. The closing date for nominations has been set as the 31 January 2012. The new President Elect will take over in Vilnius, Lithuania in May 2012.

At the Annual General Meeting a motion concerning the use of teleconferencing for delegates to observe proceedings at Annual General Meetings and to participate at Council meetings every year was approved. A further motion to create a full time post for the purposes of driving the Federation's agenda and goals was also approved. Both motions were submitted by the Environmental Health Officers' Association, Ireland. Finally the AGM elected a new Secretary in place of Ray Ellard who stood down at the meeting after five years in office.

The new Honorary Secretary of the IFEH is Roderick D House from REHIS. Unfortunately Ray could not attend the meeting to receive the overwhelming thanks of the Council for his dedication to the Federation over many years. Ray is the consummate environmental health professional whose expertise, knowledge and wisdom is in much demand, not only in Ireland, but further afield. The good news is that Ray remains on the Council as one of the EHOA representatives. From all members of the IFEH - Thanks Ray.

# New IFEH Honorary Secretary

**Bernard Forteath, Honorary Public Relations Officer, IFEH**

Rod House recently retired from Health Protection Scotland where he was employed as a Lead Consultant in Environmental Health. Rod joined Health Protection Scotland (HPS) in 1999 as a Consultant in Environmental Health and in 2006 became Head of Group for Environmental Health, Gastrointestinal and Zoonotic Disease and Travel Health.

As a Consultant he provided expert advice and support to National Health Service Boards and local authorities in Scotland over a wide range of environmental issues and non-infectious hazards. Areas covered include air quality, water quality, food safety and occupational health and safety. In addition to providing advice and support, surveillance activities included managing and developing a system to track environmental parameters with the potential to link these to health and food surveillance on behalf of the Food Standards Agency.

FSS UK started as a development project in Scotland in 2001 and is now being wholly funded by the Food Standards Agency, and has been rolled out throughout the UK, including Northern Ireland. Through his special interest in Legionella Rod led an Expert Group which developed Guidance on the Identification and Management of Legionella clusters and outbreaks. Rod is a Past President of the Royal Environmental Health Institute of Scotland and one of three REHIS representatives to the IFEH Council.



Roderick House

# **Advancing Quality Assurance in Environmental Health Higher Education in Africa**

## **The Development of a Quality Assurance Manual**

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### **Abstract**

For higher education institutions to be recognised and compete internationally and to satisfy the needs of their students and their employers it is important that programmes meet international quality norms and standards. This applies to environmental health as to other subjects. In Africa environmental health is a relatively new subject to higher education and to achieve recognition and maintain status within the highly competitive higher education and health professions environments the development of high quality standards is essential.

The African Academy of Environmental Health (AAEH) was created with aim of advancing the science and practice of environmental health in Africa including the enhancement of education and training programmes for environmental health practitioners.

This paper derives from the proceedings of the AAEH which included a series of workshops involving academics from the environmental health higher education institutions in Africa region, practitioners, quality assurance specialists and other stakeholders. It describes the process followed to arrive at a Quality Assurance Manual, the content of the Manual and how the Manual is intended to be used to assist higher education institutions delivering programmes in environmental health.

### **Introduction**

The Africa Academy for Environmental Health (AAEH) recognized the need for developing and implementing quality management systems in order to ensure that the Environmental Health training programmes deliverables meet and exceed minimum quality standards. The quality management systems must therefore meet acceptable frameworks and criteria. The AAEH identified a gap that existed with some environmental health training programmes in Africa. The gap involved the unavailability of a quality management system at university, faculty or programme level. The main objective of the DelPHE project, sponsored by the British Council, was to develop a manual that will serve as a guide to institutions on the development, implementation and maintenance of a quality system.

## **Processes and Materials**

A comprehensive, consultative process was carried out which included two workshops that were held in Kenya and South Africa. The workshops, which were attended by representatives of the environmental health discipline, were facilitated by quality management specialists from the quality directorate of the Tshwane University of Technology. Analysis of the contributors' remarks led to the drafting of the quality management framework, criteria and guidelines.

## **The aims and purpose of the Quality Management Manual**

The quality management manual through its guiding and directing principles aim at improving the quality of environmental health programmes offered by African environmental health training schools. The development of a quality management manual is intended to ensure that the quality of the environmental health programmes offered by African training schools meets and excel international quality norms and standards. This will ensure that training schools are able to compete internationally and give consistent and comparable training acceptable to all stakeholders. The AAEH recognizes the importance of quality teaching and research in training institutions. So the AAEH compiled the Quality Assurance document incorporating the best international practices made applicable to the African Region

## **The Quality Management Framework**

The scope of the quality management manual focuses mainly on what should be achieved generically by all environmental health programmes subscribed to AAEH. The framework establishes the parameters of the approach to quality management by laying down what institutions, faculties, and departments offering environmental health programmes should strive to achieve to ensure local, national, continental and international comparability.

The quality management framework is to be implemented through the Approach-Deploy-Results-Improve (ADRI) approach. The quality cycle is a useful tool in quality management implementation.

The standards and guidelines in this quality assurance manual are not designed to detect practice or be interpreted as prescriptive or unchangeable. Detailed procedures are not included in this manual since procedures are an important part of an institution's autonomy. It will be for the institutions and agencies to decide the procedural consequences of adopting the guidelines. In order to have a clear understanding of the quality management processes of academic programmes, the guidelines should be used in conjunction with the framework and the criteria.

The criteria for academic quality assurance have been developed for the use by institutions that offer environmental health programmes. The guidelines and criteria take into consideration the transnational and international frameworks with respect to programme quality and standards in higher education. The guidelines and criteria cover major areas relating to academic programme quality assurance and examples of good practice.

## **Purpose of the criteria**

The purpose of the criteria and guidelines are to:

- Improve the quality of education in environmental health programs offered in institutes of higher learning in Africa.
- Improve the consistency of the quality of environmental health degree programmes in Africa.
- To facilitate portability of environmental health degree programmes and mobility of graduates and practitioners throughout Africa.
- Assist higher education institutions in managing and enhancing their quality and, thereby, help to justify their institutional autonomy.
- Make quality assurance more transparent for institutions offering environmental health degree programmes.

The criteria are categorized according to the link that exists between the framework factors and the main focus area of programme provisioning. The criteria should be met by all institutions offering Environmental health programmes affiliated to AAEH. It is worth noting that the criteria should be used for all modes of teaching and learning to allow for flexibility. Institutions may include additional criteria to address specific international, national and institutional and professional requirements. The framework and criteria will be reviewed on a five year cycle.

The criteria and guidelines serve as standards for quality assurance in the Africa Academy for Environmental Health. The guidelines are designed to be applicable to all institutes of higher education offering environmental health programmes irrespective of their structure, function, size, and the national system in which they are located.

The guidelines shall be referred to as the Guidelines for Africa Academy for Environmental Health. The aim of the quality assurance guidelines is to improve mutual trust and improve transparency while respecting the diversity of national contexts and discipline areas. At institutional level, the guidelines are designed to provide a foundation and framework to guide academic programme design, delivery and ongoing evaluation.

They represent a set of standards by which to evaluate the improvements in the quality of education in the environmental health programmes in the key areas of teaching and learning through the delivery of coursework awards, at a number of levels in the institution. Furthermore, the guidelines serve to make explicit the commitment of the Africa Academy for Environmental Health in meeting the needs of tomorrow's society, through the provision of high-quality educational experiences for institutions in Africa and other stakeholders, the continuous monitoring of quality standards and by continuing to effectively adapt to a rapid changing world

## Conclusion

The quality assurance manual has been developed and it is upon institutions to use the manual for the benefit of the Environmental Health training and products of the institutions. Furthermore, without using this manual institutions will never know how the quality system can be improved and even how this manual can be further improved to improve the quality of Environmental Health offering in Africa.

## Acknowledgements:

Various institutions, individuals and especially the Directorate of Quality Assurance of the Tswane University of Technology in South Africa and Africa Academy for Environmental Health contributed through workshops to the final Manual for Quality Assurance for environmental health training in Africa. The British Council (through the DelPHE (development of Partnerships in Higher Education) grant) who is the main sponsor of a project which the development of this Quality Assurance Manual is one of the objectives. The authors would also like to recognise various institutions in Africa and abroad, professional boards and associations and organizations, governments and local authorities as well as individuals.

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# Past, Present and Future Developments in Environmental Health Education and Professional Practice in Malawi (UNIMA & MEHA)

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“For millions of children today, particularly in Africa, the biggest health challenge is to survive until their fifth birthday, and their chances of doing so are less than they were a decade ago.”

(Lee Jong-wook, Director –General, World Health Organization, World Health Report 2003).

“It is an appalling fact that, of all who are born of the labouring classes in Manchester (UK), more than 57% die before they attain 5 years of age, that is, before they can be engaged in factory labour.”

(Edwin Chadwick, Sanitary Commissioner, Report on the Sanitary Condition of the Labouring Population 1842).

## INTRODUCTION

Since the mid 70's Environmental Health Officers (EHOs) in the UK have been educated to honours degree level with the curricula periodically reviewed and accredited by the appropriate professional body i.e. The Royal Environmental Health Institute of Scotland (REHIS) and the Chartered Institute of Environmental Health (CIEH) for England, Wales and Northern Ireland. Prior to then, the preliminary qualification for Public Health Officers was a three-year Diploma in Public Health. Upon graduation and after approximately one year of practical training, working often with a local authority, graduates take a professional exam leading to full qualification. Thereafter, practising officers are expected to ensure that their knowledge and skills are updated through participation in various schemes of continuous professional development. This is a compulsory requirement for EHOs to remain registered as a member of the professional bodies. The development and practice of Environmental Health in UK since the Victorian age has resulted in significant improvement to the environment and health of the

population. People today can expect to live a relatively healthy lifestyle with a life expectancy, on average, of more than 80 years.

In contrast to the above, the average life expectancy of someone living in sub-Saharan Africa (SSA) is half of that (Human Development Report (HDR), 2007). For the region as a whole, life expectancy today is lower than it was three-decades ago. Several countries in SSA have suffered catastrophic reversals: 20 years in Botswana, 16 in Swaziland and 13 years in Lesotho and Zambia (HDR, 2007). A report on children's environmental health conducted by the WHO Regional Office for Africa of 6 African countries (WHO 2005) concluded that the main environmental health factors causing morbidity and mortality are related to inadequate access to safe water supplies, inadequate sanitation, inadequate solid and hazardous waste management and disposal, inadequate vector control, inadequate housing/overcrowding, poor personal hygiene, air pollution, exposure to various non-communicable diseases etc. – all areas which have been successfully tackled and are properly regulated by environmental health authorities in the UK. In 2006, 28 of the 31 low human development countries were in SSA (HDR, 2007).

A review of environmental health education in 6 African countries (Angola, Botswana, Cameroon, Kenya, Mali and Zambia) by the Africa Region of the WHO (2005) reported that few countries offered environmental health courses. Only Kenya had an adequate number of environmental health degree programmes in place producing the requisite number of graduates required for the size of the country. In the other five countries the approach to environmental health education and enforcement was fragmented and only specific areas covered through allied professionals (i.e. nurses, doctors) e.g. health education, community health or as a module in a Masters in Public Health course. It concluded that a more holistic and co-ordinated approach to environmental health practice was needed and that the academic sector could address this problem through the provision of appropriate courses but at the present time is completely under-utilised.

Even where degree programmes exist concern has been expressed that the curriculum for training EHOs (in West Africa) lagged behind the skills required to cope with the challenge of environmental monitoring and control (Emeharole, 1993). Emeharole reviewed the existing curriculum at that point in time for the training of EHOs at the diploma and degree levels in the sub-region and concluded that both curricula lack sufficient credit weight to impart the desired skills to perform the highly scientific task of environmental monitoring, which is a problem we envisage exists in other African countries. The lack of appropriately qualified professionals in this area inevitably leads to inadequate environmental health practice and enforcement, inappropriate environmental health policy and strategy for action, the lack of sound information for priority setting and planning, the absence of a suitable set of environment and health indicators, and the lack of an appropriate performance indicator system (Emeharole 1993; WHO 1998; Thomas et. al, 2002; Cairncross et. al., 2003; WHO 2005).

In 1998, the African Region of the WHO announced that “it is indispensable to strengthen the capacities of the ministries of health to promote environmental health as a precondition for any sustainable human development”. In this respect, it called upon ministries of health to act as catalysts in directing, coordinating and promoting environmental health and hygiene activities, through: (i) the adoption and implementation of policies, strategies and plans of action on environmental health and hygiene and (ii) strengthening of inter-sectoral collaboration between all environmental health actors and stakeholders. It encouraged ministries of health to establish an appropriate legal framework for implementing environmental health activities, integrate environmental health into all local and

national development programmes and projects, mobilise the resources needed to support and strengthen these activities, promote community-based local initiatives in the area of environmental health and coordinate interventions related to the management of environmental health activities (WHO 1998a).

The Southern African Development Community (SADC) Health Protocol reaffirms the importance of improving environmental health conditions of communities especially in rural and under-developed areas. The WHO has also committed itself to the Health for All in the 21st Century framework which makes explicit three goals (WHO 1998b): (i) an increase in life expectancy and improvement in the quality of life for all; (ii) improved equity in health between and within countries and (iii) access for all to sustainable health systems and services. While not encompassing all the actions, environmental health falls clearly in the interface between health and development and is therefore critical to the goal of “making health central to human development” (Thomas et. al., 2002; Cairncross et. al., 2003).

Malawi is a country located in Southern Africa, east of Zambia and shares borders with Mozambique and Tanzania. The country is one of the poorest nations in the world. Two out of five people live on less than US\$1 per day and three quarters of the population on less than US\$2 per day. Within SADC, only Angola and Mozambique have a human development index value less than that of Malawi (Chunga et. al., 2004). It is categorized within the lowest human development category. Despite the financial challenges facing the country, the academic institutions in collaboration with the environmental health profession are striving to produce graduates, at different levels, to improve the health of the nation. Here, we present the first of two papers on the challenges facing the profession and academia reviewing the past, present and future of the profession and academia in the country.

## **THE PAST**

The environmental health profession in Malawi dates back to the early 1950s when the Government of Malawi established the Likangala School of Hygiene in Zomba. The school trained an Environmental Health cadre popularly referred to as ‘Sanitary Capitaos’ (Sanitary Inspectors). At this time they were mostly engaged in nuisance inspection and control duties e.g. inspecting liquid and solid waste disposal facilities (Chunga et. al., 2004). Later in 1980 the course for this cadre was moved to a newly opened college called Lilongwe School of Health Sciences (LSHS) run by the Ministry of Health. LSHS offered a two year certificate course and produced a cadre of graduates now known as Health Assistants (HAs).

Supporting the Sanitary Capitaos in the early days were the Public Vaccinators (PVs) whose role and responsibility was to vaccinate people against smallpox. These PAs travelled the length and breadth of the country vaccinating people and were immensely successful and their mission. In 1972 Malawi together with other countries under World Health Organization auspice was declared smallpox free in 1978 (Ntopi, 2010). In 1973 Malawi experienced its first cholera outbreak in Nsanje District and HAs and PVs played a pivotal role in stemming the outbreak by promoting village sanitation and water hygiene. As a result the PVs became entrusted by the Government as they had demonstrated that they had the necessary skills and knowledge base undertake the duties associated with preventing and controlling cholera outbreaks. As a result they were renamed Cholera Assistants. Today Cholera Assistants are known as Health Surveillance Assistants due to the increased nature of their duties. They now undertake a range of preventative and medical health activities at community (village) level and are located primarily at the community (village) level within health posts and report to the District

EHO. The HSA at the community level is a trusted individual who interacts with the village health and water committee's and is regarded as an essential the link between the community and the health facility/hospital by the MoH and DEHOs. Villagers often refer to HSAs as "a dokotala" meaning a doctor (Ntopi, 2010).

The first major boost of the profession was in 1965 when the University of Malawi (UNIMA) at its inception decided to instigate a diploma programme in Public Health Inspection (PHI) to improve the health of the nation. The programme followed the then UK Royal Society of Health syllabi for the Diploma in Public Health Inspection and was directed by Mr. John Channel from the UK. Graduates from this programme were known as Public Health Inspectors. In 1983 the UNIMA senate replaced the PHI diploma with Diploma in PH (DPH). With this change the scope of PHIs expanded and deepened to encompass management skills, statistical analysis, community research, epidemiology, biochemistry and nutrition, environmental pollution mitigation, laboratory analysis, health education, planning and implementation strategies. Practical attachments to district health authorities under the supervision of qualified EHOs were introduced as a professional component of the DPH and were rigorously assessed by practicing professionals and academics alike.

A professional body responsible for the professional well-being of PHIs and HAs was formed in 1982 called the Public Health Inspectors Association of Malawi (PHIAM). Unlike the previous situation PHIAM united the segmented group of PHIs, HAs and HSAs. The professional image of these cadres was also enhanced vis-à-vis the other medical and allied health professions. The Malawi Government Ministry of Health officially recognized PHIAM and gave it an annual subvention similar to other allied health associations to develop and manage their own needs-specific affairs. PHIAM was registered under the Trustees Act. All PHIAM members were obligated to register on an annual basis with the Malawi Medical Council under the Allied Health Professions category in order for them to practice in the country and comply with their statutory duties During PHIAMs time it developed a the foundation of the current constitution and ensured that members strived to upholding its values. This resulted in a greater respect of PHIs by other allied health professionals and Government ministries within the country. PHIAM was registered with the Government of Malawi (Registrar Generals Office) in 1994 and became a Member of International Federation of Environmental Health (IFEH) in 1994.

At the same time, the profession changed its name to 'Environmental Health' in line with the professional development of PHIs throughout the developed world. To reflect this change the UNIMA developed a 4 year BSc Environmental Health – the first African University in sub-Saharan Africa to do so. The title 'Environmental Health Officer' was adopted in 1998 by PHIAM when the University of Malawi phased out the DPH programme. Today the MCHS continue to offer a 2 year diploma programme producing graduates known as Assistant Environmental Health Officers (AEHOs). In contrast HSAs are currently trained over a 12 week period through District Health Offices (Ntopi, 2010).

The Department of Environmental Health at UNIMA – The Polytechnic is one of the four Departments under the Faculty of Applied Sciences. It was founded on 1st September, 1995 under the leadership of Associate Professor Kafwe Tembo. Today the degree programme produces graduates (> 400 to date) with the capabilities of understanding the determinants of health at a greater depth than before, develops critical thinking methods to tackle environmental health (EH) and public health issues, interpret and produce different environmental health related policies and guidelines, the

importance of liaising with other allied health-care professionals and professional bodies within and outside the country, skills to solve environmental health-related problems and participate in environmental health research projects to provide the evidence base for future environmental health related policies and practices. This has enabled EHOs working government and non-governmental organisations (NGOs) to become actively involved in the planning, implementation, monitoring and evaluation of health-related activities. In turn, the profession has gained respect from other allied health-care practitioners working in the country.

## **THE PRESENT**

The establishment of the degree programme at UNIMA and diploma programme at MCHS has led to better qualified cadre of graduates moving into the Environmental Health profession. The majority of degree graduates usually obtain positions with the Ministry of Health as EHOs (without any post-graduate practical training) and are seconded to one of the 28 Districts in the country. Here they are employed as District EHOs, Disease Control Officers, Water and Environmental Sanitation Desk Officers, Food Safety and Hygiene Desk Officers and District Health Education Officers. However, the Government of Malawi has also provided funding for practising AEHOs with the DPH to upgrade their qualification to degree level through the introduction of the parallel programme at UNIMA. Other graduates have taken up environmental health-related positions with Non-Government Organisations such as WATERAID, Save the Children, UNICEF, WHO, etc. With the introduction of occupational health and safety module into the degree course graduates are now finding positions with the Ministry of Labour, G4S, and Roads Safety Council. AEHOs are mostly involved in hand on provision of Environmental Health services but designated to operate at health centre level and as supervisors of HSAs. HSAs are designated to operate at community/village level.

UNIMA in conjunction with the Africa Academy for Environmental Health (AAEH) have also made a concerted effort to attract more female students onto the EH degree course. This is particularly relevant in a setting such as Malawi where the majority of the EH risks are faced by women and children. Plans are underway in the Department of EH at UNIMA to attract a greater proportion of female students through career guidance and role modelling programs in secondary schools. Secondary school students have limited understanding of EH as a career option. As such, talks on EH as career options are being presented in various secondary schools in Malawi. Influential females working in the field of Environmental Health within the Ministry of Health, Institutions of Higher Learning and NGOs etc. are used as role models. These role models spend time with girls sharing their experiences to develop emotional ties which will hopefully encourage young girls to think about studying EH as a career option. This initiative has been endorsed by the Africa Women Environmental Health Network (AWEHN) (July, 2011).

Ironically whilst these developments in environmental health education were taking place PHIAM was slowly dying a death as a professional body due to inactivity, lack of finances and had barely a pulse by the turn of the century. As result of a Commonwealth Professional Scholarship (CPS) awarded to Mr. Paul Chunga, Chikwawa District EHO (at the time) he visited REHIS in 2003 to learn about the management and operation of a professional EH organisation. Mr. Chunga is presently District EHO (DEHO) for Ntcheu and holds the position of Treasurer with MEHA. Upon his return to Malawi, and after due consultation with the membership, it was recommended that PHIAM should be renamed the Malawi Environmental Health Association (MEHA) in 2004. A few years later Mr. Young Samanyika, DEHO for Blantyre (at the time) visited REHIS in 2008 on a REHIS travelling

scholarship to drive the MEHA development process forward. Mr. Samanyika is presently the Principal Environmental Health Officer at the Ministry of Health and holds the position of President of MEHA. The following year he was awarded a CPS to enhance his knowledge about operation and management of a professional institution. Upon his return to Malawi, and with great perseverance, MEHA was incorporated under the Malawi's Trustee Incorporation Act in 2009. Since then, the association has gone from strength to strength and MEHA invite you to visit the website for additional information ([www.malawieha.org](http://www.malawieha.org)).

MEHA has also been successful in obtaining professional development funds in the form of an IFEH Development Grant and a REHIS grant to promote the recently launched MEHA Scheme of Continuing Professional Development. This grant followed grants from REHIS to develop and launch the MEHA website and for two laptop computers to assist with the uploading of new information to the MEHA website. These developments have made MEHA more popular and credible to all its members. From this year members will be undertake a specifically tailored Environmental Health CPD scheme as opposed to the situation in the past when they were forced to participate in a generic and more medical CPD scheme. Members are now able to share experiences though posting of articles pertaining to Environmental Health activities in various areas. At the moment MEHA working with UNIMA and MCHS to develop and run appropriate CPD to act as an income generator to supplement the funds realised from membership fees. For example, short courses on Occupational Health & Safety, Solid Waste Management, Food Safety & Hygiene and Water Quality & Health are planned for January 2012.

In conjunction the Department of Environmental Health at UNIMA, MEHA approached the Africa Group of the IFEH in 2008 with a request to host the 2nd All Africa Environmental Health congress in Malawi and were granted permission to do so. The congress was held in May 2010 in Lilongwe and was an undoubted success. It was attended by over 150 delegates from 14 African countries as well as participants from the UK, USA and Australia and was opened with presentations by the President of the IFEH, the Chair of the Africa Group of the IFEH and Malawi Government Minister for Health. In addition, sixty presentations of original EH researches were presented at the meeting. The congress was enhanced with expert led workshops on drinking water safety plans, community led sanitation and Africa Academy for Environmental Health activities. Support was received from a number of organisations including the British Council, and a profit of over US\$ 15,000 was made from the event. The profit from the congress is being used to develop MEHA programmes for Continuous Professional Development (CPD) courses in conjunction with the Centre for Water, Sanitation, Health and Appropriate Technology Development (WASHTED) at UNIMA, scheme of practical training for graduates and accreditation of the UNIMA EH degree course. Funds have also been earmarked to facilitate MEHA members attending the 3rd AAEH Congress due to be held in South Africa in 2012.

## **THE FUTURE**

In the near future MEHA intend to accredit each EH course offered by Higher Education Institutes in the country to ensure that future graduates continue to meet the needs of the profession and develop the health of the nation. Accreditation of the degree programme offered by UNIMA is planned for 2013, although preliminary discussions are underway at present between MEHA and the Department of Environmental Health at UNIMA. MEHA intend to accredit the diploma programme offered at the MCHS by 2014 and the training programme undertaken by HSAs by 2015.

The Department of Environmental Health have recently announced that UNIMA intends to introduce two new Masters Degree programmes in Environmental Health in the next year or so. An MSc in Environmental health instruction and an MSc in Environmental Health by research to help drive the profession forward and develop the research skills of EHOs and academics involved with EH programmes in Africa. UNIMA believe that this again will be a first in sub-Saharan Africa. The Department is also developing a third Masters programme in Public Health Engineering at UNIMA.

MEHA is currently putting in place measures to hold its first Annual Environmental Health Conference scheduled for 2012. At the end of the 2nd All Africa Environmental Health congress it was announced that the 3rd All Africa Environmental Health congress will be held in Durban, South Africa in 2012. Based on the success of the 2nd All Africa Environmental Health congress, MEHA is contemplating submitting a proposal to the IFEH that the 14th World Congress in Environmental Health should be held in Malawi in 2016. If successful this would be the second time that the event will have been held in Africa. The last time was held in South Africa was in Durban (22nd – 27th February) in 2004. In recognition of the development and impact that the environmental health profession has had on improving people's lives in the country the Ministry of Health recently appointed Mr. Humphreys Masuku to the position of Deputy Director of Preventive Health responsible for Environmental Health Services. This is the first time ever that an EH professional in Malawi has been appointed to what historically has been a medical position.

However, as a new profession MEHA face many challenges. MEHA need to improve environmental health practice and enforcement and promote the core functions of environmental health for ensuring a healthy nation. Over the last decade there has been a noticeable slackening of food hygiene and safety services, absence of health and safety inspection and enforcement, limited pollution monitoring services, absence of an integrated approach to vector control and absence of a comprehensive national approach to water quality monitoring system. The profession suffers in Malawi from a lack of enabling factors such as out-dated legislation and inappropriate EH policies and a lack of resources such as facilities for collecting samples and ascertaining water quality, laboratory support for environmental health needs as most of the laboratories are clinically oriented, instruments to assist in food hygiene like probe thermometers, accommodation for environmental health staff at rural health centres (mainly available for clinical and nursing staff), transportation etc. Currently, financial allocations from the Government and Districts seem to favour the curative rather than the preventative approach. Therefore, MEHA has a major challenge ahead if it is to convince those in Government that “prevention is indeed better than cure”.

In our next article we will outline in greater detail the challenges facing the environmental health profession and academia in Malawi. A recent Gap Analysis on EH undertaken in Malawi (Morse et al., 2011) to determine priorities for environmental health research highlighted the need for research to be conducted in the areas of food safety and hygiene, water and sanitation, occupational health and safety, communicable disease control and surveillance, vector control and the impact of climate change on health. It is hoped that through this assessment, environmental health will have a stronger profile within the National Health Research Agenda which is currently being drafted. This should help drive forward improved policy development and availability of resources. We will also highlight the development by the MoH & MEHA the National Environmental Health Plan and outline UNIMA's plans for a National Centre for Environmental Health.

In the interim, we invite you to look at the attached photograph depicting a typical water scene in Africa and identify as many environmental health hazards as possible. We will provide the answer to this challenge in our next article. We suspect that we will identify additional risk factors unique to environmental health in Africa which you may not have identified!

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# **Cultural-Religious meaning of and reaction to Labour Pain**

## **A case for Mozambican women living in Swaziland**

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### **ABSTRACT**

Pain during childbirth is experienced by most women. The way it is perceived and reacted to may be different depending on culture, socialization and prior experience. The study sought to describe the cultural-religious meaning of and reaction to labour pain by Mozambican women living in Swaziland. The researcher had observed that, whenever Mozambican women residing in Swaziland came into the Hospital in labour, they would be labelled 'uncooperative' because they are thought to be very afraid of the experience of pain during labour. The study sought to define the manner in which labour pain is perceived and reacted to and to elicit the culturally acceptable meaning and religious beliefs they attach to the whole experience of the child-bearing process. The objectives were: to describe the reaction to the experience of pain during labour, transcribe the behaviour in response to pain and to describe the cultural-religious meaning Mozambican women attach to the experience of childbearing.

An exploratory, descriptive and contextual phenomenology design was utilized for the purpose of this study. The results of the study were displayed in themes and categories of data chunks directed quoted from the data. Culturally inspired behaviour, such as stoicism and bravery, and culturally inspired appreciation of self and the experience and meaning of giving birth, such as pride, womanhood and the removal of shame, and the value placed on the new born formed part of the categories in the results.. In conclusion, it was found that cultural orientation and differences significantly affect both the assessment and management of women in labour pain. Cultural bias or orientation might also lead to ethnocentrism, placing the midwife in a judgmental position, as was the case with the Swazi midwives. It was recommended that the midwifery curriculum should have aspects of transcultural nursing concepts to enable the midwives to understand cultural differences in rendering maternity care. The implication of the study is that Swazi nurse-midwives should render culture congruent maternity care to the women during labour.

### **KEY CONCEPTS**

Culture, descriptive, ethnic group, experience, exploratory research, labour pain, phenomenological research

## **INTRODUCTION**

Physical reactions to the experience of labour pain are important, as these are the entry points for the involvement of health care professionals in the experience of women in labour. Through these physical reactions, women in labour not only show the physical experience of pain, but also give an indication of the psychological distress and psychological pain they experience. This study was undertaken to elucidate this overt expression and reaction to the experience of labour pain among Mozambican women, among other reasons. As the physical expression of pain might differ among cultures, the reaction of health professionals from other cultures to these expressions may not always be in an appropriate client-centred manner that indicates multicultural awareness.

The focus of the study is trans-cultural nursing. Nursing research, done from a trans-cultural nursing perspective therefore focuses on studying the health/illness beliefs and practices of diverse cultural groups, and the integration of these belief systems into the Western medical model. Cultural and social factors also influence perception of pain during labour. Culture is a component of the social features of a human environment and, as such, needs to be kept in mind when rendering care to a clientele of different cultural backgrounds.

## **METHODOLOGY**

This is an exploratory, descriptive and contextual qualitative study. The researcher employed the phenomenological methodology. The phenomenon in question is 'labour pain'. This phenomenon is studied with a view to describe the meaning Mozambican women attach to the experience of labour pain and the religious beliefs that surround pregnancy, labour and delivery.

In this study, the population of informants from whom a sample of five respondents, determined by data saturation was selected to participate was Mozambican women living in Swaziland admitted into the maternity unit in labour. The sampling criteria were that these women should already have their first, second or third babies, that is, primigravidae, gravida 2 and gravida 3 and between ages of 18 and 35 years.

Convenience and purposive sampling were used in the present study. The researcher identified the Mozambican women on admission to the maternity ward. If they qualified according to the sampling criteria, they were conveniently and purposively selected to participate in the study.

Methods of data collection utilized were participatory observation, where the researcher participated as a member of the Midwifery staff in the Labour ward, thereby identifying and observing their reactions to their experience of labour. The in-depth interview method of data collection took place after the identified participants had delivered their babies and had rested for a period of one hour. An interview guide was utilized for this activity.

The researcher translated and transcribed the tape-recorded interviews, then read and reread the interviews in their entirety, reflecting on the interviews as a whole. Then, she summarised the interviews, keeping in mind that more than one theme might exist in a set of interviews. Once identified, the themes that appeared to be significant concepts linking substantial portions of the interviews were written down and entered onto a computer.

## RESULTS

This study presents the themes and categories that emerged from the data. Data are presented from the most general (themes) to the most specific (data units/chunks). All data units relate to the cultural-religious meaning of and reaction to labour pain by Mozambican women residing in Swaziland.

### DATA STRUCTURE

Table 1.1 represents an overview of the structure of the data as it emerged during data analysis. The table illustrates the themes, categories and sub-categories.

Table 1.1

These themes include both culturally inspired behaviour, such as stoicism and bravery, and culturally inspired appreciation of self and the experience and meaning of giving birth, such as pride, womanhood and the removal of shame, and the value placed on the new born.

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**DATA DISPLAY 1.1**  
**CULTURAL-RELIGIOUS MEANING OF AND**  
**REACTIONS TO LABOUR PAIN**  
**(OVERVIEW)**

1.1.1	Stoicism
1.1.2	Bravery
1.1.3	Pride
1.1.4	Womanhood and honour
1.1.5	Gratification: reward
1.1.6	Removal of shame
1.1.7	The bitter/sweet paradox
1.1.8	Valuing the baby
1.1.9	Natural problem
1.1.10	Judeo-Christian belief

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#### 1.1.1 Stoicism

Stoicism is the ability to endure pain, discomfort or misfortune without complaining or showing signs of feeling it or being upset (Collins Cobuild English Dictionary for Advanced Learners 2001:1533). Stoicism is comparable to self-denial and has influenced Christianity and religion in many ways.

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**DATA DISPLAY 1.1.1**  
**THEME 1 STOICISM**

I contained the feeling of pain  
In my culture, a woman experiencing pain during labour is supposed  
to withstand the pain and not show that she is suffering  
Pain endurance is highly regarded  
Stoicism is culturally sanctioned

---

Different cultures and ethnic groups express pain differently. “Some cultures, for example, encourage women to make a noise during labour while others condone silent stoicism (the ‘grin and bear it’ or ‘stiff upper lip’ brigade). Moreover, different societies seem to have different expectations regarding labour pain. American women, for example, when compared with women from Holland, expect labour to be more painful and also anticipate receiving more analgesia”.

It is necessary to assume that the ability to cope with labour pain is learned behaviour that may be culturally determined. While accepting the important cultural component in the acceptance of labour pain, van Teijlingen (1994) in Mander (2000:135), linked United Kingdom (UK) women’s attitudes to pain adherence to the medical model of health.

**1.1.2 Bravery**

In a sense, bravery is closely related to stoicism. However, it is not the same thing. Data display 1.1.2 displays bravery as a reaction to labour pain.

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**DATA DISPLAY 1.1.2**  
**THEME 1.1.2 BRAVERY**

I did not cry because I wanted to feel brave  
I like feeling brave  
It is culturally a sign of bravery not to cry during labour  
Culturally, a woman is supposed to prove bravery by not responding  
negatively to labour pain  
A brave woman is honoured as an individual who can withstand  
suffering  
Not crying during labour is bravery

---

Bravery is another way of displaying a stoic response to a painful experience. “The highest accolades for bravery go to the women who can ‘stick to their guns’ in carving out the birth experience they want under difficult to hostile circumstances”. “Women must be commended for having completed the worlds most dangerous and blessed life event (childbearing). Their bravery must be celebrated”.

At the same time, some women feel that accepting pain relief (medication) is not being brave: on the contrary; one of the women said, “I’ve already decided to abandon all attempts at bravery in the natural childbirth. I shall happily accept all offers of pain relief with pathetic gratitude”. This study found that the Mozambican women valued bravery in labour, although there are cultural variations.

### 1.1.3 Pride

In Africa and many other cultures in the world, children are the pride of a family. It is thus understandable that women in labour would bear suffering with dignity and pride.

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**DATA DISPLAY 1.1.3****THEME 1.1.3 PRIDE**

Labour pain makes me feel proud as a woman  
It is a pride to be brave  
It is a pride for a woman to undergo a painful experience during  
labour

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Chalmers (1990:20) found that “crying out during labour reflects poorly on the woman’s family preparation for childbirth”. In this regard, Kabeyama and Miyoshi (2001:51) refer to Deutsch’s (1973) statement that “everlasting pride on accomplishing childbirth was one of the precious components of maternity”. Therefore, when parturient women are relieved of excessive fear and pain with natural and normal childbirth, their experiences become the most satisfactory ones. According to Kabeyama and Miyoshi (2001:51), the high level of self-confidence and pride brought about by good childbirth experience seems to create greater motivation for constructing good mother-child relationships and mother-role achievements.

In their study on indigenous customs in childbirth, Lefeber and Voorhoeve (1998:25) refer to Kuntner’s (1988) finding that if a woman cried out in pain during labour, the traditional birth attendant would immediately close the woman’s mouth with her hand in order to prevent men from hearing what is going on. This was seen as “defending the woman’s pride”. However, cross-culturally it might be considered an invasion of privacy and even assault. In this study, the researcher attempted to examine and highlight cultural practices among Mozambican women in labour in an attempt to foster understanding of their culture and to prevent stereotype actions on the part of Swazi health care professionals.

### 1.1.4 Womanhood and honour

In African culture, womanhood is associated with childbearing and the honour of a woman with pride; bravery and stoic conduct during pregnancy and labour (see data display 1.1.4)

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**DATA DISPLAY 1.1.4****THEME 1.1.4 WOMANHOOD AND HONOUR**

It is for the pride that makes me feel more like a real woman  
A brave woman is honoured as an individual who can withstand hardships  
The pride of having a baby makes me feel like a real woman  
A real woman is someone whose shame has been removed by the ability to give birth

---

Callister (1992:53) found that Mormon women expressed the cultural religious values, spirituality, self-discovery and the meaning of the childbirth experience as a process of mastery and learning about themselves. Childbirth was related to their ultimate destiny or reason for being 'real women'.

According to Finn (1994:32), the experience of labour pain was a source of discussion and pride among Euro-American women, who saw the childbirth experience as a "rite of passage to womanhood".

It is a family honour to reserve the bride price, a ritual that is part of the initiation ceremony to womanhood by being able to give birth. These traditional practices serve cultural, religious and economic purposes. These practices are prevalent in most African countries.

**1.1.5 Gratification and reward**

In addition to stoic conduct being meaningful and rewarding, the Mozambican women had a feeling of gratification that was further supplemented by the joy of the newborn baby as a gift to them (see data display 41.1.5).

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**DATA DISPLAY 1.1.5****THEME 1.1.5 GRATIFICATION: REWARD**

If I endure the pain experience, I have an inner feeling of gratification  
In suffering, a woman anticipates a period of impending joy for receiving the baby  
I had an inner feeling of satisfaction for having accomplished the task of delivering the baby  
This pride makes me accept the baby as a reward that I have suffered for  
It is a rewarding experience because after the hard labour and pain, I finally had a reward "the baby" to make me feel happy  
I attach value to the baby  
The expectation of a reward makes an individual withstand the pain  
I have the knowledge that it is for a special gift I am suffering  
You really feel rewarded for having withstood the pain during labour

---

The knowledge that after enduring the pain of labour, she experiences a feeling of gratification for having accomplished a task to which a reward is attached makes a woman feel honoured. Ferdinand Lamaze, one of the pioneers in childbirth education maintained that pain was a signal of gratification to come and of the coming reward of birth. The Mozambican women were all in smiles during the interview as a sign that they were happy and felt greatly rewarded for having withstood the pain experience during labour. They were holding health and bouncy babies.

### **1.1.6 Removal of shame**

In many cultures, being childless is regarded as a disgrace. The Old Testament testifies to this. For example, in the first Book of Samuel (1 Samuel 1:10, 11) Hannah lamented her childlessness and barrenness and prayed to God for a child (Women’s Devotional Bible, 1995:250). The situation is the same today, and children and motherhood are still highly valued among African cultures. Childbearing cleanses the woman from the shame of barrenness and also establishes her womanhood (see data display 1.1.6).

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**DATA DISPLAY 1.1.6**  
**THEME 1.1.6 REMOVAL OF SHAME**

A real woman is someone whose “shame” has been removed by the ability to give birth  
If a woman is barren, she feels ashamed of herself in society

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In many African societies, infertile women feel ashamed of the fact that they cannot bear children as if it is their own fault. This is compounded by the fact that the in-laws usually complain of having wasted “lobolo” (the bride price) on an undeserving woman. The process of coming to terms with infertility and integrating the shame of infertility is long and gradual, but it is possible to transform the sense of failure into acceptance. The greatest challenge is to join hands and support a growing movement throughout the world committed to removing the stigma and shame of infertility and replacing it with acceptance of the situation.

In The Netherlands, the stigma and shame of infertility and lack of education have triggered several parties involved in the field to organize and initiate a worldwide campaign aimed at an increasing level of fertility awareness. With respect to the issue of barrenness or infertility, since many African people and cultures regard marriage as a contract whereby the woman undertakes to provide the man with children to continue his line and his name, it follows that without exception a childless wife is considered guilty of breach of contract with respect to her husband, a disturber of normal behaviour in her community, and a source of embarrassment to her family. The latter stems from the fact that, having broken her contract, the husband can claim back the bride price, a circumstance that can be disastrous to a family since the gifts may already have been widely distributed – even have been slaughtered and eaten, in fact. In terms of the social organisation of the community, the bridegroom’s gifts to the bride’s parents may already have been used by her brother for the “procurement of his wife”.

However, the researcher found no literature on what is being done about the stigma of infertility among the Southern African Nguni tribes, to which the Mozambican women belong, but the

Mozambican women condoned to the belief that it brings shame to their parents if they are unable to bear children in their marriages as displayed in the data chunks.

### 1.1.7 Bitter-sweet paradox

The “bitter-sweet paradox” continues the theme of joy and suffering introduced by the category “stoicism and bravery”. Data display 1.1.7, however, attributes a more experiential and folk meaning to stoicism.

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**DATA DISPLAY 1.1.7**  
**THEME 1.1.7 BITTER-SWEET PARADOX**

In my culture, the older members of society believe that something good comes from bitterness. This means that women have to undergo some form of pain in order to have babies (babies are good) They believe in the saying, “first work then earn a salary”  
There is no reason why an individual should cry in labour when something good comes out of suffering  
In my culture, the pain experience is equated to the act of getting honey from a beehive. In order to get honey, one has to withstand the bee sting with the knowledge that out of the pain of the bee sting, honey is to be obtained

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Some of the women in Callister’s (1992:55) study expressed their experience as “the most unique and wonderful experience ... unique in the sense that it’s hard yet best. I think it’s the greatest paradox of an experience that you can have ...”

The researcher found the following statements about the three miracles of motherhood on a web site on “motherhood” that have a strong bearing on the “bittersweet paradox” of pain during labour:

The act of giving birth is the only moment when both pain and pleasure converge in a moment of time. It is in the manner of the sharp point of a needle. Astride upon that point are both pleasure and pain, simultaneously assailing the female that is undergoing the miracle of childbirth. This is the only instance where both pleasure and pain work in unison, a second miracle. Before the childbirth, the lady was a woman. After the childbirth, the woman is transformed into a mother.

This is a revolutionary act; an evolutionary happening; in the manner of the silkworm getting transformed into some winged angel; a miracle. This is the third miracle.

The Mozambican women likened the act of giving birth to obtaining honey from a beehive. Once the task has been accomplished (withstanding the bee sting), there is the joy of enjoying the honey. (<http://www.manbit.com/obstetspain> ... accessed 13-10-03) likens this task of labour to a battle and says that “from this battle will come some good, the satisfaction of overcoming pain; the achievement of happiness and peace, of life in spite of it. This is quite an achievement, an achievement very special, very personal – a feeling of strength, of inner strength, which has to be experienced to be understood.”

### 1.1.8 Valuing the baby

As indicated earlier, children are highly valued in African communities. The value of the new born overrides the physical and mental experience of labour pain (see data display 1.1.8).

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**DATA DISPLAY 4.3.8**  
**THEME 1.1.8 VALUING THE BABY**

Another reason for enduring the pain of labour is attaching value to what you have suffered for: the baby

The pain of labour makes me attach value to the baby I have suffered for, such that I want to take good care of it

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Callister (1992:53) found that Mormon women valued their babies such that they felt a sense of satisfaction in childbearing. For these women, the arrival of their first child marked a time of great joy for their young family. There was a sense of fulfilment in childbearing because family and children are highly valued:

“My relationship with the baby seems to grow every day. The first time I held her, I was so amazed ... and the more I do for her, the more I love her. She is just so precious ... I think there is so much I have to learn ... and so much she will teach me”.

Women who value the pain are sometimes adamant that natural childbirth is the only way to have a baby. Likewise, they attach value to the baby, the result of suffering.

### 1.1.9 Labour pain as a natural phenomenon

Some of the participants, in the present study indicated that labour pain is a natural phenomenon and, by implication, then, that pregnancy is a condition and not a disease (see data display 1.1.9).

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**DATA DISPLAY 1.1.9**  
**THEME 1.1.9 LABOUR PAIN AS A NATURAL PHENOMENON**

The experience of pain during labour is a natural phenomenon whereby mankind enters the world

Labour pain is a naturally occurring event. Therefore, I personally believe that nature should be allowed to take its course without any interference

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Mackay (1988:340) describes the experience of pain in labour as a natural, emotionally fulfilling event, but the most dangerous period of existence for both the mother and the baby.

In a study on the traditional practices in the management of labour pain, Makoae (2000:126) found that among traditional birth attendants in Lesotho, 38,8% reported that they did not control labour pain while caring for women in labour because it is natural for a woman to experience this type of pain.

Lefeber (1994:46) refers to Priya's (1992) finding that South East Asian traditional birth attendants seldom mentioned that they did anything to relieve labour pain: "They thought pain was a natural part of childbirth and they would only do anything about it if it would go on for a long time or if the woman found it absolutely unbearable." Likewise, the Mozambican women stated that the labour pain experience was a naturally occurring event.

### **1.1.10 Judeo-Christian belief**

Religion and culture are closely intertwined. In addition to the Mozambican women's innate cultural beliefs, they also expressed certain beliefs derived from their Judeo-Christian faith about labour (see data display 1.1.10).

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#### **DATA DISPLAY 1.1.10**

##### **THEME 1.1.10 JUDEO-CHRISTIAN BELIEF**

I believe that women should suffer childbirth because the Bible says that because of Eve's sin women will suffer during childbirth  
I think that pain during labour is a curse from God because of the sin of the first woman on earth, Eve, who was deceived by the snake in the Garden of Eden

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According to Genesis (3:16), after Adam and Eve had been banished from the Garden of Eden, God told Eve, "I will greatly increase your pangs in childbearing; in pain you shall bring forth children ..." (Women's Devotional Bible 1995:4). Callister (1992:55) found that "Mormon women endowed childbirth with a profound spiritual dimension and drew an inner strength from their religious beliefs. They viewed the experience with an eternal perspective ... The dimension of spirituality was an integral part of their childbirth experience."

### **DISCUSSIONS**

Much of the discussion was done concurrently with the data presentation together with some literature support to the findings. However, culturally inspired behaviour, such as stoicism and bravery, and culturally inspired appreciation of self and the experience of giving birth, such as pride, womanhood and the removal of shame, and the value placed on the new born, plays a major role in the lives of women. Similarly, the Mozambican woman endured the hardships of pain in labour for the benefit of characteristics listed above and experienced joy at the end of the event.

### **CONCLUSION**

This study on cultural-religious meaning of and reactions to labour pain by Mozambican women living in Swaziland found that personal and cultural meanings are equally important in the experience and treatment of labour pain. To provide effective care, midwives should practice culturally congruent care. They should understand the influence of cultural practices on communication about pain and the communication of the experience of pain. Cultural orientation and differences significantly affect both the assessment and management of women in labour pain. Cultural bias or orientation might also lead to ethnocentrism, placing the midwife in a judgmental position. Human dignity and the ethics of nursing and midwifery practice, however, call for humane nursing care, which finds its ultimate

quality in a blend of Western medicine and traditional health care practices, the realm of trans-cultural and culturally congruent care.

## **RECOMMENDATIONS**

The researcher makes the following recommendations, based on the findings and their implications for midwifery practice, midwifery education and client education.

### **Midwifery practice**

In midwifery practice, both Western-oriented medicine and traditional practices in pregnancy and labour are involved. It is thus recommended that:

The local cultural diversity surrounding pregnancy, labour and the management of labour pain be included in a continuing in-service training programme

Cultural assessment schedules be compiled and implemented as part of the history-taking activity of midwives

Leininger's strategies of accommodation/negotiation and re-patterning/restructuring for bridging trans-cultural gaps in health care be implemented by midwives specifically in terms of the cultural difference among the triad of Mozambican, Swazi and Western medicine local to the area in which this study was conducted.

Multicultural concepts and the ethics of cultural relativism are included in the suggested in-service training programme. In essence, midwives should be made aware of trans-cultural ethics (ethical relativism), the pitfalls inherent in this, and cautioned against prejudice, ethnocentricity and ethnic stereotyping.

Cultural practices surrounding the management of labour pain and gestation in general be interpreted in terms of Western medical practice, and vice versa, and that the advantages of both these perspectives on health care be articulated to the ultimate benefit of the patients.

### **Midwifery education**

To provide culture congruent care, nurse-midwives must know about the patient's culture (Jones, Bond & Cason 1998:43). Educational strategies for neophytes in midwifery should focus on producing nurses with a desire to render culture congruent care. The culturally sensitive and competent facilitator should guide neophytes and others in midwifery education and training in reconciling the cultural perspective and differences that exist between clientele and student midwives.

### **Client education**

Based on the findings of the study, the physiological basis of pain appears to be cross-culturally the same, clients of cultures other than a western medical oriented culture need to understand the physiological aspect in the experience of labour pain.

## Recommendation for further research

To improve the Swazi midwives' understanding of different cultural practices in an attempt to render culturally congruent care the following research topics are proposed:

- Research into the Swazi cultural-religious meaning and reactions to labour.
- A comparative study into the Swazi and Mozambican cultural practices surrounding pregnancy, the antenatal period, immediate postnatal period and management of labour pain.

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# **Environmental Health at the Edge**

## **An Arainneachd Aig An Oir**

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I choose my words carefully – at the edge suggests something different from on the edge. To use the latter would be to speak metaphorically whereas the former and actual title aims to convey a location with just a little hint of remoteness.

So, the Edge, in this case refers to the Outer Hebrides or Western Isles, but more specifically, in this short article, to one particular area of the Hebrides; the island archipelago of St Kilda, or Hirta, as it is sometimes known, the latter being derived from the main island's Gaelic name, Hiort.

Apparently there is no record of a saint named Kilda, so how did this archipelago of four islands and several sea stacks get its name? Not surprisingly there are a number of views – cartographers changing names down the years is one and a similarity to a word describing the shape of a shield is another. However, I prefer a more likely explanation that is derived from a Danish term for a source of fresh water.

There are, to this day, a number of fresh water sources on the main island and this would have been known and valued by early seafarers making their journey south. Furthermore, the requirement to refresh or replenish food and water supplies on long sea journeys explains the presence on St Kilda of a feral breed of sheep reckoned to be one of the world's oldest breeds. A similar breed of sheep was at one time also found on one of the smaller islands in the Faroes, indicating that this was another calling point for food supplies. One finds similar accounts in the history of the South Atlantic Islands where Portuguese mariners deposited pigs and goats long before these islands were occupied by the first settlers.



So when did it all begin? The St Kilda archipelago, rising to 1397 ft. above sea level at its highest point, is evidence of volcanic activity going back over 60 million years, similar to the formation of islands such as Tristan da Cunha and St Helena in the South Atlantic, located on the mid Atlantic ridge which extends to the Faroe Islands and areas further north towards Iceland and Spitzbergen. There are still varying degrees of activity along this ridge and adjacent hotspots. The Icelandic ash cloud is very fresh in our memories and this year marks the 50th anniversary of the Tristan da Cunha volcano eruption that resulted in the entire population of the world's most remote island being evacuated, first of all to South Africa and then to the south of England where they spent two years before returning to their home island in 1963. Emergency Planning takes on a different meaning in places like Tristan from the point of view of access and communications. However volcanoes do not feature in the Western Isles Emergency Plan on the assumption that the St Kilda volcano is now well and truly extinct.

Over the years, researchers have tried to establish the history of human occupation on St Kilda. Archaeologists have discovered evidence of Neolithic and Bronze Age activity but the clearest early evidence of man made structures is in the underground dwellings that point to the Iron Age period. There is also evidence of early Christian churches and a Viking period evident from the names given to some of the smaller islands surrounding the larger island of Hirta.

The structures we see today on the "Main Street" on St Kilda are a mix of early and mid 19th century dwellings.

Prior to the organisation of the island village into sixteen separate holdings, the very basic stone and thatch dwellings were built very close to each other in clusters. Then, around 1830 there was a move

to spread people out and to allocate each of the sixteen families a piece of ground on which they could have their own dwelling. At that time, families and their livestock were housed under the one roof.

However, within thirty years all was to change again when the dual purpose houses would be given up for sixteen more modern houses. The new houses were bigger, comprising three rooms and thatch roofing was replaced, initially by corrugated iron that was eventually replaced by tarred felt. This was at a time when a large proportion of the Hebridean population was living in much poorer housing conditions. Indeed in Ben Buxton's book on the history of the island of Mingulay (1) (often referred to as a miniature St Kilda) we read that, as late as 1893 "the County Sanitary Department issued all households in Uist and Barra district with a written notice instructing them to remove offensive middens, ashpits and dung heaps at least twenty yards from houses and wells and to provide separate accommodation for cattle." So, from this point of view, the St Kildans' standard of housing may have been slightly ahead of its time.

Nevertheless, there were some significant health issues affecting life on St Kilda. They experienced a major smallpox outbreak early in the 18th century. For many years through the 19th century, numerous babies born on the island died within ten days of birth. The cause was attributed to neonatal tetanus and records for the 60 year period between 1830 and 1891 show that 92 out of 160 babies born, died in the first few weeks of life. Other ailments such as rheumatism and dyspepsia were common and there was little resistance to the common cold and flu and it was not uncommon to have an outbreak following contact with visiting ships. (2)

Even some St Kildans who made the decision to emigrate to Australia in 1852 did not escape the fate of infection to which they had no resistance and only half of the emigrants survived the journey. The intention had been for more St Kildans to follow them but the plans changed when the fate of the original group became known.

Following the First World War, a number of St Kildans made the decision to leave for the mainland and over the next ten years it became clear that the remaining population of mainly elderly islanders would not be able to carry on life in such a remote location. Finally the decision was made to evacuate St Kilda and with Government help, the islanders moved to the mainland on 29th August 1930.



For twenty five years or so following the evacuation, St Kilda was privately owned by the Marquis of Bute who visited the islands for short holidays accompanied by his ornithologist friends.

The Marquis of Bute bequeathed St Kilda to the National Trust for Scotland (NTS) who remain owners to this day. Part of the main island is leased to the Ministry of Defence (MoD) for operations connected with their missile testing range on South Uist.

So, today the role of the Environmental Health Officer on St Kilda extends to working with the MoD and NTS on matters concerning the health and wellbeing of their staff working on the island.

A core unit of about fifteen staff work on the MoD base throughout the year and this number usually increases during the summer months when additional personnel are engaged in maintenance work.

NTS employees and volunteers are seasonal workers, normally on the island from April to September each year. In addition there are the summer visitors who arrive by various modes of transport ranging from small yachts to medium sized cruise liners.

All food preparation and catering facilities on the base and in the NTS properties are routinely inspected and the water supply is included in the local authority's Private Water Supplies Sampling Programme. The authority also works closely with both organisations regarding the disposal of waste as it is not permitted to dispose of any waste on the island.

The St Kilda archipelago is the UK's only Dual World Heritage Site (designated by UNESCO for its Environmental and Cultural Heritage significance). I represent our local authority (Comhairle nan

Eilean Siar) on the St Kilda Management Board along with representatives from other stakeholder groups including the MoD, Historic Scotland, NTS and Scottish Natural Heritage. Currently we are involved in pulling together the final stages of the second five-year Management Plan for St Kilda as required by UNESCO.

That is but a snapshot of St Kilda from its origins to the present day but you can explore further by reading any of the 750 or so books written about the archipelago over the last three hundred years.

There is a lot of information on the NTS website at [www.kilda.org.uk](http://www.kilda.org.uk) and if you would like to visit the islands some day to experience The Island at the Edge of the World for yourself, a number of boat operators offer day trips from Lewis, Harris and Uist during the summer months.

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# Africa Academy for Environmental Health: Past, Present and Future

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“Success in tackling environmental health problems depends very much on collaboration between ministries and agencies. Members States, WHO and partners should work together to apply these tried and tested methods and knowledge to make the environment more healthy.” (African Regional Health Report, 2006)

“For millions of children today, particularly in Africa, the biggest health challenge is to survive until their fifth birthday, and their chances of doing so are less than they were a decade ago.” (Lee Jong-Wook, Director –General, World Health Organization, World Health Report 2003).

Introduction.

In Africa it is recognised that there is a shortage of Environmental Health Practitioners (EHPs) per head of population and national policies are currently directed at addressing this problem. A review of environmental health education in six African countries (Angola, Botswana, Cameroon, Kenya, Mali and Zambia) by the Africa Region of the WHO (2005) reported that few countries offered environmental health courses. Only Kenya had an adequate number of environmental health degree programmes in place producing the requisite number of graduates required for the size of the country. In the other five countries the approach to environmental health education and enforcement was fragmented and only specific areas covered through allied professionals (i.e. nurses, doctors) e.g. health education, community health or as a module in a Masters in Public Health course. It concluded that a more holistic and co-ordinated approach to environmental health practice was needed and that the academic sector could address this problem through the provision of appropriate courses but that at present this sector is under-utilised.

Even where degree programmes do exist concern has been expressed that the curriculum for training EHPs (in West Africa) lagged behind the skills required to cope with the challenge of environmental monitoring and control (Emeharole, 1993). Emeharole reviewed the existing curriculum for the training of EHPs at the diploma and degree levels in the sub-region and concluded that both curricula lack sufficient credit weight to impart the desired skills to perform the highly scientific task of environmental monitoring, which is a problem we envisage exists in other African countries. The lack of appropriately qualified professionals in this area inevitably leads to inadequate environmental health practice and enforcement, inappropriate environmental health policy and strategy for action, the lack of sound information for priority setting and planning, the absence of a suitable set of environment and health indicators, and the lack of an appropriate performance indicator system (Emeharole 1993; WHO 1998; Thomas et. al, 2002; Cairncross et. al., 2003; WHO 2005).

In 1998, the African Region of the WHO announced that “it is indispensable to strengthen the capacities of the ministries of health to promote environmental health as a precondition for any sustainable human development”. In this respect, it called upon ministries of health to act as catalysts in directing, coordinating and promoting environmental health and hygiene activities, through: (i) the adoption and implementation of policies, strategies and plans of action on environmental health and hygiene and (ii) strengthening of inter-sectoral collaboration between all environmental health actors and stakeholders. It encouraged ministries of health to establish an appropriate legal framework for implementing environmental health activities, integrate environmental health into all local and national development programmes and projects, mobilise the resources needed to support and strengthen these activities, promote community-based local initiatives in the area of environmental health and coordinate interventions related to the management of environmental health activities (WHO 1998a). The SADC Health Protocol, of which all the African participants of this project are members reaffirms the importance of improving environmental health conditions of communities especially in rural and under-developed areas. The WHO has also committed itself to the Health for All in the 21st Century framework which makes explicit three goals (WHO 1998b): (i) an increase in life expectancy and improvement in the quality of life for all; (ii) improved equity in health between and within countries and (iii) access for all to sustainable health systems and services. While not encompassing all the actions, environmental health falls clearly in the interface between health and development and is therefore critical to the goal of “making health central to human development.” (Thomas et. al., 2002; Cairncross et. al., 2003).

To achieve these goals in Africa, various Ministries of Health are (i) encouraging the establishment of environmental health degree programmes in higher education institutes where none currently exist; (ii) recruit appropriately qualified and research active academic staff to deliver the programme and undertake research; (iii) improve the professional capacity of academic staff to enable them to review and/or upgrade existing Diploma in Public Health programmes to Bachelor’s in Environmental Health degrees, (iv) ensure that such degrees are accredited and reviewed by appropriate professional bodies and (v) provide appropriately tailored continuous professional development courses for practising EHPs. The development of the curricula for environmental health degrees in Africa is intended to ensure that irrespective of the location within Africa all environmental health professionals will be educated to the same core curriculum. This will ensure that cross-cultural insights have been shared and leads to the development of environmental health professionals who have common internationally recognized educational base. This will facilitate transportability of qualifications and mutual recognition of partners.

## **The Past**

The concept of an ‘Africa Academy for Environmental Health’ was first proposed by Dr. Koos Engelbrecht (Tshwane University of Technology) and Mr. Dennis Mazali (Muhimbili University of Health and Allied Sciences) at the International Faculty Forum on Environmental Health Education (5th World Congress on Environmental Health, Stockholm) in 1998. At the World Congress the International Federation of Environmental Health (IFEH) endorsed this concept. Later, at the first African conference on Environmental Health Education held at Bagamayo, Tanzania in October 2001 the above concept was moved forward. Participants from a number of African countries came together to discuss many environment and health related issues that are specific to Africa. At this meeting, it was unanimously agreed that there was a need for a proactive communication system, using the ‘newly’ developing electronic media (internet, email) to improve the exchange of information between

academic staff and students in African academic institutions. Amongst the many resolutions tabled, the Africa Group of the IFEH gave a mandate to three Universities in Tanzania, Malawi and South Africa to collaborate and establish an Africa Academy for Environmental Health.

At the 1st All Africa EH congress in Nairobi, Kenya (27th – 30th, August 2007) the Academy was officially launched after more than 10 years of preparatory work. At this meeting a number of executive committee (EXCO) members were preliminary elected with specific duties assigned to each member. Three EXCO members (Lungu, Engelbrecht & Grimason) were specifically tasked with the duty of soliciting funding to develop the AAEH and help mobilise and expand its membership. In 2008 a UKAID multi-lateral grant involving South-Africa, Tanzania, Malawi, Kenya, and Swaziland was awarded jointly to Professor Grimason (then at University of Strathclyde) and Dr. Engelbrecht through the British Council Development Partnerships in Higher Education (DelpHE) scheme (2008 – 2011; £135,000).

### **Aim of DelpHE 3 Grant**

The aim of the grant is to develop the Africa Academy for Environmental Health.

### **Objectives of the DelpHE AAEH grant**

To determine the extent of environmental health diploma/degree provision within each SADC country; To help establish an environmental health diploma/degree course in each SADC country by the end of the link period; To raise the profile and advance the discipline of environmental health in SADC countries; To determine the uptake and gender participation in environmental health diploma / degree programmes in each SADC country; To promote the national recognition of environmental health education within SADC countries; To determine the number and ratio of EHO's compared with other allied health professionals and the population in each SADC country; To establish a database of environmental health education expertise in SADC countries; To establish an electronic network of environmental health academics in SADC countries; To promote and stimulate environmental health e-learning in SADC countries; To identify the presence / absence of any professional environmental health institutes/bodies and their role in reviewing / directing environmental health curricula and accrediting diploma / degree courses; To facilitate contact with other national and international environmental health training institutions and bodies/associations that share values compatible with the aims of the AAEH; To promote exchange of environmental health academics within SADC, Africa and abroad; To promote sharing of best practices in environmental health within SADC countries and abroad; To promote and facilitate collaborative environmental health research in SADC countries; To improve the exchange and management of information and experience among environmental health academics, technicians, students and institutes in SADC countries; To promote the harmonisation of standards and practices in environmental health in SADC countries; To undertake an educational needs assessment of environmental health academics involved in the delivery of environmental health diploma/degree programmes in SADC countries.

### **Portfolio Holders**

At the 1st All Africa EH congress a number of portfolio holders were identified and the duties shared equally between the original few proposed EXCO members (Engelbrecht, Kitagwa, Lungu, Mazali & Grimason) of the Academy. An interim Chairperson (Engelbrecht) was elected to drive the

development process forward until a formal meeting of the Academy could be held. After the DeLPHE grant was awarded a formal meeting was held at the 1st workshop in Pretoria in March 2009. To meet the aim and objectives of the grant and to develop the Academy a number of academic portfolios were assigned to EXCO members with specific duties and appropriate timelines. The burden of this task initially fell upon a few EXCO members, however over the course of the grant period with increased membership these duties have been shared (Table 1). In addition to individual portfolios, a number of sub-groups were identified to drive forward specific objectives of the grant e.g. curriculum development and quality assurance.

## Workshops

To achieve the objectives a number of key AAEH workshops took place over the three year funding period, the outputs of which have been displayed on the IFEH AAEH website over the years and presented to the British Council Country Director.

Year 1 2009	SOUTH AFRICA (Develop a quality assurance and registration model) Tshwane University, Pretoria	KENYA (Moving quality assurance forward and finalise models) Moi University, Eldoret
Year 2 2010	TANZANIA (Demonstrate e-learning model & EH communication tools) Muhimbili University of Health and Allied Sciences, Dar es Salaam	MALAWI (2nd All Africa EH congress & EH networking) University of Malawi, Blantyre.
Year 3 2011	SCOTLAND (Research proposal writing workshop) University of Strathclyde, Glasgow	SOUTH AFRICA (Finalise and sign off documents and to identify the way forward) Cape Town Peninsula University, Cape Town

In addition to the above workshops others were held at Tshwane University, the University of Malawi and University of Johannesburg which enabled sub-groups to get together and finalise key objectives e.g. curriculum development and quality assurance groups to enable to Academy to focus on other objectives. Environmental health professional practitioners and academics from the host institute(s) were invited and actively participated. This contributed to their professional development, especially where professional bodies were in place to award continuous professional development points.

## PRESENT

### Membership

Whilst the objectives of the DeLPHE funded project apply specifically to SADC countries, the overall aim of the AAEH was always to encourage the participation of as many African academics from institutes within their respective countries involved in the delivery of environmental health education to become active members of the Academy. At the 1st All Africa EH congress in Nairobi the

membership comprised of 6 academic members from 3 African countries (South Africa, Kenya & Malawi) and 5 institutions. By the end of year 1 of grant, the membership had increased to 9 academic members from 6 countries (including Botswana, Tanzania and Zambia) and 9 institutions, and by the end of year 2 this had increased to 12 academic members from 9 countries (including Zimbabwe, Nigeria and Rwanda) and 11 institutions. Most of these are outlined in Table 1.

It took a long time, but finally God and King met.

At the penultimate meeting of the AAEH held at Cape Town Peninsula University (20th – 27th August, 2011), academics from Universities offering environmental health degree programmes in Nigeria (Dr. Godson Ana), Ghana (Dr. Ishmael Norman) and Namibia (Mrs Charmaine Jansen) joined the Academy. At this workshop God met the King for the first time i.e. Dr. Godson Ana from Nigeria and Mr. Kingsley Lungu from Malawi. With the inclusion of members from Nigeria, Ghana and Namibia in Year 3 this increased the membership to 16 academic members from 13 countries (Table 2). More importantly, the Academy now had representation from institutes delivering EH programmes in east, west and southern Africa and is expanding throughout the continent.

At the present time the Academy does not have representation from institutes in north and central Africa or from institutions delivering EH programmes in non-English speaking countries within Africa which we are trying to address. The environmental health problems highlighted by Samanyika et. al. in Malawi (recently submitted to Environment & Health International) are common throughout the continent and language should not be barrier for God, King and the AAEH to overcome. Additional contact details for each AAEH EXCO member and academic institutions within their respective countries have been placed on the IFEH Africa page webpage. Academic profiles for each EXCO member can also be found on the IFEH Africa page website.

### **Curriculum Development and Quality Assurance of EH programmes in Africa.**

A concept document entitled ‘Developing an International Competence-Based Curriculum for Environmental Health’ was developed jointly by the University of Birmingham, Dublin Institute of Technology and Chartered Institute of Environmental Health to guide the development of an international curriculum in 2008. The proposal was presented at the International Faculty Forum which is traditionally held prior to the World Congress on Environmental Health in Brisbane, Australia in 2006 (Brennan et. al., 2008). The document emphasised the concept of core skills for Environmental Health Professionals and focused upon the need for the development of a curriculum that enhanced the knowledge, ability and skills that are uniquely possessed by environmental health professionals. Using this document as a template the AAEH held a workshop at Tshwane University of Technology in Pretoria (3rd – 5th March, 2009) and produced a revised document that emphasized the development of an internationally portable curriculum aimed at (i) promoting environmental health articulation within various countries in Africa and (ii) emphasising the importance of addressing environmental health problems specific to the African continent.

Subsequent workshops held at the University of Malawi in Blantyre (27th – 29th May 2009), Moi & Kenyatta Universities in Nairobi (17th - 20th August 2009) and the University of Johannesburg (22nd – 25th February 2010) led by Me J. Snyman, a curriculum development specialist at Tshwane University of Technology. Thereafter, Keraka and Haman finalised the curriculum with input from all EXCO members. The proposed curriculum is also the result of the commitment and hard work of

various environmental health academics and practising professionals from the higher education institutes and professional associations throughout Africa. The curriculum was officially launched at the 2nd IFEH Africa Group All Africa EH congress held in Malawi in May 2010 and presented to the Chair of the Africa Group of the IFEH.

Alongside curriculum development, rigid quality management systems must be implemented and maintained to ensure that the deliverables of environmental health programmes meet and exceed minimum international standards. Therefore another key objective of the DelPHE project was to develop a QA manual that would guide, direct and inform Institutions on the development, implementation and maintenance of a quality system. This is missing in a number of environmental health training programmes in Africa. To this end, a comprehensive consultative process was undertaken which included two workshops (i.e. Pretoria and Nairobi) and another sub-group workshop (Pretoria, June 2009). Stakeholders that represented the environmental health discipline in Africa and Europe were part of the respective workshops. Participants included Universities in Africa and Europe, professional boards and associations, government departments and non-governmental organisations.

The workshops were facilitated by Dr. D. Naidoo and Me C. Selepe from the Quality Directorate, Tshwane University of Technology in South Africa. The quality management manual has been completed and was formally handed to the Director of the British Council in South Africa in February 2010. Thereafter, Kitagwa and Nkambule developed the QA documents on behalf of the AAEH with input from all EXCO members. Dr. Harold Harvey (University of Ulster) and Maswabi also made a significant contribution to this area. The manual is comprised of three chapters covering the recommended quality management framework accompanied by an associated set of quality criteria to be met to assure quality. As far as we determine this document represents a first for Africa where a QA document has been compiled including best international practise and tailored made for environmental health degree programmes in Africa.

The uniqueness of the curriculum and QA documents is that they are inter-woven or married to each other. One influences the other and vice-versa. This could not have been achieved with the guidance of Naidoo, Selepe and Snyman from Tshwane University. All documents can be downloaded from the IFEH webpage. In light of these developments a number of African Universities have amended their curriculum to reflect the AAEH curriculum and implemented QA procedures and a number are currently piloting or have implemented them into their degree programmes. Copies of these documents have been sent to the Ministry of Health in each member country.

To present the outcomes of these two objectives to the world, Engelbrecht and Haman represented the AAEH at two International Faculty Forums and World Congresses on Environmental Health held in Singapore (2009) and Canada (2011), respectively. A recent past President of the International Federation for Environmental Health (Mr. Bernard Forteath) announced at the 2nd All Africa Congress on Environmental Health that was held in Malawi during May 2011, that the generic curriculum for environmental health and associated QA procedures “was a first for Africa as well as internationally”. We expect that the IFEH and Africa group of the IFEH is will formally endorse these documents at the next World Congress on Environmental Health (Vilnius, Lithuania, May 2012). With these tools a number of Universities have already requested their professional bodies and/or Ministry of Health to accredit their degree programmes.

Funds have been put aside to ensure that the AAEH are represented at the next International Faculty Forum and World Congress on Environmental Health which will be held in Lithuania (Vilnius, May 2012) and 3rd All Africa Environmental Health Congress in South Africa (Durban, November 2012).

### **Academic database, communication and eLearning**

An academic database containing the email addresses of every academic member of staff involved in the delivery of EH programmes within each institute and country has been created (n=123) by Haman & Keraka. Although not an exhaustive list of every EH academic involved in the delivery of EH programmes in Africa, it is at least a start, and this will facilitate better communication between academic members of staff in different institutes in Africa and enable the electronic distribution of outputs from the DelPHE grant, AAEH activities and other any other pertinent information.

The AAEH is also leading the way on the promotion of environmental health eLearning. Mazali has presented these developments at e-Learning conferences in Lusaka, Zambia and Dar es Salaam, Tanzania attended by representatives from more than 90 countries. Other meetings have taken place in Tanzania and Malawi to develop an appropriate e-Learning module on EH for Masters in Public Health courses in Africa involving Mazali, Lungu, Morse, Engelbrecht, van der Westhuizen and Grimason. Mazali has also developed an online eLearning platform and courses which is accessible to all members of the Academy. Under development is an 'AAEH eLearning Tool Kit' to facilitate and promote sharing of information, project data management and capacity development.

This area of development has attracted additional funding from DelPHE 5, IICD of Netherlands, capacity building – GiZ of Germany and research SPIDER of online resource sharing. The following websites portals, platforms have been designed [www.ifeh.org/afa](http://www.ifeh.org/afa), [www.wikispaces.com/aaeh](http://www.wikispaces.com/aaeh), [www.elearning.or.tz/project](http://www.elearning.or.tz/project), [www.aaeh.net](http://www.aaeh.net) and <http://aaeh-network.ning.com>. The AAEH communication strategy developed by Engelbrecht can be found on at [http://www.ifeh.org/afa/docs/DelPH\\_project\\_implementation\\_plan\\_rev02.pdf](http://www.ifeh.org/afa/docs/DelPH_project_implementation_plan_rev02.pdf).

### **Marketing and advocacy**

Marketing and advocacy objectives have been achieved through active participation of the AAEH and EXCO members at the 2nd All Africa Environmental Health congress (Lilongwe, 24th – 27th May, 2010) in Malawi 2010. This area of activity was led by Macherera and Letsholo (previously Maswabi). AAEH were a major partner in the congress supporting it through the registration and participation of all, but one, EXCO member. Three EXCO members in particular were instrumental in applying to the Africa Group of the IFEH for permission to host the congress in Malawi and the management of the meeting, primarily led by Morse. The congress was attended by over 150 delegates from 14 countries including the President of the IFEH, the Chair of the Africa Group of the IFEH and experts from a number of fields in environmental health. Sixty presentations of original research were given with additional expert led workshops on drinking water safety plans, community led sanitation and AAEH activities.

Every EXCO member presented at the congress presenting 19 scientific papers in total. All EXCO members played a pivotal role in manning (not exactly gender sensitive!) the AAEH exhibition stand, distribution of AAEH publication material and presentations on CDs. AAEH members have also played a pivotal role in bringing the AAEH to the attention of higher officers within academia,

professional organisations, Ministries of Health personnel and through the participation and management of technical tours in each country ([www.ifeh.aeah.org](http://www.ifeh.aeah.org)). Support was received from a number of organisations including the British Council, and a profit of over US\$ 15,000 was made from the event. At the Congress the Director of the British Council (Malawi) was presented with the final version of the curriculum development and quality assurance documents.

## **Gender Development**

The Academy recognises that all environmental health and allied health professionals must have knowledge and awareness of the ways in which gender affects health, so that they may address gender issues wherever appropriate to ensure that their work is both effective and gender sensitive. Gender mainstreaming is therefore a key component of the development and role of the organization and members. Environmental health within Africa is an area where the impact of the natural, home and working environment most affects the lives of female members of the community both adults and children. As such, the Academy sees the inclusion of gender in its targets as imperative in the development of the quality of training for environmental health practitioners and allied health professionals throughout the continent. At the onset of the AAEH in 2007, the Academy had no female members. In 2008, it had one (with Morse), in 2009 three (with Keraka and Haman), in 2010 it had increased to 4 (with Macherera) and finally 5 in 2011 (with Jansen). Thus, 40% of EXCO members are female.

To specifically address this area Morse developed a gender policy on behalf of the Academy which can be accessed on the IFEH webpage. Through the award of a gender development grant from the Association of African Universities she is currently determining the uptake and gender participation in environmental health diploma/degree programmes in southern and east African countries. This project involves 25 female academics from 11 Universities in 10 African countries and involves participation by many of the EXCO members (male and female). The objectives are to gather data on the status of gender equality in EH courses and research, create an electronic database and forum for female academics, address gaps identified in student intake, attrition rates and academic staffing, including the role of women in research and management positions and develop a database of online courses and materials. To date, workshops addressing these needs have taken place in South Africa with others planned for Kenya and Malawi in the near future. At the workshop held in Johannesburg by Morse, Keraka, Haman and Grimason, the African Women Environmental Health Network (AWEHN) was officially launched. An announcement about the AWEHN will appear in the E&H International Journal in the near future.

## **Networking**

Nkambule has compiled a comprehensive list on networking activities and exchange programmes undertaken by EXCO members during the course of this grant and this can also be found on the IFEH website. For example, Engelbrecht (South Africa) has acted as external examiner for degree programmes at the National University of Science and Technology (NUST-Zimbabwe), University Of Swaziland (Swaziland) and Muhimbili University of Health and Allied Health Sciences (Tanzania). He was also appointed as external examiner for two MPhil. & PhD candidates at the University of Strathclyde (UK) who had undertaken EH research in Africa. Letsholo (Botswana) has acted as external examiner for the diploma programme at NUST-Zimbabwe. Nkambule (Swaziland) is external examiner for the degree programme at Wits University (South Africa) and a certificate programme at

the National Health Training Centre (Lesotho). Keraka (Kenya) was invited by Kitagwa (Kenya) to act as external examiner for the degree programme at Moi University and is also the external examiner for the newly established degree programme at Mount Kenya University. Van der Westhuizen (South Africa) has been invited to be external examiner for the new degree programme at the Polytechnic of Namibia by Jansen (Namibia). Musoke (Uganda) has been appointed as a visiting lecturer at Kigali Health Training Institute (Rwanda). Grimason has acted as external examiner for the degree programme at the Polytechnic (Malawi). Very little collaboration between African academics existed before the establishment of the Academy, which is a step forward in the right direction.

## **Research**

Another objective of the project was to promote and facilitate collaborative environmental health research in SADC countries. Universities and academics in Africa face many challenges and constraints when it comes to undertaking environmental health research e.g. lack of well-equipped and accredited laboratories, limited technical support, government / university funding etc. As a result, most studies generally gather empirical evidence using observational, questionnaire / focused group discussions which is important in the field of environmental health. The uniqueness of EH research is that it provides a bridge between the physical and social sciences and facilitates a better understanding of the environment and health. However, evidence from the questionnaire study conducted by Engelbrecht would suggest that most academics involved with the delivery of EH programmes in Africa are recruited for teaching purposes rather than research. Feedback from the workshops would suggest that most academics lack essential research skills and knowledge e.g. on proposal writing and paper writing. As a result many struggle to publish their results in peer-reviewed scientific journals. Often the results of fascinating studies unique to EH are published in national medical and/or professional journals which are not highly regarded by the University promotion committees and are not necessarily available to the world-wide EH community.

During the recent workshop in Cape Town, Norman, Ana, Musoke and Lungu presented on EH in their respective countries. Interestingly, many of them presented photographic evidence of the insanitary conditions facing the poorest members of society in each country – different countries but similar problems. We know what the problems are but how do we generate the statistical data to bridge the photographic evidence with empirical evidence to provide the scientific evidence to convince Ministries of Health to develop/adopt/apply environmental health policies and strategies and drive home the message that prevention is better (and more cost effective) than cure? However, one of the speakers did add another dimension to this dilemma “there is a clear lack of will by most politicians and Governments in Africa to adequately address these issues ... it is within their control to do so if they were seriously interested ... they see the same things that we do on a daily basis, come on, get real!”

With respect to the objectives of this grant, we have attempted to address this issue by helping (i) academics obtain Commonwealth academic research scholarships to undertake M. Phil and PhD studies (n = 6), (ii) EH practitioners obtain Commonwealth professional scholarships to develop professional practice and institutions (n =2), (iii) run proposal writing courses at Strathclyde University, UK (March 2010), University of Johannesburg, South Africa (July 2010) and Kenyatta University, Kenya (October 2011), and (iv) undertake collaborative research and produce publications in professional and peer-reviewed scientific journals (see reference section). At the penultimate workshop, the Academy also received a proposal from Dr. Caradee Wright, Council for Scientific and

Industrial Research representing a EH research network (<http://www.ehrn.co.za/>), to jointly develop an on-line Africa Journal of Environmental Health Sciences. This journal would reflect the unique problems faced by academics in Africa and provide them with a forum to publish their research findings. The Academy is in full support of this proposal and negotiations are on-going.

The Academy has also agreed to put funds aside to undertake collaborative research on two key EH KAP projects on (i) geophagia and (ii) malaria in each country and compare and contrast the findings across the continent. We envisage the data generated will lead to joint publications in many peer-reviewed scientific journals in the future and be of interest to the World Health

### **Organisation.**

Since the award of the DelpHE 3 grant to establish the AAEH, the Academy has received two other grants. A Mobilising Regional Capacity Initiative (MRCI) grant from the Association of African Universities (£94,000 over 18 months) on gender development for female staff involved with EH programmes in Africa and a DelPHE 5 grant (£60,000 over 30 months) to develop an eLearning EH module suitable for Masters in Public Health courses in Africa. Future articles will elaborate upon the fine details and outcomes of these grants. Morse and Grimason recently submitted a concept note to the Tropical Health Education Trust in the UK seeking funding (£1.5 million) to address the training and practice of community based health workers on behalf of the AAEH. Previous proposals by Lungu and the Royal Environmental Health Institute of Scotland (UK) submitted to the International Health Links Scheme in the UK to develop CPD courses for EHOs in Malawi fell upon deaf ears. However, successful proposals were submitted by Siulapwa (Zambia) in 2010 and Musoke (Nigeria) in 2011 in conjunction with regional groups of the CIEH (UK) and the Academy awaits the findings from their studies.

### **FUTURE**

The long term goal of the Academy is to establish a body of African academic institutions under the auspices of the AAEH to instigate, develop and advance the training, science and practice of environmental health throughout the continent. We envisage that this will lead to a cadre of well qualified environmental graduates and professional EHOs in each country over time. Overall the AAEH aims to promote national, continental and international recognition of African environmental health qualifications and develop south – south academic partnerships with universities in Asia, Australasia and north-south partnerships with European and North American/Canadian universities through electronic networking and the IFEH International Faculty Forum network. A future aspiration of the AAEH is to establish active professional bodies/institutes throughout Africa, similar to those in the developed world.

During the series of workshops which have been held over the years a problem highlighted by a number of EH academics and practitioners was that environmental health legislation was out-dated, non-existent or not enforced for a variety of reasons. Lungu cited an example of a piece of legislation on public health in Malawi dating back to 1946 which is still in place and where the fines are still in pounds, shillings and pence! Norman (Ghana) who joined the Academy recently is a leading player in this field given his professional background as a lawyer and public health practitioner. He has accepted an undertaking to provide guidance to the AAEH on environmental legislation, policy and enforcement. If the Academy can develop this essential area through future workshops and congresses,

hopefully we can share the outputs with colleagues throughout Africa. Norman states that “as all the nations involved in this Academy are Commonwealth Nations with Common Law traditions, respective nations can borrow freely from each other in drafting of laws, deciding cases in court and learn from those countries that already have a standardized legal system in place”. Norman has also agreed to lead a sub-group to develop a Constitution on behalf of the Academy. Mazali will do likewise with regards to the AAEH strategy.

The questionnaire study conducted by Engelbrecht at the start of the project and throughout revealed that there is need for an MSc in EH by research for young academics to develop / enhance their research proposal and paper writing skills. To address this need the University of Malawi will introduce in 2012 three new Masters courses (i) MSc in EH by instruction, (ii) MSc in EH by research and (iii) Masters in Public Health Engineering. To ensure the sustainability of the Academy more members need to become research active. To this end the Academy has agreed to devote funds to two cross-continental studies on knowledge, awareness and practices (KAP) associated with geophagia and malaria. Grimason has developed a unique educational video for community based health care workers to present to rural communities in Malawi. A pilot study is underway in Malawi and the results are being evaluated. We envisage undertaking a similar study involving all members of the Academy. We will endeavour to attract additional research funds given the attractiveness of the network to potential donors i.e. multi-lateral projects as opposed to bi-lateral projects. However, we also need to identify a way of involving EH academics and practitioners from non-English speaking countries into the Academy to share the outcomes of this project and to encourage their active participation on on-going and future projects.

In due course the Academy will introduce a registration scheme similar to that of the IFEH to generate income. The Academy will also be registered as an NGO in the UK, USA and Malawi to enable it to apply for funds which are only available to NGOs, and not academic institutions, and vice-versa depending on the funding criteria. During the course of this project the AAU was confused as why the funding for the MRCI gender development project should be deposited at the University of Malawi given that the physical address of the Academy was in Pretoria. This has also caused confusion amongst other potential donors. However, at the workshop in Glasgow it was agreed that the AAEH bank account should be based at the University of Malawi alongside the AAU MRCI project account.

At the Cape Town meeting it was agreed that there was a need for a ‘permanent’ country secretariat office to be established to attract donors and funding and avoid confusion. As Grimason is now located in Malawi, alongside Lungu the resource mobilisation officer and Morse, it was agreed that the secretariat office should be located in Malawi for the foreseeable future. To this end, Grimason, Morse and Lungu have been tasked with the responsibility of soliciting funds to help establish the Africa Journal of Environmental Health Sciences - proposed by Wright. To this end they will explore funding opportunities through the UKAID HRSCI (Malawi & Kenya) imitative and report back to the Academy.

Prior to the onset of this project there was a general perception that environmental health research and practice in Africa was lagging behind the rest of the world. This view was held by academics and practitioners in developed and developing countries. As a result of this project Mr. Bernard Forteach, a recent past President of the IFEH stated at both the World Congress on EH in Singapore and the 2nd All Africa EH congress in Malawi that “the AAEH and the Africa group of the IFEH is leading the way on curriculum development and quality assurance”. When these procedures have been fully

implemented into degree programmes, graduates in future will have their qualifications internationally recognized by professional bodies world-wide and be as ‘mobile’ as doctors and nurses. Naturally, they will have to undergo some degree of professional assessment by the professional bodies in those countries to ensure that they are competent to practice and enforce the law in those countries.

We envisage that the cross-continental research which we propose to undertake will not only provide the evidence base upon which to base EH policy and strategy within each country, but that the findings will be taken seriously by the World Health Organisation.

“Long live the King. Long live the Academy”.

## **Acknowledgements.**

We would like to acknowledge the hard work, professional approach and dedication of all EXCO AAEH members, including those that have stepped down during the grant period to pursue further study i.e. Siulapwa (‘Father’) and Maswabi (‘Lion-heart’). We would also like thank Dr. Harold Harvey (University of Ulster) and Mr. Andrew Mathieson (University of the West of England) (‘Uncles’) for their invaluable contributions to the workshops held in Pretoria, South Africa and Lilongwe, Malawi. Special thanks go to Dr. D. Naidoo, Me. C. Selepe and Me J. Snyman Tshwane University – you worked us hard in the workshops, but at a controlled pace and hopefully you will agree with us that your efforts have been worthwhile. We would also like to acknowledge the support of Henning Hansen, IFEH Webmaster in creating and populating the IFEH AAEH webpage. Special thanks go to Professor Huw Smith (deceased), Scottish Parasite Diagnostic Laboratory for his encouragement throughout the duration of the grant period. Finally, we would like to acknowledge the British Council, South Africa and UK for their continued support throughout the DelPHE 3 project.

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## Health Organisation

Table 1. EXCO Member and Current Portfolios

EXCO Member	Country	Portfolio
Dr. Koos Engelbrecht	South Africa	Chairperson & Communication
Mr. Dennis Mazali	Tanzania	Deputy Chairperson & e-Learning
Prof. Tony Grimason	Malawi	Research co-ordinator
Mr. Kingsley Lungu	Malawi	Resource mobilisation
Mr. William Kitagwa	Kenya	Quality Assurance
Mr. Stanley Nkambule	Swaziland	Quality Assurance
Dr. Margaret Keraka	Kenya	Curriculum Development
Mrs. Tanya Haman	South Africa	Curriculum Development
Mr. Yoram Siulapwa	Zambia	Curriculum Development
Mrs. Margaret Macherera	Zimbabwe	Marketing and Advocacy
Mr. Baemedi Letsholo Mr. Titus Mswabi	Botswana	Marketing and Advocacy
Dr. Tracy Morse	Malawi	Gender Development
Mr. Hennie van Westhuizen	South Africa	Curriculum Development
Dr. Ishmael Norman	Ghana	Constitutional matters
Dr. Godson Ana	Nigeria	Research & Development
Mr. D. Musoke	Uganda	Research & Development
Mrs. C. Jansen	Namibia	Curriculum Development

Table 2. List of Institutions offering Environmental Health (EH), Environmental Health Science and Public (Environmental) Health (PH) programmes in Africa.

Name of Institution	Contact Person	Course(s) offered
Tshwane University of Technology <a href="http://www.tut.ac.za">www.tut.ac.za</a>	Mrs M. Mokgobu <a href="mailto:mokgobumi@tut.ac.za">mokgobumi@tut.ac.za</a>	National Diploma (ND) EH, B. Tech., M. Tech & D. Tech. EH
University of Malawi <a href="http://www.poly.ac.mw">www.poly.ac.mw</a>	Mr K. Lungu <a href="mailto:klungu@poly.ac.mw">klungu@poly.ac.mw</a>	BSc EH
Malawi College of Health Sciences <a href="http://www.university-directory.eu/Malawi/Malawi-College-of-Health-Sciences.html">http://www.university-directory.eu/Malawi/Malawi-College-of-Health-Sciences.html</a>	Mrs. E. Kaunda <a href="mailto:esterkaunda@gmail.com">esterkaunda@gmail.com</a>	ND EH
Kenyatta University <a href="http://www.ku.ac.ke">www.ku.ac.ke</a>	Dr M. Keraka <a href="mailto:keraka.margaret@ku.ac.ke">keraka.margaret@ku.ac.ke</a>	BSc EH & MSc EH
Moi University <a href="http://www.mu.ac.ke">www.mu.ac.ke</a>	Mr W. Kitagwa <a href="mailto:Wilkita2002@yahoo.com">Wilkita2002@yahoo.com</a>	BSc Environmental Science
Muhimbili University of Health and Allied Sciences <a href="http://www.muhas.ac.tz">www.muhas.ac.tz</a>	Mr D. Mazali <a href="mailto:dmazali@muhas.ac.tz">dmazali@muhas.ac.tz</a>	ND EH & BSc EH
University of Botswana	Mr. B. Letsholo	BSc EH

<a href="http://www.ub.bw">www.ub.bw</a>	<a href="mailto:Baemedi.Letsholo@mopipi.ub.bw">Baemedi.Letsholo@mopipi.ub.bw</a>	
University of Swaziland <a href="http://www.uniswa.sz">www.uniswa.sz</a>	Mr Stanley Nkambule <a href="mailto:snkambul@healthsci.uniswa.sz">snkambul@healthsci.uniswa.sz</a>	BSc EH Science
University of Zambia <a href="http://www.unza.zm">www.unza.zm</a>	Mr Yoram Siulapwa <a href="mailto:rambewe@yahoo.co.uk">(rambewe@yahoo.co.uk)</a>	BSc EH
University of Johannesburg <a href="http://www.uj.ac.za">www.uj.ac.za</a>	Mrs Tanya Haman <a href="mailto:thaman@uj.ac.za">thaman@uj.ac.za</a>	ND EH, B. Tech., M. Tech & D. Tech. EH
Mangosuthu University of Technology <a href="http://www.mut.ac.za">www.mut.ac.za</a>	Mr Thobile Poswa <a href="mailto:poswa@mut.ac.za">poswa@mut.ac.za</a>	ND EH
Durban University of Technology <a href="http://www.dut.ac.za">www.dut.ac.za</a>	Dr. Poovie Goender <a href="mailto:moetik@dut.ac.za">moetik@dut.ac.za</a>	ND EH, B. Tech., M. Tech & D. Tech. EH
Nelson Mandela Metropolitan University <a href="http://www.nmmu.ac.za">www.nmmu.ac.za</a>	Mr Charles Qoto <a href="mailto:charles.qoto@nmmu.ac.za">charles.qoto@nmmu.ac.za</a>	ND EH, B. Tech., M. Tech & D. Tech. EH
Central University of Technology <a href="http://www.cut.ac.za">www.cut.ac.za</a>	Prof Ryk Lues <a href="mailto:rlues@cut.ac.za">rlues@cut.ac.za</a>	ND EH, B. Tech., M. Tech & D. Tech. EH
Cape University of Technology <a href="http://www.cput.ac.za">www.cput.ac.za</a>	Mr Hennie Van der Westhuizen <a href="mailto:vanderwesthuizen@cput.ac.za">vanderwesthuizen@cput.ac.za</a>	ND EH, B. Tech., M. Tech & D. Tech. EH
Kigali Health Institute <a href="http://www.khi.ac.rw">www.khi.ac.rw</a>	Mr Z Bigirimana <a href="mailto:zbigirimanaa@yahoo.com">zbigirimanaa@yahoo.com</a>	BSc EH Science
Federal University of Technology <a href="http://www.futa.edu.ng">www.futa.edu.ng</a>	Dr Agum Amadi <a href="mailto:pht_futo@yahoo.com">pht_futo@yahoo.com</a>	Information awaited
University of Ibadan <a href="http://www.ui.edu.ng">www.ui.edu.ng</a>	Dr Godson REE Ana <a href="mailto:anagrow@yahoo.com">anagrow@yahoo.com</a>	BSc Public Health
University of Calabar <a href="http://www.unical.edu.ng/">http://www.unical.edu.ng/</a>	Dr S. Olaniran <a href="mailto:sobmores@yahoo.com">sobmores@yahoo.com</a>	Information awaited
University of Ghana <a href="http://www.ug.edu.gh/">http://www.ug.edu.gh/</a> School of Public Health	Dr. Ishmael D. Norman <a href="mailto:ishmael_norman@yahoo.com">ishmael_norman@yahoo.com</a> , <a href="mailto:idnorman@ug.ed.gh">idnorman@ug.ed.gh</a>	BA Pub Health MPH/MPhil/ M. Health Informatics, M. Applied Health, Social Science/Ph.D, (Pub Health)
National University of Science and Technology <a href="http://www.nust.ac.zw/">http://www.nust.ac.zw/</a>	Ms. Margaret Macherera <a href="mailto:mzmba@nust.ac.za">mzmba@nust.ac.za</a>	BSc Env. Sc. & MPh EH
Polytechnic Namibia <a href="http://www.polytechnic.edu.na">www.polytechnic.edu.na</a>	Ms. Charmaine Jansen <a href="mailto:cjansen@polytechnic.edu.na">cjansen@polytechnic.edu.na</a>	BSc EH
Makerere University School of Public Health <a href="http://www.musph.ac.ug/">http://www.musph.ac.ug/</a>	Mr. David Musoke <a href="mailto:sokidavi@yahoo.com">sokidavi@yahoo.com</a>	BSc EH



Mrs Tanya Haman, Head of Environmental Health, University of Johannesburg & AAEH Curriculum Development Portfolio Holder



The day God (Godson Ana - far right) met the King (Kingsley Lungu - third from right) on Table Mountain. Far left is David Musoke, Baemedi Letsholo, Stanley Nkambule and between King and God, Dennis Mazali.



From left to right: Godson Ana, Margaret Keraka, William Kitagwa, Hennie van der Westhuizen, Margaret Macherera, Tanya Haman, Ishmael Norman, Melissa Nfedt (British Council), Kingsley Lungu, Dean of Applied Sciences (Cape Town Peninsula University), Charmaine Jansen, Baemedi Letsholo, Tracy Morse, Koos Engelbrecht, Dennis Mazali and David Musoke. Photographer – Tony Grimason.

#### AAEH Logo



# Environmental Health in Lithuania

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Health is being affected by the four main factors: heredity (about 20%), health care services (10%), environment (20%) and lifestyle (50%). Inheritance may be little affected, while health care system, if it is focused on providing treatment services, can little contribute for improving public health. Thus, a key role in strengthening health of the population is a health promoting environment and lifestyle. Telling and educating people what they have to do and what not, there is not always an effective method to achieve their behaviour changes. An alternative approach is to allow people to self-consciously choose a healthier lifestyle, to develop health promotion and social living environment. So the environment, in which we live, has an undoubted impact on the health of the population.

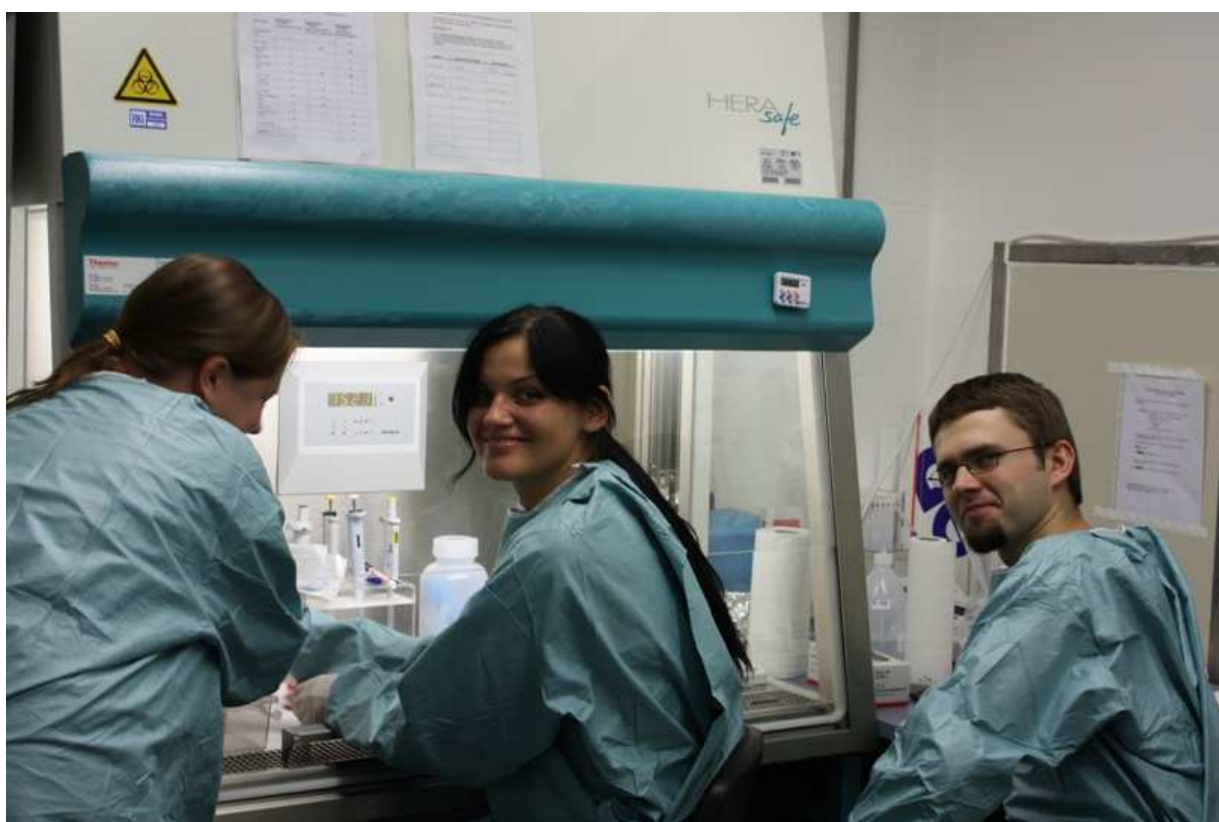
Ministry of Health of the Republic of Lithuania have two types of institutions to ensure and strengthen public health – ones that deal with public administration and public health safety, that are State Public Health Service with 10 regional Public Health Centres, Radiation Protection Centre, Health Emergency Situations Centre, and others, dealing with specialized public health matters and services, that are Centre for Health Education and Disease Prevention, Centre for Communicable Diseases and AIDS, Institute of Hygiene, State Mental Health Centre, National Public Health Surveillance Laboratory. Ministry of Health is also responsible for alcohol, tobacco and drugs control coordination policy and supervision of Drugs, Tobacco and Alcohol Control Governmental Department. At local level, municipalities are responsible for setting up and maintaining Health Boards and Public Health Bureaus.



In concert with the upcoming 12th World Congress of Environmental Health, to be held on 22-27 of May, 2012, in Vilnius, Lithuania, we provide You with more information about Lithuanian institutions that were established to protect general public and the environment. Here we present You 3 institutions that were chosen by Congress' organizing committee as options for technical visits.

## Radiation protection – a part of public health

The health and the public are closely related: the public development depends on its health, and the health depends on public development. That's why the main goal for ages is to avoid the illness and to safe humans health. Protection of general public and the environment against unjustified exposure caused by ionizing radiation and the provision of guarantees for the safety of use of ionizing radiation sources is a concern of each country. In Lithuania for this aim is paid much attention for a long before and this goal is one of responsibilities of Ministry of Health. Radiation Protection Centre (RSC) under the Ministry of Health was established in 1997 and has delegated functions of regulatory authority in radiation protection except the nuclear facilities by Radiation Protection Law. RSC is headquartered in Vilnius and has departments in Kaunas, Klaipėda and Šiauliai. It has a staff of over 50 professionals including hygiene doctors, physicists, medical physicists, engineers, radiobiologists, radio-chemists, and technicians.



RSC as one of institutions of public health system is responsible for monitoring of exposure of members of public, exposed workers and separate risk groups under the normal conditions and in case of radiological or nuclear accident, assessment of impact of ionising radiation on humans as well as monitoring of contamination by radionuclides in air, drinking water, foodstuffs and their raw material, building material and their products as well as other objects which may result the exposure on humans. In our days big attention is paid to the medical exposure or radiation protection of patients. Another big part of RSC responsibilities is authorization of practices with ionizing radiation sources, radiation protection supervision and control, security of use of ionizing radiation sources, determination of compliance with radiation protection requirements, expertise of the projects in regard of radiation safety. Of course, performing these functions RSC specialists also analyse and evaluate radiological

accidents, forecast of their consequences and preparation of proposals for their prevention and minimization of consequences. Very important part is radiation protection education of public and training of workers and other professionals who are related to ionizing radiation.

At present the role of RSC is increasing. RSC plays proactive role in drafting legal acts and laws in the field of radiation protection, administers the State Register of Sources of Ionizing Radiation and Occupational Exposure, takes part in international activities, collaborates with educational, governmental, research institutions and often communicates to the media and public. All RSC activities are focused to radiation protection ensuring in the country from public health point of view.

RSC tasks are addressed to protect human from hazardous impact of ionising radiation. For creating an effectively functioning radiation protection system in Lithuania a significant support was received from The European Commission (EC) and International Atomic Energy Agency (IAEA) and other countries governments. They helped in creating the legal basis in radiation protection and setting up the regulatory authority. This made it possible to create the prerequisites for a radiation protection system, which complies with EC requirements. RSC received basic equipment for laboratory measurements; radiation protection professionals were trained in specific areas. RSC management system has been accredited according LST EN ISO 9001:2008 and RSC laboratory has been accredited according LST ISO/EC 17025:2003.

The RSC carries out the radiological monitoring of local production food and drinking water. For this task sampling of milk, meat, cabbages, potatoes, grain, fish, mushrooms, berries are performed. Different surveys are carried out as indoor radon, soil, patient doses and external exposure, wood fuels surveys and programs for searching of orphan sources. The specialist has big experience in monitoring of occupational exposure by measuring and assessment of internal (whole body counting and bioassay testing) and external exposure doses (termoluminescent dosimetry) and work place monitoring as well.

RSC is leader in implementation of quality assurance systems in hospitals and performing of quality control tests for almost all kind X-ray imaging systems and processes.

RSC laboratory carries out tests of surface radioactive contamination, the activity of concentrations of gamma radionuclides, strontium, tritium and gross alpha and gross beta activities, dose rate and dose.

All mentioned functions, activities and adequate capabilities (appropriate equipment and qualified staff) enable RPC to deal with one of the main threats in public health – ionizing radiation.

During the last 15 years of our experience had shown, that public, medical and occupational exposure monitoring and control, preparedness for the radiological emergency situations, radiation protection supervision and control, public information and radiation protection training are the main duties, that covered in the country may reach the safer environment and better public health.

Food and veterinary risk assessment – to ensure and safeguard consumers

Lithuanian National Food and Veterinary Risk Assessment Institute (thereafter – Institute) ensures effective implementation of the state policy in the field of food safety and veterinary and safeguards interests of the consumers. Institute provides technical and scientific advice in order to ensure reduction of risks to food and feed safety, animal health and animal welfare and environment. The autonomy of the Institute is based on the scientific integrity of risk assessment and findings. Its

opinions based on scientific evidence and results of laboratory investigations ensure interests of consumers and implementation of Community requirements in the field of food and feed safety and veterinary.



Institute focuses on the activities of the National Reference Laboratories in the field of food and feed safety and quality and veterinary. It carries out bacteriological, parasitological, post mortem, histopathological, virological, serological, radiological and molecular and other investigations of animal samples, and physical, chemical, toxicological, microbiological, radiological, organoleptic, olecular and other testing of food, feed, water and other samples.

Laboratory Quality Management System meets requirements of the ISO/IEC 17025 standard on “The General requirements for the competence to carry out tests and / or calibrations, including sampling”, and Rospotrebnadzor rules of the Federal Centre of Hygiene and Epidemiology of the Federal Service for the protection of Consumer Rights and Human Well-being and GOST-R requirements of the Federal Agency on technical regulating and metrology of Russian Federation. Test results are used by Lithuanian and foreign competent authorities and business operators.



Institute strengthens cooperation with EU Central Reference Laboratories, its National Reference Laboratories participate in interlaboratory proficiency testing, implement standard test procedures and new test methods, and develop laboratory quality management system.

Institute increases coherence in risk communication through close cooperation with risk assessment institutions and strengthens trust of stakeholders and consumers in the field of risk assessment. It also investigates consumers' needs and strengthens their perception in the area of risk assessment.

#### Laboratory tests in the field of public health surveillance

Laboratory tests in the field of public health surveillance in Lithuania are performed by National Public Health Surveillance Laboratory (NPHSL), in which highly trained specialists are working. The Laboratory is equipped with modern equipment in accordance with the requirements of latter-day science, also progressive test methods are implemented, the majority of which are accredited by German office of accreditation. The laboratory implemented the quality management system, which was accredited according to the requirements of LST EN ISO/IEC 17025:2005. NPHSL is recognized as the National influenza center (NIC) and WHO National poliomyelitis laboratory.



The laboratory is based on following three departments: Microbiology testing, Chemical testing and Physical factors testing department.

Microbiology testing department performs environmental and clinical microbiology tests. Tests are also performed to detect infective agents of bacterial, viral, parasitic and fungal infection diseases and to estimate their susceptibility for antimicrobial preparations. The most progressive up-to-date test methods, which are implemented, and modern equipment used for their performance allows proper performance of the functions of reference laboratory in the field of epidemiological surveillance of infectious diseases. NPHSL is the only laboratory in the country, which performs microbiological diagnostic of diphtheriae, whooping-cough, leptospirosis, legionellosis and botulism and works with risk group III microorganisms, possible agents of bioterrorism. This activity was expanded much more when investment project “Biological safety level III laboratory establishing in Lithuania” had been realized. Specialists of the department actively participate in the activity of nets of EU infectious diseases and their agents’ epidemiological surveillance.

Chemical testing department performs chemical and physical-chemical analytical testing of atmosphere, air of residential and working environment, drinking water (from public water-supply systems, excavated manholes and artesian wells and mineral and mineralized water), dialysis and deionized water, surface water (water of rivers, lakes, ponds, bathing-places and swimming-pools), food and food supplements, non-food products (cosmetics, products of hygiene, materials and products intended for contact with food, tobacco products, toys, medical devices, pharmaceutical products etc.), soil, sludge, rain drainage, domestic and trade effluents. Modern and usual laboratory analytical and auxiliary apparatus are used for their performance. Chemical analytical tests are performed according to the requirements of national (LST), European (EN) and international (ISO) standards, standard operating procedures (SOP) and other validated test methods.

NPHSL Physical factors testing department performs measurements of electromagnetic fields of working and residential environment, measurements of sound pressure level, parameters of

microclimate, ultraviolet radiation, vibration level and illumination. Professional and modern measuring equipment is used for the measurement of physical factors.

In foreseeable future NPHSL plans to implement the newest testing methods in the field of microbiological and chemical testing and accredit them, to expand testing of infectious agents in the field of risk group III and IV diagnostic; it is also plans to further actively participate in performing international projects and implementing innovations of science, improve qualification and competence of specialists and develop material basis of the Laboratory.

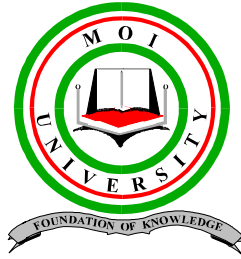


### **Instead of conclusions**

Every member of the 12th World Congress will have an opportunity to visit and explore more about one of these institutions. The organizing committee is currently working to provide more options as well.

### **Acknowledgements:**

Lithuanian Union of Hygienists and Epidemiologists wants to express a gratitude for preparation of this article to Albinas Mastauskas, Julius Ziliukas, Jurate Vaicekaviciute from Radiation Protection Centre; Romualdas Brusokas, Bronius Morkunas from National Public Health Surveillance Laboratory; Zenonas Stanevicius, Snieguole Sceponaviciene, Elena Nalivaikiene from State Food and Veterinary Service and National Food and Veterinary Risk Assessment Institute; Jurga Ramanauskaite from AIM Group International Vilnius Office.



**Moi University**  
**School of Public Health**  
**Health Risks related to Water and Sanitation**  
**Practices in Rural Areas**

**A case study of Kilibwoni and Nambale**  
**Divisions [KENYA]**

Authors:

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**Declaration**

We, Vincent M. Ouma and Ontiri K. Susan, hereby declare that this research paper is our original work based on our findings in the community.

**Dedication**

We dedicate this piece of research paper to all the rural communities in Kenya.

**ACKNOWLEDGEMENT**

We take this opportunity to acknowledge the following persons who made this research a success:

The COBES committee for providing us with the relevant information and the supervisors who accompanied us to the field.

The Clinical Officers in charge, the Public Health Officers and other staff members of Kilibwoni and Nambale Health Centres for their co-operation during our stay at the centre.

Much appreciation is extended to the local administration; chiefs, assistant chiefs and the community elders and the community for facilitating our integration and allowing us into the community.

Much thanks to Dr. Otwelo J.B and Dr. Koskei Peter from the School of Public Health for their valued input.

Finally, special thanks to our parents for their financial and spiritual support, and above all, thanks to God for seeing us through the whole process.

## **Abstract**

**INTRODUCTION AND OBJECTIVES:** Water and sanitation is one of the most crucial components of life. Lack of improved sanitation facilities predisposes humans to many forms of infections that are otherwise avoidable. In Kilibwoni and Nambale divisions, various options and sources of water were used. There were also different excreta disposal methods. Although water sources and sanitary facilities were available, health problems related to them still prevail. This research paper focuses on water and sanitation within Kilibwoni division, Nandi central district and Nambale divisions, Busia districts of Kenya. The research therefore sought to identify the sources of water; determine the methods of sanitation used in excreta disposal and their influence on water sources, and identify the water and sanitation related health problems. Sanitation in this context is restricted to excreta disposal.

**METHODOLOGY:** The study was conducted in Kilibwoni and Nambale divisions. A total of 400 households responded by use of interviewer administered questionnaires, interviews and observation. Cross-sectional study design and random sampling was used to identify the respective sample units. Secondary data from the health centres records was also used. Chi-square test and bi-variate correlations of the data were performed.

**FINDINGS:** Most (65%, N=260) of the residents (households) got their water from unprotected wells and springs; a majority (75%, N=300) used traditional pit latrines for excreta disposal, most (90%, N=360) of these latrines were found to be poorly maintained; some (12%, N=48) households did not have an excreta disposal unit; there were cases of excreta related diseases including diarrheal infections which were most prevalent.

**CONCLUSION:** Waterborne diseases are prevalent in these regions due to lack of safe water from unprotected wells and springs. Despite the availability of latrines, they are not well maintained and as a result, they have become an avenue of diseases. Thus, their presence has not yet had a remarkable change in the health of the individuals. A lot still needs to be done to enable achieve the Millennium development goals (MDG 1, 4 and 7).

## **Chapter one**

### **Introduction and Background Information**

#### **1.0 Introduction**

Availability of safe water in appreciable quantities is essential for life as it improves the quality of life. Lack of clean and safe water especially in developing countries has become a major global issue as it

has led to an increase in waterborne diseases. Waterborne diseases are among the most recent emerging and re-emerging infectious diseases throughout the world. The infections have proven to be the biggest health threats worldwide contributing between 70 and 80% of health problems in developing countries. The most well-known waterborne diseases such as cholera, dysentery and typhoid are the leading causes of morbidity and mortality. The causative agents of water-borne diseases may be bacterial, viral and protozoa in nature and this is true during both epidemic and endemic periods.

The survey was meant to evaluate the availability of sanitary facilities, their conditions and how effective they were in preventing some diseases. In addition to that, water was also considered due to its importance in preventing most avoidable diseases. The survey was an initiative of Moi University COBES (Community Based Education and Service) program which was carried out in Kilibwoni and Nambale divisions.

Availability of an excreta disposal method goes a long way in eradicating excreta related infections which are prevalent in the under-fives. A proper disposal method which is well maintained prevents epidemics of many contagious diseases like cholera bearing in mind prevention is better than cure.

Clean water and provision of latrines are requirements that should be met as per the WHO guidelines.

### **Background Information**

Sanitation refers to all conditions affecting health, especially with regard to dirt and infection and specifically to the drainage and disposal of sewage from households. At its first meeting in 1950, the WHO expert Committee on Environmental Sanitation define environmental sanitation as including the control of community water supplies, excrete and waste water disposal, refuse disposal, vectors of disease, housing conditions, food supplies and handling, atmospheric conditions, and the safety of working environment.

Kenya is classified as a scarce water country by the global standards and has only 646 cubic meters of water per capital against the benchmark of 1000 cubic meters. Most (about 13 million) of the people who lack water supply and basic sanitation are in the rural areas, and the just ending prolonged droughts just helped worsen the situation, Kilibwoni and Nambale divisions are a classic example of the rural areas found in Kenya.

In as much as water can be used to reduce potential contamination, it can also serve as a serious source of chemical and microbiological contamination. It can also serve as a carrier of many pathogenic micro-organisms that are responsible for water-borne diseases.

There is inadequate supply of safe drinking water and sanitation services in the areas. The streams, springs and shallow wells are the main source of water supply in the regions. However, they are heavily contaminated with human faecal material leading to water-related diseases such as diarrhea, typhoid and worm infestations.

Kilibwoni is located in the lowland regions of the Rift valley highlands in the now Nandi central district, Rift valley province, about 14km east of Kapsabet town. Kilibwoni division has a population of 45,312 covering a total area of 164.7sqkm with a population density of 275 persons per square

kilometer (unpublished district profile of 2008). The areas surveyed included Kilibwoni, Kapnyeberai and Kaptendon sub locations.

Nambale division is in Western province. It has a total population of 91,719. The division has a total area of 232.5 sqkm with a population density of 394 persons per square kilometer as per the District profile of 2008.

## **1.2 Study Purpose**

The purpose of the study was to evaluate water and sanitation practices in the community.

## **Research Question**

Is there any relationship between water supply, excreta disposal methods and causation of water borne diseases?

## **1.4 Broad Objective**

The main aim of the study was to carry out a survey on the water and sanitation practices in Kilibwoni and Nambale divisions.

### **1.4.1 Specific objectives**

Determine the communities' water sources.

Determine the available excreta disposal methods and their conditions.

Determine the common water-borne diseases.

## **CHAPTER TWO**

### **Methodology**

#### **Study Area**

The study was carried out in Arwos and Kilibwoni Locations in Kilibwoni Division. A total of 10 villages were considered, 5 from each division.

The villages that were considered from Kilibwoni division included; Kaptendon, Kimolwo, Kapkoros, Kilibwoni and Katanin while the villages from Nambale were Emakina, Manyole, Walatsi and Nandafumbua A and B.

#### **Study Design**

The study adopted a quantitative descriptive cross-sectional study design.

#### **Study and Target Population**

The target population comprised of all the members of the community from Kilibwoni and Nambale divisions.

The study population included the heads of households, men and women above the age of eighteen.

### **Sampling Technique**

Random sampling method was used to select Kilibwoni and Nambale divisions among other COBES stations. Random sampling was also used in selection of the locations on the divisions to be sampled. Population density was considered in selecting the villages of interest.

### **2.5 Sample Size**

The sample size was 220 households in divisions, 100 from Kilibwoni and 120 Nambale.

### **2.6 Data Collection Tools**

The data was collected by use of interviewer administered questionnaire, interviews, observation and secondary data from the health centre.

### **2.7 Data Analysis and Presentation**

After collection, the data was cleaned, coded then entered into the Statistical Package for Social Sciences (SPSS). Analyses of the data were done by use of Pearson's Chi square relationships and cross tabulation. Data presentation was in form of graphs, charts and tables.

### **2.8 Ethical Considerations**

The study was approved by the Institutional Research and Ethics Committee (IREC) of Faculty of Health Sciences, Moi University. After the necessary training, the COBES committee gave. Permission from the area provincial administration was granted before entry in to the community. The respondents gave informed consent before taking part in the study after an explanation of the purpose of the study had been given. Privacy and confidentiality of the information collected from them was guaranteed by using only their first names.

### **2.9 Study Limitations**

The research in Kilibwoni and Nambale divisions was successful, However it suffered the under mentioned setbacks; There was the problem of language barrier where some of the respondents had difficulties in expressing themselves in Kiswahili and so we had to seek for interpretation from other people, hence limiting the confidentiality and quality of the information obtained. The cross sectional study design is limiting in that it does not allow for assessment of any change over the years in the already existing data.

## Chapter three Findings

### 3.1 Sources of Water

The respondents were asked their source of drinking water. Their response is summarized in the chart below.

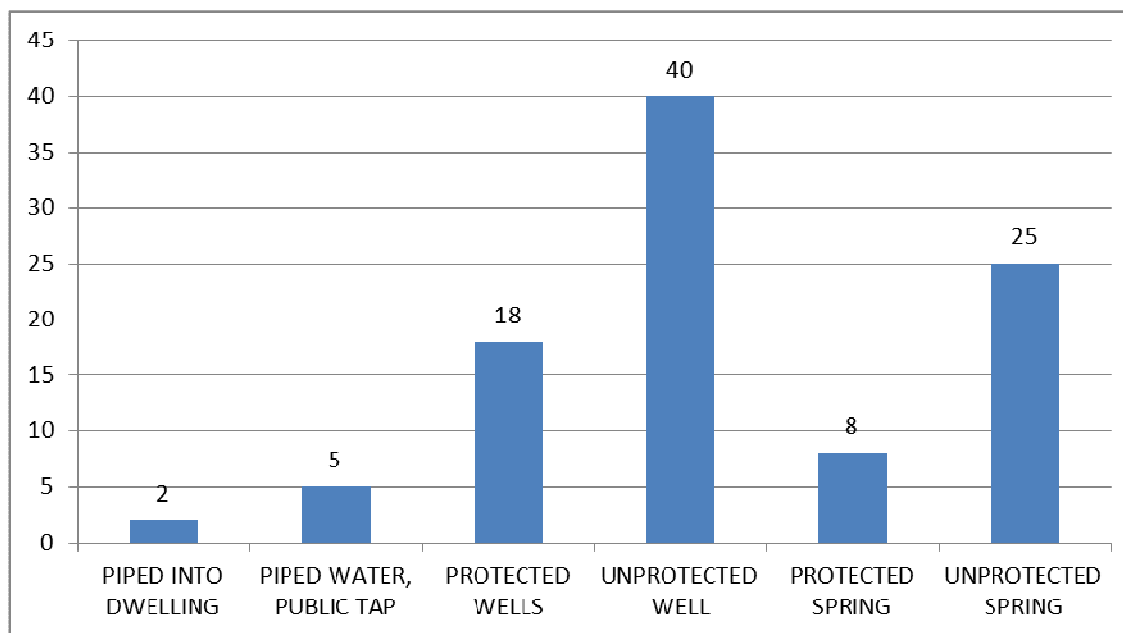


Figure 1: A graph showing various sources of drinking water.

A majority, 40% (N=160) of the households got their drinking water from unprotected wells, while the minority, 2% (N=8) had their drinking water piped into their dwelling.

Of the households visited, 53% households treated their drinking water versus 47% households did not. The methods of treating their drinking water varied from one household to another. The majority 53% (N=212) boil their water, 27% (N=108) use chlorinated tablets, 1% (N=4) filter while 19% (N=76) do not treat their drinking water.

### 3.2 Available Excreta Disposal Methods and Their Conditions

A majority of 96% (N=384) of the households visited had conservancy systems available. The systems available varied from one household to another. The frequencies of different system are depicted in the graph below

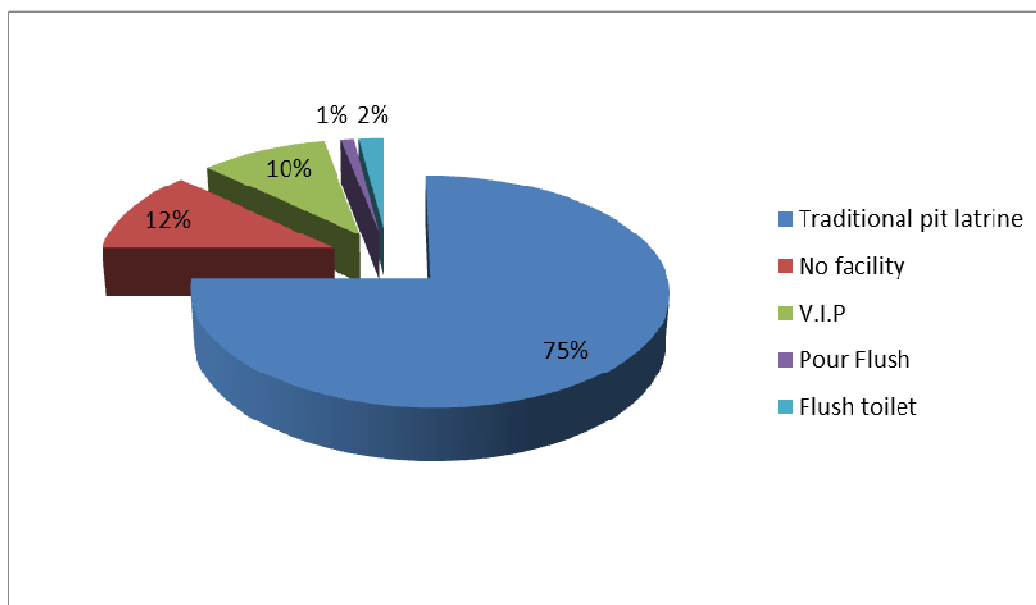


Figure 2: A graph showing the distribution of the various conservancy systems used.

A majority, 75% (N=300) of the households had traditional pit latrines while as 12% (N=48) households did not have any excreta disposal facility.

From observations, most of the facilities were poorly maintained; some were almost filled up and had a poor superstructure. Hygiene in the toilets was not well maintained as few households cleaned their latrines regularly.

Most of the conservancy systems were within 15 meters from the wells

### 3.3 Water and Excreta Related Infections

As per the health centre records, the following health problems were realized

Disease	No. of cases ( for year 2008)
Diarrheal diseases ( non -specific)	621
Typhoid	483
Helminthes	367
Amoebiasis	258
Cholera	2

## Chapter four Discussion

The results strongly indicated there was a relationship between the sources of drinking water, excreta disposal and diseases. As it was noted, most households got their drinking water from unsafe sources. This predisposed them to many infections that are otherwise avoidable. Water from the unprotected wells and springs is most likely to be contaminated with fecal matter. This is as a result of the fact that

most latrines were not constructed as per the WHO's guideline of at least 30 meters away from a source of water, some water sources were clearly on the downstream end from the sanitary facilities. The inadequate and insanitary disposal of infected human excreta leads to contamination of groundwater and other sources of water; percolation is facilitated especially in the loose soils and the reduced distances as observed.

Some of the latrines that were in use were almost filled up. Maggots were crawling from the fecal contents inside the substructure to the surrounding ground. Some households did not have latrines; they therefore shared the facility with their neighbors, but children were however allowed to defecate in the open as most thought their waste was safe. This is a typical belief in most rural areas in Kenya, Kenya Demographic and Health Survey (KDHS 2003). Apart from sight and odor nuisances, the fecal matter attracted many flies and vermin. They therefore provide sites and opportunities for certain species of flies and mosquitoes to lay their eggs, to breed, or to feed on the exposed material and to carry infections into human dwellings. It also attracted domestic animals, rodents and other vermin which spread the feces and carry with them the potential pathogens for disease. From the interviews, most of the latrines were constructed without the knowledge of the Public Health Officers hence no supervision was done to ensure required standards were met.

A chi square value of 0.001 indicated a strong and significant relationship between the conditions of latrines and likelihood of water-borne diseases. A further chi square result of 0.004 also indicated a relationship between sources of drinking water and likelihood of waterborne diseases.

Despite the fact that most households treated their water, the methods of treatment were not effective. Of the households that boiled their water, majority admitted to boiling as a matter of routine. The source of fuel that was mainly used to boil the water was firewood. A high level of heat was in most cases not maintained so as to kill all microorganisms in the water. Insufficient temperature therefore did not render the boiled water safe for drinking purposes. From research that has previously been done, chlorine tablets are only effective in treating water when the water has the right pH value. Treatment with chlorine has been proved effective in conventional water treatment methods that include screening, sedimentation, coagulation and flocculation, and chlorination processes. Such processes may not actually be attained on a small scale home based treatment with chlorinated tablets hence posing a health risk to the very consumer.

The high cases of water-borne diseases are as a result of poor sanitation and lack of safe drinking water. Diarrhea for instance is a symptom of infection caused by a host of bacterial, viral and parasitic organisms most of which can be spread by contaminated water. It is more common when there is a shortage of clean water for drinking, cooking and cleaning and basic hygiene is important in prevention. Water contaminated with human feces for example from latrines is of special concern. Diarrheal diseases were ranked high from the health centre records. Those most at risk of these diseases are children under five years of age, given that their immune systems are not fully developed and may be further impaired by malnutrition. The diarrheal diseases are by far the major underlying cause of mortality in this age group, accounting for some four million deaths each year (UNICEF). Cholera cases have been recorded in Kenya country in the recent past, such episodes are a hundred percent preventable.

## **Chapter five**

### **Conclusion and recommendations**

#### **5.1 Conclusion**

Majority of the people in the rural communities obtain their drinking water from unprotected sources that include among others wells and springs. Traditional pit latrines are the common mode of excreta disposal among these groups. The relationship between water supply and excreta disposal is of great importance and cannot be ignored, especially in disease causation mechanisms. The most important infection included diarrheal infections caused by host of microorganisms.

It is therefore important to note that, just having the excreta disposal facility is not enough, such facilities must be put up in the right standards and well maintained. During construction, one must have in mind the water sources, taking care not to cause a problem by preventing another.

There is no doubt that improving sanitation within a community should lead to an improvement in health, but it is hard to ascertain whether the impact would be direct or indirect. Often, provision of better sanitation is part of the broader development activities, which should be accompanied by safe water supply within the community. Other factors that are encompassed within water and sanitation include health and hygiene education; there effects, such as increased hand washing, changes in attitude toward handling of children excreta will go a long way in improving a people's health status.

The International Year of Sanitation which was 2008, aimed to raise the profile of sanitation issues on the international agenda and to accelerate progress towards meeting the Millennium Development Goal target of reducing by half the proportion of people living without access to improved sanitation by 2015.

Since it the government desire for every household to have adequate water supply and sanitation by the year 2015, such realizations seek to complement the mission of the Millennium Development Goals(MDGs) and in particular target 1 and 2 of MDG 1, target 5 of MDG 4 and target 10 of MDG 7. Achieving the MDGs for water and sanitation in Kenya means a permanent fight against poverty, ignorance and sickness.

#### **5.2 Recommendations**

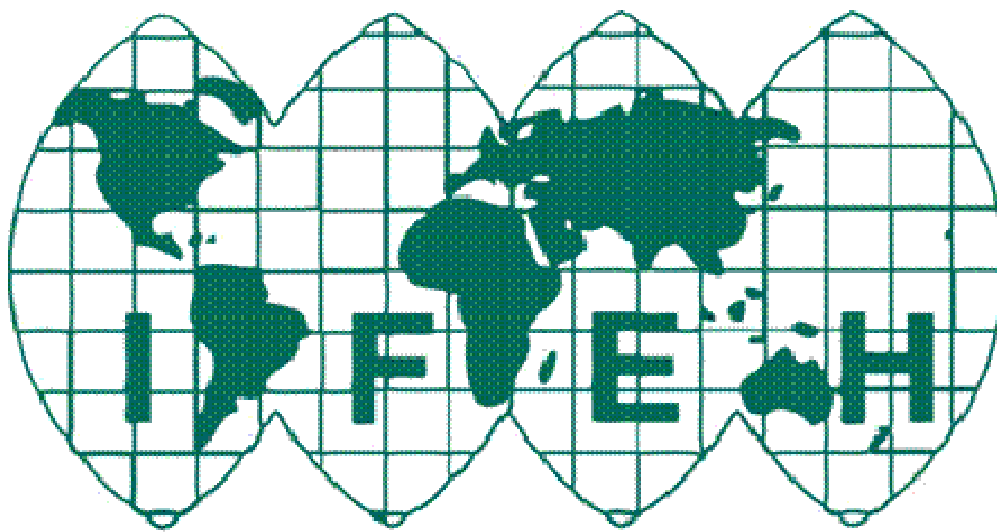
The Public Health department should sensitize people on the importance of improved sanitation. They should ensure that WHO guidelines on the sitting and construction of latrines are followed to prevent contamination of water supplies. They should also educate people on how infections especially water-borne infections are spread.

The government should ensure that the residents of Kilibwoni, Nambale divisions and other rural areas in Kenya have access to safe drinking water. As the absence of adequate sanitation has a serious impact on health and social development, especially for children, the government should invest in improving sanitation as it will accelerate progress towards achieving the Millennium Development Goals to improve living status of the people.

The residents should be advised on how to maintain their latrines in cleanly states, construct others or desludge when the recommended head space of 0.5m is reached.  
The quality of drinking-water may be controlled through a combination of protection of water sources, control of treatment processes and management of the distribution and handling of the water.

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## Environmental Health Management Systems

Every member organisation and associated body should:

- a) Adopt a programme of action to encourage a central role for the public sector in the co-ordination of environmental policies in each member country.
- b) Ensure that the programme of action lays down the standards to be achieved and a timescale for their achievement.
- c) Maintain pressure to ensure that environmental policies are continuously monitored and reviewed as appropriate.
- d) Ensure that policies affecting environmental health have regard to best practical means.
- e) Attempt to co-ordinate locally, policies on the environment which have an international context.
- f) Undertake research into environmental conditions in their local sphere of operation.
- g) Work towards increasing public sector supervision of processes affecting the environment,
- h) Co-operate with other members and associated bodies of the Federation to assist in achieving these goals.

**24 May 1991**

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**THE INTERNATIONAL FEDERATION  
OF ENVIRONMENTAL HEALTH**



# IFEH 12th World Congress on Environmental Health Vilnius, Lithuania 22 – 27 May 2012

[www.ifeh2012.org](http://www.ifeh2012.org)

Dear Colleagues,

The Organizers of the 12th World Congress on Environmental Health have a great honour and pleasure of inviting you to take part in this Congress to be held on **21st-27th of May, 2012**, in Vilnius, Lithuania.

The Congress will focus on the most relevant issues that reflect the main theme of the Congress – **“New Technologies, Healthy Human Being and Environment”** including traditional topics and aspects of environmental health, such as health impact and health risk assessment, noise and electromagnetic fields impact, food safety and public education. The Congress will touch as well new challenges to public health - such as information technologies, gene engineering, new epidemics, climate change and other.

Vilnius, the historical capital of Lithuania, dating back to the 14th century, has the most beautiful and the largest old town, awarded with the status of World Cultural Heritage by UNESCO, with Vilnius University being the oldest one in Eastern Europe. It is rapidly expanding as a modern European capital, so you can experience the harmony of the old and the new Vilnius. For the participants of the Congress this will provide beautiful atmosphere and the mood for work and friendship.

We look forward to meet you in Vilnius in 2012!

With warm regards,

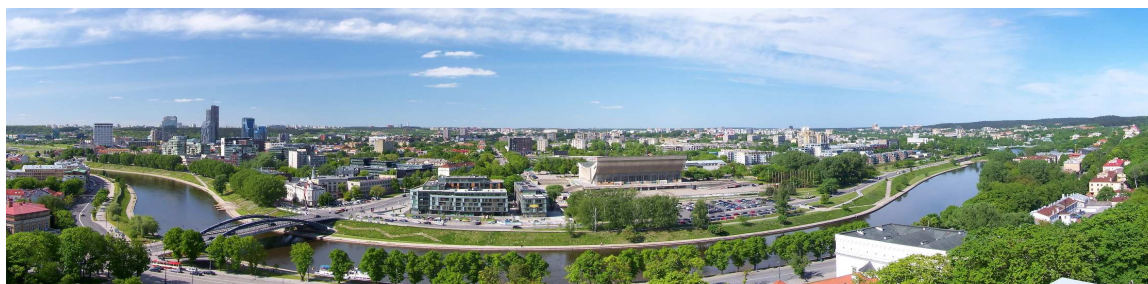
**Viktorija Montviliene**

Chairperson

Lithuanian Union of Hygienists and Epidemiologists

### **Venue**

The Congress will take place in Radisson Blu Hotel Lietuva. The hotel is situated on the bank of River Neris in the center of Vilnius, only a 10-minute walk to the Old Town.



## **About IFEH**

### **INTERNATIONAL FEDERATION OF ENVIRONMENTAL HEALTH**

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 health science and administration, to represent the interests of environmental health to state agencies, national governments and international organisations and to promote field studies of environmental health control.

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