

# **E&HI** Environment & Health International

**Magazine of the International Federation of Environmental Health**

Volume 15 Issue 1 July 2014



Welcome to IFEH World Congress in partnership with the NEHA 2014 AEC

ISSN 1683-3805

## Contents

**Page 4** IFEH President Perspectives. *Dr Peter Davey.*

**Page 7** IFEH President Elect Perspectives. *Henning I. Hansen.*

**Page 11** IFEH Editorial. *Kathryn Young.*

**Page 14** The Need for Inclusion of Conflict Analysis and Resolution Training in Environmental and Occupational Health Academic Program Curricula. *Anton Shufutinsky. David Johnson. Anthony Trojan.*

**Page 34** Availability and Utilisation of Hand Washing Facilities in Primary Schools in Wasiko district. Uganda. *Rawlence Nodejo. David Musoke. Fred Wabwire Mangan.*

**Page 46** Safe Food Healthy Business. *Emer Murphy and Michael O Rourke.*

**Page 49** Don't Gamble with Norovirus. *Eric Bradley and Kristen Obbink.*

**Page 65** Smokefree Ireland 10 years on - A work in Progress. *Laura Garvey.*

**Page 69** IFEH Sponsorship Program. *Robert W Bradbury*

---

*Cover Picture : Las Vegas by Night*

## 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.

---

#### Board of Directors:

**President**

*Peter Davey, EHA, Australia*

**President Elect**

*Henning I. Hansen, EnviNa, Denmark*

**Chair IFEH Africa Regional Group**

*Jerry Chaka, SAIEH, South Africa*

**Chair IFEH Americas Regional Group**

*Mel Knight, NEHA, United States of America*

**Chair IFEH Asia & Pacific Regional Group**

*Dr. Pranav S Joshi, SEHS, Singapore*

**Chair IFEH Europe Regional Group, EFEH**

*Jan Homma, Het College, Netherlands*

**Chair IFEH Middle East Group**

*Ahmed S. Al Harkan, Kingdom of Saudi Arabia*

**Honorary Secretary**

*Rod House, REHIS, Scotland*

**Honorary Treasurer**

*Steve Cooper, CIEH, Northern Ireland*

#### Other officers:

**Honorary Webmaster**

*Henning I. Hansen, EnviNa, Denmark*

**Honorary Public Relations Officer**

*Bernard Forteach, REHIS, Scotland*

**Honorary Editor**

*Kathryn A. Young, EHAI., Dublin Institute of Technology, Ireland*

*Email: kathy.young@dit.ie*

## **IFEH President Perspectives**



### **By Dr Peter Davey, President IFEH**

As the President of IFEH 2012-2014 and previously President Elect for 2 years, I have engaged with several key IFEH and Regional Group Events including the Bali Environmental Health launch of “World EH Day” and the IFEH Council meetings hosted by the Indonesia Environmental Health and Safety Association in 2011; assisted in the facilitation of the IFEH World EH Congress in Lithuania 2012 with the European Regional Group; Chaired the 2013 IFEH AGM and Council Meeting in Glasgow with REHAS and now in 2014 soon travelling to Nevada to collaborate with our IFEH Americas Group and Members of the International Federation of Environmental Health, and all working together at the 13th IFEH Environmental Health World Congress in partnership with the 78th NEHA Annual Educational Conference (AEC) & Exhibition 7-10 July, 2014 in Las Vegas, Nevada, You can also all see our success stories over the past years well illustrated on our comprehensive IFEH Website.

I'll be meeting with many colleagues in Las Vegas to not only expand our IFEH advocacy and networks but discuss in more detail the content of the robust selection of presentations covering a wide range of environmental and

public health issues, experiences and solutions you and your organisations have confronted and resolved.

This Edition of the IFEH Magazine demonstrates the diversity of membership characterised by our organisation. We reach out to over 40,000 EH Professionals worldwide that include EH scientists/practitioners, academics, researchers, students and industry partners. We can boast about our formal linkages through our strong IFEH Council and Country/Regional Groups and increasing Individual memberships, academic links with our prestigious universities, including student membership and our partnering with industry sponsors and affiliates. We have significant community relationships through our Council members.

During my term as President I have focused on the core business of the Federation and introduced the concept of strategically positioning IFEH as a global education and training organisation.

Firstly, this has best been achieved step by step by facilitating a series of 2 and 5 day Intensive Accredited Short Courses titled "*Environmental Health and Disaster Management*". By partnering a healthy relationship with NEHA and CDC Atlanta and linking with key colleagues in these organisations and throughout the Asia and Pacific Regional Group over 2012/2013, our teaching teams have delivered courses in Brisbane, Townsville and Redland City, Australia; Bali and Surabaya, Indonesia and Kuching, Malaysia and 4 more courses are planned for Indonesia, New Zealand and Australia during August and September 2014. The success of this training lies in the work of Mark Miller and Martin Kalis from CDC; and the teaching skills of accredited trainers including Tim Hatch a NEHA Member from Alabama and Ben Ryan from Cairns in Queensland. Many others including Professor Umar and Professor Mukono and staff from IEHSA Indonesia, Mr Niponi from MEHA Kuching and Gavin Hammond and staff from EHA based in Townsville and EHA administrative staff in Australia - all have been enthusiastic about the delivery of the professional training. We have trained 325 participants to-date. Partnering with local EH organisations has been a key feature of these initiatives.

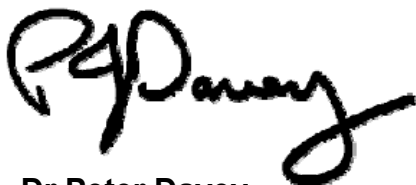
I believe this is the start of more professional training opportunities from this international perspective including topics like EH: Impacts of Climate Change, Understanding/Control of Emerging Diseases, International Auditing and Across Borders Biosecurity that could also be developed in the future.

IFEH is proposing an “International Credential” that would recognize the efforts of Members who would benefit from an International Certification as EH Professionals - we will discuss this in the following year.

Secondly, I wanted to encourage Members to not only gain accredited EH Degrees but also enrol in higher degree studies, particularly Masters and PhD research during their careers. All of our IFEH Academic University Members offer very relevant higher level tertiary programs.

Thanks to all IFEH Council and BOD Members I wish the incoming President Henning Hansen my best wishes; and my personal thanks to NEHA President Alicia and CEO Nelson and staff for their efforts in Las Vegas.

Finally, all members are invited to send articles to this IFEH Magazine, again thanks to our Editor Kathryn. We have been discussing the possibility of upgrading this magazine to a Peer Reviewed International Journal of Environmental Health, I certainly support this approach.

A handwritten signature in black ink, appearing to read 'P. Davey'.

**Dr Peter Davey**

**President IFEH 2012 – 2014**

# IFEH President Elect Perspectives



**By Henning I. Hansen, President IFEH Elect.**

## **Perspectives**

Dear members of the IFEH, Associate Members, Academic Associate Members, Affiliates and individual members of this great organisation. At the IFEH World Conference in Las Vegas, July 2014 I will take over the office as President of the International Federation of Environmental Health as decided by the council in Vilnius some two years ago. In this small article, I will share some of my thoughts and my vision for what I think could be possible developments for the Federation in the next two year period.

First of all I would like to extend my sincere acknowledgement and thanks to the out-going President of the IFEH, Dr Peter Davey. It has been a privilege to work together with Peter. Peter Davey has worked hard and tireless in order to grow this organisation and in order to expand the activities of the IFEH. One amongst other remarkable achievements of Peter Davey has been the successful establishment of The Environmental Health Disaster Management Course, which by now has been run in many countries in the Asia Pacific Region and is by now being further developed to encompass the challenges and needs for many other regions of the World. Peter has this very important

qualification as a president to involve and to engage people around him and to share his enthusiasm in a way that many feel the ownership of the specific projects and initiatives. And he is always paying credits to those who are taking on new initiatives in order to pursue the vision behind the IFEH “Caring for the Environment in the Interest of World Health.”

Peter has paved the way for his successor and he leaves the office as president with an IFEH in a state – bigger and stronger than ever before. So in that sense it is easy to take over where he left – but on the other hand I know it will become a hard job to keep up this momentum that Peter has initiated. I hope that I in my president period will be able to keep up this momentum and that I will be found worthy for this important post. I look very much forward to work together with Peter Davey in the future as well. I also look very much forward to work together with Peter Archer, our coming IFEH President-Elect.

When this is said, I know that the IFEH is absolutely not a one-man driven organisation. And neither should it be. I would like to extend my deepest gratitude to all those other honorary persons spending hours of their private time to work for the IFEH. This include amongst others Secretary Rod House, Treasurer Steve Cooper, Regional Chair Persons: Jerry Chaka (Africa), Mel Knight (Americas), Dr Pranav S. Joshi (Asia & Pacific), Jan Homma (Europe), Rasheed Ahmed / Ahmed Al Harkan (Middle East); Hon. Editor Kathryn Young, IFEH PRO Bernard Forteach, IFEH Company Secretary Graham Dukes and Immediate past president Robert Bradbury. I would like also to send my gratitude to those companies who are sponsoring some of the activities of the IFEH – Hedgerow Software Ltd., NSF International, Underwriters Laboratories and Decade Software Company.

Finally, my deepest gratitude goes to NEHA, NEHA President Alicia Enriquez Collins, NEHA CEO Nelson Fabian and NEHA past president and now IFEH Regional Chair Mel Knight for organising this great event to take place in fabulous Las Vegas, the 13<sup>th</sup> World Congress on Environmental Health in partnership with the NEHA 78th Annual Educational Conference and Exhibition.



## **Some visions for the coming development**

As I have said previously the IFEH already has some solid tracks laid down and pointing in a bright direction. I would like the IFEH to follow those tracks, strengthening those tracks and build further on these tracks.

When I am looking on an IFEH map I see lots of countries in the World that are not yet represented in the IFEH. I strongly hope that we can soon welcome national Environmental Health organisations from South America and that we get India involved as well. In general I would like the organisation to cover even more nations.

I would like the IFEH to go both deeper and wider. Deeper in the sense that I would like to grow the network of IFEH so that each private member of each member organisation will find it natural and easy to contact individuals in another country and really benefit from this huge network with some 40,000+ private members. Each individual member should have easy access to this great pool of knowledge that in fact is the most precious and important asset of the IFEH. And indeed this is what the IFEH is all about – to share experience and knowledge.

To go wider – besides expanding the organisation with more member organisations – the IFEH should engage even more in the co-operation with the world leading institutions as the UN WHO, UN Commission on Sustainable Development, OECD – in order to contribute with our knowledge on environmental health.

Finally, I foresee an IFEH that initiate even more projects – in collaboration with other organisations or just on our own. These projects could very well be in cooperation with specific universities.

## **In Summary**

As you may see my vision is that IFEH continues to be a leading voice regarding Environmental Health – that the Federation becomes a natural contact point for each private member – that the IFEH keeps on engaging with World leading organisations – and that the Federation keeps on doing projects in regard to Environmental Health.

I look very much forward to meeting many of you at the World Conference in Las Vegas.

A handwritten signature in black ink, reading "H. I. Hansen." The signature is written in a cursive, flowing style.

**Henning I. Hansen, M.Envina, MIFEH**

**Incoming IFEH President**

## Editorial



Welcome to the Las Vegas edition of the IFEH Magazine which is certainly an exciting edition as it marks the eve of the 13<sup>th</sup> IFEH World Congress in partnership with the NEHA 2014 AEC which takes place in Las Vegas Nevada from 7<sup>th</sup> July to 11<sup>th</sup> July 2014. This event will bring the latest innovations and unique responses to Environmental Health and protection problems and we will learn more about 20 Environmental Health topics through educational lectures, hands on demonstrations and innovative presentation platforms,

In this edition we have contributions from our American colleagues and an interesting article on Conflict Resolution in Environmental Health demonstrates the wide skill set that graduates and practitioners must possess and this is something that academic forums should consider in their review of Environmental Health curricula.

Being ever vigilant in the hand washing area is something that all countries must be concerned about as rising trends in the incidence of Norovirus is a particular public health concern in hospital, child and school settings. In Ireland we have seen a considerable increase in the prevalence of Norovirus and incidence levels can be taken as an indicator of general hygiene levels within a community setting. Rawlence Nodejo. David Musoke and Fred Wabwire Mangan. from Uganda report on the availability and use of

handwashing facilities which could be applied to different settings in other countries as a comparison to the findings of this article. This piece ties in very well with a timely response from Eric Bradley and Kristen Obbink on their appropriately entitled article Don't gamble with Norovirus.

The development and expansion of mobile technology in the education and practice of EH is addressed in an article by Emer Murphy and Michael O'Rourke, two graduates of the BSc Environmental Health course at Dublin Institute of Technology who have developed a Food Safety App entitled Safe Food Healthy Business. It is wonderful to see the skill set of the younger generation in EH being used to advance improvements in Food Safety. Emer and Michael will be presenting at the World Congress and we look forward to hearing about their contributions in this important area in the advancement of Food Safety. Dublin Institute of Technology are very interested in the development of mobile technology for use as a learning and teaching aid and I have recently had a project approved in this important area. I anticipate a future article for the magazine on advancements in pedagogical methods and the use of Digital Media in EH teaching.

Smoke Free Ireland 10 years on is an article by Laura Garvey and the recent proposal by Ireland's Minister for Health to introduce plain packaging on all branded cigarettes is a welcome advancement in Tobacco Control. Ireland has followed Australia's lead in this area and is the first country in the European Union to advance this policy. The Tobacco industry invests heavily in pack design and branding and recent research by the WHO indicates that Tobacco companies are finding alternative Eastern European markets where an increase in the incidence of Female smoking has been found to be particularly sensitive to the marketing practices of Tobacco Companies who use subtle messaging through colour and packaging design to gain market share.

I hope you enjoy the magazine and sincere thanks to contributors as without these the magazine would not exist.

We look forward in anticipation to the EH World Congress and I would like to thank DIT for approving my attendance at this important event.

Enjoy the Congress and of course Las Vegas.

I look forward to meeting you.

*Kathy*

**K.A.Young MSc. MEHAI**  
**Lecturer in Environmental Health**  
**Dublin Institute of Technology**  
**Ireland.**

**Hon. Editor. IFEH**

# **The Need for Inclusion of Conflict Analysis and Resolution Training in Environmental and Occupational Health Academic Program Curricula**

Anton Shufutinsky, DHSc, MSPH, CHMM, REHS/RS<sup>1, 2</sup>, David Johnson, PhD<sup>1, 3</sup>, Athony P. Trojan, REHS/RS<sup>1, 2n</sup>

<sup>1</sup>Association of Interdisciplinary Doctors of Health Science, Elkins Park, PA 19027

<sup>2</sup>Industrial Hygiene, Directorate for Public Health, Naval Hospital Camp Pendleton, Camp Pendleton, CA 92055

<sup>3</sup>Department of Brain Trauma, Neuroprotection, and Neurorestoration, Walter Reed Army Institute of Research, Washington, D.C

## **Abstract**

The nature of environmental and occupational health practice, whether due to numerous stakeholders, regulatory environment, conflicting science, or varying national and international regulations and standards, is rooted in conflict. Thus, conflicts arise between employees, employers, health care organizations, legal and public affairs representatives, and regulatory agencies, potentially preventing timely solutions and resulting in continued exposures, acute and chronic illness, resource expenditures, property damage, and failure to implement appropriate controls. Additionally, conflict may arise because stakeholders have conflicting interests regarding environmental health concerns, leaving environmental health professionals to resolve the problem. Conflict analysis and resolution skills are vital in these situations, and the ability of environmental health leaders to understand, implement, and utilize complex conflict analysis and resolution (CAR) models becomes increasingly important.

## **Introduction**

One of the United Millennium Development Goals (MDG) is directly related to environmental health (EH), particularly focusing on sanitation, safety drinking water, air, and safe dwellings. The other MDGs are also at least indirectly related to the environment and environmental public health infrastructures in the developing world (Chaffues & Mack, 2009; United Nations, n.d.). Environmental health is vital to the health care infrastructure and productivity of a nation. In fact, it has been stated that the single-most important contribution to the public's health is EH and sanitation (Jacobsen, 2008; Pruss-Ustun & Coravalan, 2007).

There are sometimes incompatible factors involved in the provision and management of health care services, and they sometimes affect health outcomes of patients and populations. Environmental health is no stranger to this relationship. When these factors overlap, and cannot be addressed effectively, conflict ensues and can slow or stall solutions to EH concerns and progress in sanitation infrastructures. These conflicts can arise due to a diversity of reasons, including differing national or organizational laws, regulations, and standards, differing standard procedures, a difference in acceptable environmental and occupational behaviors, and contradictory cultural understanding of the activities and potential hazards involved. Therefore, it is proposed that conflict analysis and resolution is a vital element in the training and practice of EH professionals around the world.

Anywhere that humans interact, there is the potential for conflict. Conflict arises on international, national, community, organizational, family, and personal levels. These conflicts can be destructive to the involved individuals, groups, or populations, and are commonly problematic in the workplace (Ramsay, 2001; Saltman, O'Dea, & Kidd, 2006; Wilmot & Hocker, 2011).

Conflicts in the workplace and in professional relationships present challenges that can affect career development, office cohesiveness, morale, productivity, and may strain inter-professional collaboration (IPC) (Ramsay, 2001). Conflicts that remain unresolved can have negative effects that reach

beyond the principal parties involved in those conflicts. This is particularly evident and can be critical in health care settings, where providers, managers, organizations, and patients are affected (Wilmot & Hocker, 2011).

As stakeholders in the health care infrastructure become increasingly interdependent on one another, cooperation is vital in order for individual practitioners, groups, and organizations in health care to maintain strong collaborative relationships and effectively manage health priorities. However, these collaborations across systems and organizations often cause peaks in conflict situations (Lemieux-Charles, 1994). Environmental and EH organizations are not strangers to conflict. It is the occupational nature of environmental occupational health to assess, communicate, and manage risk to organizations, the environment, and individuals. EH professionals have dealt with conflict resolution necessities in numerous scenarios, including mediation to resolve land resource disputes and conflicts where environmental justice is concerned (Dahl, 2003; Soliman, Derosa, Mielke, & Bota, 1993; Stokes, Hood, Zokovitch, & Close, 2010; Waller, Louis, & Carlin, 1999). This is particularly important in situations where regulatory exposure standards and analytical method guidelines are limited or do not exist, such as investigations of indoor air quality (IAQ) and mold (Breeding, 2003; Macher, 1999), and in international settings, where these standards and methods may differ drastically. The topic and practice of conflict resolution is therefore vital to health care practitioners and organizations, including EH (Lemieux-Charles, 1994).

Preventing and resolving conflict among organizations requires a committed infrastructure that focuses on understanding the triggers for and the relationships from which conflicts arise through detailed analysis of the situations and stakeholders (Porter-O'Grady, 2004; Ramsay, 2001). Environmental health experts across numerous national EH organizations and federal agencies have defined that conflict analysis and resolution (CAR) should be a core competency for EH professionals. This management core competency is intended to complement the established technical competencies necessary for the comprehensive practice of EH. Standards and guidelines were developed and published calling for the EH profession to incorporate conflict resolution into training and practice (National Center for



Environmental Health & American Public Health Association, 2001).

Nonetheless, there is a lack of evidence that CAR has been broadly adopted in EH practice or EH training, and peer-reviewed literature is lacking on the application of CAR models to resolve EH conflicts.

## **Review of Literature**

### **Background**

Most situations that call for people to collaborate, particularly in interdisciplinary professional environments, have the likelihood for conflict to occur (Harolds & Wood, 2006; Porter-O'Grady, 2004). Conflict that may arise internally or externally, within or between two or more parties or groups, can have many roots (Lemieux-Charles, 1994; Saltman, O'Dea, & Kidd, 2005; Wilmot & Hocker, 2011). This makes it essential that leaders have the knowledge and capacity to understand and resolve conflict by applying proven CAR strategies and tools (Porter-O'Grady, 2004). Nonetheless, these CAR skills are not inherently intuitive, and many leaders and managers must learn how to resolve both intra- and inter-organizational conflict situations. Professional leaders that do learn how to apply CAR strategies effectively are often perceived as better and more skilled leaders who are able to effectively complete an organizational mission because the ability to resolve conflict has a proven role in workplace productivity, and improved IPC (Wilmot & Hocker, 2011; Zwarenstein, Goldman, & Reeves, 2009).

### **The Need for Conflict Resolution in Health Care**

With all of the advances in health care technologies, procedures, and management systems, there is an increasing complexity of patient care and health services management. In order to accommodate this, health care practice is increasingly dependent on IPC between professional specialties, organizations, payee and management systems, and sometimes governments. IPC is vital today because it has been widely accepted that there is no single discipline that can provide complete holistic care for chronically ill patients (Yeager, 2005).

However, barriers to successful IPC exist, and disagreements between practitioners or organizations often create conflict and affect the quality of

collaborative work, most often resulting ineffective or incomplete IPC (Xyrichis & Lowton, 2008), with potential to negatively affect the delivery of health care services. The ability to resolve conflict improves IPC and productivity and is therefore a critical piece of the health care and health support puzzle (Wilmot & Hocker, 2011; Zwarenstein, Goldman, & Reeves, 2009). For that reason, health care executives have identified CAR as a core managerial competency in health care leadership and management (Lorber & Savic, 2011).

**Conflict resolution and environmental health.** In an address to the National Academy of Sciences, President Obama articulated the importance emphasizing research in science, technology, and health care as priorities for national prosperity (The White House Office of the Press Secretary, 2013), including in the development of energy and health resources that deal with environmental protection and environmental health, and are directly in line with Millennium Development Goal number seven, which is focused on environmental sustainability (Mitra & Rodriguez-Frenandez, 2010; World Health Organization [WHO], 2005).

The National Institute of Environmental Health Sciences (NIEHS), an agency of the National Institutes of Health (NIH), has emphasized their commitment to understanding the major environmental determinants of global disease (National Institute of Environmental Health Sciences [NIEHS], 2011). In order to identify, understand, and control these environmental determinants, the involvement of numerous like-minded partner organizations and stakeholders is necessary. Coordination and interaction with these stakeholders can be complex, and can result in a diversity of conflict situations (NIEHS, 2011).

***The need for conflict resolution in environmental health practice.*** Environmental Health is an allied health field that is not excluded from health care conflict (NCEH, 2001). Environmental health and protection is an interdisciplinary field and is the single largest component of the field of public health (Morgan, 2003). The administration of EH science is rooted in risk assessment, risk communication, and risk management, and the field deals with a large diversity of stressors within the environmental matrices that

potentially affect the health of the global public (Friis, 2011; Morgan, 2003). As such, the practice of EH Science is no stranger to conflict. A controversy over the neglect of the Florida Everglades National Park resulted in a conflict between the local Florida population, environmental activists, legal representatives of the state, and congressional leaders. This conflict resulted in a long-standing and complex legal quagmire, triggering the U.S. Institute for Environmental Conflict Resolution (USIECR) to be established (Dahl, 2003; U.S. Institute for Environmental Conflict Resolution [USIECR], n.d.). There have been numerous cases like this one around the world. The USIECR was developed in order to mediate conflicts addressing land and resources, but lacking coverage of environmental and occupational health and safety concerns (USIECR, n.d.).

Environmental justice and EH inequity are EH topics that stir up major controversy and trigger conflict between affected communities, private corporations, and legal representatives and agencies. These conflicts originate because of inequitable protection against the burdens of environmental hazards across socio-demographic subpopulations. Most often, these inequities are seen in cases of development of hazardous waste disposal and storage sites. The effluent or emission of toxic environmental chemicals from hazardous waste disposal sites, mining and other industrial operations, and power plants make the population in close proximity vulnerable to health-hazardous occupational and environmental exposures (Soliman, Derosa, Mielke, & Bota, 1993; Stokes, Hood, Zokovitch, & Close, 2010; Waller, Louis, & Carlin, 1999). These scenarios are also seen near or on borders of countries with populations in close proximity to the environmental threat.

Work environments are particularly rich in potentially hazardous exposures to chemical, physical, and biological stressors, and the workplace is becoming increasingly complex (Mulhausen & Damiano, 1998). The first priority of EH practitioners in the workplace is to protect the health of the worker. However, EH professionals are becoming increasingly responsible for regulatory risks, legal risks, and risk communication, and to multiple stakeholders including employees, owners, labor unions, regulators, stockholders, the media, and the surrounding communities (Mulhausen &

Damiano, 1998). As the number of risks, stakeholders, and collaborators interact, the likelihood and severity of conflict may increase (Porter-O'Grady, 2004; Zwarenstein, Goldman, & Reeves, 2009).

Environmental health experts have recognized the immediate need for EH practitioners to incorporate conflict analysis and resolution knowledge and methods into their practices. Conflict resolution has been identified as a supplementary core competency that complements the core technical competencies established by the National Environmental Health Association for the comprehensive practice of EH (NCEH & APHA, 2001). Because EH assessments, inspections, and investigations have numerous stakeholders, conflicts can arise between inspectors, workers, executives, surrounding communities, medical providers, and regulatory agencies, and bordering governments, among others. Thus, experts from 13 U.S. national EH organizations and agencies have come to the realization that EH professionals must understand the core elements of conflicts in order to resolve problems (NCEH & APHA, 2001; Porter-O'Grady, 2004; Ramsay, 2001).

As an example, one of the focus areas of EH where conflict exists is indoor air quality (IAQ). IAQ has become an increasingly important topic in the media and within regulatory agencies. NIEHS has committed to understanding the environmental causes of diseases and has particularly emphasized indoor air pollution as a focus of intervention and research intervention (NIEHS, 2011).

It is estimated that people spend an average of 90% of their time, whether recreational or occupational, in indoor environments. Therefore, poor IAQ poses a significant public health risk, particularly among children, and the population living in substandard housing (Wu, Jacobs, Mitchell, Miller, & Karol, 2007) or working in substandard buildings. An estimated 50% of the entire workforce in developed countries work in indoor settings (Wittczak, Walusiak, Palczynski, 2001).

Although adverse effects to general IAQ problems, particularly mould and fungal and bacterial toxin exposures, have been recognized for centuries, workplace inhalation exposures to these bioaerosols have not been officially recognized as sources of work-related disease (Hardin, Kelman, Saxon,

2003). Despite overwhelming research exhibiting poor IAQ as being socially and economically costly and potentially harmful to human health, indoor settings are generally difficult to regulate (Wu, Jacobs, Mitchell, Miller, & Karol, 2007) because direct causal association between IAQ exposure and disease remains weak (Hardin, Kelman, & Saxon, 2003) and there are no comprehensive regulatory standard for IAQ sampling, analysis, and control currently, with only minor exceptions (Breeding, 2003). Nonetheless, workers complain of symptoms and poor IAQ has been associated with loss of productivity in the workplace (Wyon, 2004). As such, conflicts often arise between employees, employers, professional organizations, health care organizations, legal representatives, public affairs professionals, regulatory agencies, and policy makers, among others. These conflicts can prevent a solution to the existing health threat and may result in (a) continued exposures, (b) acute and chronic illness, (c) unnecessary expenditures, (d) and lost time and productivity at work (Wu, Jacobs, Mitchell, Miller, & Karol, 2007; Wyon, 2004). This type of scenario is the reason that conflict analysis and resolution is a necessary core competency in EH practice (National Center for Environmental Health & American Public Health Association, 2001).

***Vital conflict analysis and resolution strategies and methods for EH practice.*** As the dynamics of conflict change, so must the conflict intervention methods (Hare, 2007). In order to effectively manage conflicts that arise in workplaces and in inter-organizational environments, the leaders must first be able to understand the conflict. Analyzing the origins, development, lifecycle, and causal factors of conflicts is critical to good leadership. Effective conflict analysis models must be used in order to be effective in the conflict resolution process (Fisher, 2007; Hare, 2002; Byrne & Senehi, 2007; Wilmot & Hocker 2011).

Numerous models exist for the analysis of conflict, including TRIP Analysis, SWOT Analysis, Fishbone, and social cubism, among others. Numerous conflict analysis models are derived from business and leadership concepts and have been made popular by their acronym titles. These include TRIP Analysis and SWOT Analysis. TRIP Analysis is a method commonly

used in leadership of health care organizations. In conflict management, this analytical method is applied in relation to analyzing goals within a conflict. Each letter in the acronym identifies a particular part of the goal (Wilmot, 2011). The letters in the acronym TRIP mean (a) topic of what each party wants, (b) relationship of each party to each other in the conflict, (c) identity (saving face), and (d) the process of communication during the conflict. The major stakeholders' goals in a conflict may overlap and may be at odds with each other. This may potentially exacerbate conflicts or create new ones. The TRIP method is used to analyze potential damages and perform follow-on damage control (Wilmot, 2011).

The letters in SWOT stand for strengths, weaknesses, opportunities, and threats. This method is used in business and financial leadership often in order to assess a diversity of factors that are at a crossroads in a strategic plan within an organization. SWOT analysis evaluates a plan like a puzzle, assessing the strengths, weaknesses, opportunities, and threats within an organization and leveraging them against one another in order to determine why a failure exists (Fine, 2011).

The Fishbone Diagram, commonly called the Ishikawa Diagram, is used in dispersion analysis for business and health care quality improvement analysis and research. Fishbone is a cause-and-effect strategy and the model is used to categorize and clarify the steps in a process. Ishikawa allows for a continual search for causation to a problem until all potential answers are exhausted (Tague, 2004). Within the Ishikawa fishbone diagram, the problem is placed at the head of an arrow, and all potential causes are drawn as attached lines to the rear of the head, creating a resemblance to the skeleton of a fish. The model analyzes the conflict by searching for causes that appear repeatedly within the skeletal structure (Kelly & Johnson, 2006; Minnesota Department of Health, n.d.).

The critical factors not addressed by other analytical models are addressed by social cubism as part of the conflict resolution process (Byrne, Carter, & Senehi, 2002; McKay 2002). Social cubism is a more complex conflict analysis method that can be very well-suited to analyze conflict because it identifies not only the roots of conflict within organizations and between stakeholders, but it also analyzes how these categorized root causes

interact with each other to cause and proliferate conflict. Designed for use in the analysis of international *ethnopolitical* conflict, this model has potential applications in health care, and particularly in environmental health settings. Social cubism emphasizes the multi-factorial interaction of the main elements of conflict. A pictorial representation of this conflict analysis model uses the Rubik's Cube® as a visual, with each side representing one of the six main elements of conflict (history, politics, religion, demographics, economics, and psycho-cultural factors), and the mixture of colors in a turning cube representing the interaction of the factors causing conflict (Byrne & Nadan, 2011; McKay, 2002). This method, in particular, can potentially be implemented for analysis and resolution of complex multi-organizational EH assessments, surveys, and investigations, such as in the case of poor IAQ scenarios, among others.

### **Methods and Materials**

A literature review was performed on the topics of CAR in EH, CAR in health care, and CAR strategies and methods using Internet-based medical and legal literature search engines including PubMed, EBSCOHOST, Lexus Nexus, and Science Direct indices. Additionally searched were the accredited educational programs in industrial hygiene and environmental health listed under the Accreditation Board for Engineering and Technology (ABET) and the National Environmental Health Science Protection and Accreditation Council (EHAC), with the intention of identifying accredited programs that require or provide classes that focus on CAR in EH, with the expectation of finding models that can be distributed among accredited EH programs. Additionally, the authors assessed three popular and commonly used environmental health and industrial hygiene textbooks for focused CAR content in the text chapters. The authors evaluated Ignacio's & Bullock's third edition of *A Strategy for Assessing and Managing Occupational Exposures*, DiNardi's second edition of *The Occupational Environment: Its Evaluation, Control, and Management*, and Nemerow, Agardy, Sullivan, and Salvato's sixth edition of *Environmental Engineering: Environmental Health and Safety for Municipal Infrastructure, Land Use and Planning, and Industry*.

## Results

Despite the need for CAR training to EH professionals in academic and professional training programs, there continues to be an inadequacy of CAR training in EH science educational programs in the United States. Even though some literature exists on the topic of CAR in environmental resource protection, the literature search resulted in zero peer-reviewed journal articles specifically on the topic of conflict analysis and resolution in the practice of EH.

Some environmental health and safety management courses in college programs briefly touch on topics related to conflict resolution. However, zero of the four undergraduate industrial hygiene programs accredited by ABET and zero of the 23 ABET graduate programs had a course specifically designed for CAR in IH practice. Likewise, zero of the 30 undergraduate and eight graduate programs in EH accredited by EHAC had a course specifically focused on CAR in environmental health. In total, of the 65 accredited IH and EH programs in the United States, zero percent of the environmental undergraduate and graduate programs accredited by ABET or EHAC currently offer courses specifically dedicated to conflict resolution in EH practice and management (National Environmental Health Science & Protection Accreditation Council [EHAC], 2012; Accreditation Board for Engineering and Technology [ABET], 2012). Additionally, neither the Occupational Safety and Health Administration (OSHA) Training Institute nor the National Institute for Occupational Safety and Health (NIOSH) Continuing Education and Research Centers in occupational health offer conflict resolution courses as part of their certificates or short course curricula (Southern California NIOSH Education and Research Center, n.d.; UC San Diego OSHA Training Institute Education Center, 2013).

Finally, the review of three of the commonly used environmental health and safety textbooks yielded no detailed content specifically focused on CAR. Although the textbooks did contain chapters that discussed multiple stakeholders in exposure assessment programs and covered information on



the management of environmental health and safety programs and risk communication, none of the text had a chapter or a section of the chapter clearly devoted to the analysis and resolution of conflict that arises during environmental health surveys or investigations (DiNardi, 2003; Ignacio & Bullock, 2006; Nemerow, Agardy, Sullivan, & Salvato, 2009).

### **Discussion**

The implementation of conflict analysis and resolution models into environmental health surveys, assessments, and investigation could be vital to timely and effective results and solutions to environmental health problems. Despite the call for conflict analysis and resolution emphasis and coursework in professional training programs (NCEH & APHA, 2001), none of the accredited undergraduate and graduate programs or the recognized professional training programs currently have requirements for CAR courses in their curricula.

Additionally, even though it has been recognized that this is an important skill in health care and in environmental health (NCEH & APHA, 2001), and there are professional ethics and management topics listed in the rubrics for the Certified Industrial Hygienist (CIH) and Registered Environmental Health Specialist/Registered Sanitarian (REHS/RS) credentialing examinations, no emphasis is placed on CAR strategies and methods in these examination rubrics (ABIH, 2012; NEHA, 2000), or in the more commonly studied and referenced textbooks in EH and industrial hygiene ((DiNardi, 2003; Ignacio & Bullock, 2006; Nemerow, Agardy, Sullivan, & Salvato, 2009).

### **Conclusion**

Similar to other professions in health care, conflict occurs in the professional practice of the environmental health sciences. In the attempt to protect the public from environmental and occupational hazards that exists in the workplace and general environment, specialists have to perform assessments, surveys, inspections, and investigations in order to assess the potential levels of hazard exposures and to make decisions on controls. These exposures and control methods potentially affect numerous

stakeholders, whether in the form of surveillance requirements, worker compensation claims and laws, and other situations, and the interests of different stakeholders may contribute to disagreement and conflict. It is therefore vital that environmental health professionals have the capability to assess the situation and implement CAR strategies in order to manage the conflicts that arise between the stakeholders.

Environmental health organizations and agencies have identified the necessity for CAR training and practice in EH. However, these complex CAR strategies and methods have not been implemented in the form of an undergraduate, graduate, or professional training course at any of the accredited EH programs in the United States.

These CAR methods should be taught in graduate programs in environmental and occupational health science programs, among other public health and health care programs, and this should be achieved through professional and undergraduate training, but definitely through graduate programs, since many graduate-educated professionals in this field are either serving in or may likely move into management positions.

### **Strengths and limitations**

**Strengths.** The authors examined the curricula of accredited universities for EH and IH programs, which often set the standard and are viewed as ideal programs to attend for education and training in EH sciences.

**Limitations.** The authors were unable to identify all EH programs, academic and training, and stuck mainly with ABET and EHAC U.S.-based accredited programs. Additionally, the authors were not able to identify the degree to which EH programs may discuss CAR in other courses. However, the focus of the study was to identify entire courses in CAR in EH programs.

### **Recommendations**

It is recommended that a follow-on needs assessment study be conducted to identify whether other EH programs that are not accredited by ABET or EHAC, as well as international programs, require or offer full classes or training courses specifically addressing CAR in EH practice. The authors

agree that graduate EH programs, at a minimum, should implement courses in their programs that focus specifically on CAR in environmental health science.

### References

Accreditation Board of Engineering and Technology. (2012). *ABET Accredited Programs*. Retrieved from <http://main.abet.org/aps/accreditedprogramsearch.aspx>

American Board of Industrial Hygiene. (2013). *IH-Defined*. In About ABIH. Retrieved from [www.abih.org/content/ih-defined](http://www.abih.org/content/ih-defined)

Breeding, D. C. (2003). Bioaerosol evaluation in indoor environments. *Occupational Health and Safety*, 72(5), 58-66.

Burge, P. S. (2004). Sick Building Syndrome. *Occupational and Environmental Medicine*, 61, 185-190. doi: 10.1136/oem.2003.008813

Byrne, S. & Carter, N. (2002). Social cubism: Six social forces of ethno-political conflict in Northern Ireland and Quebec. *ILSA Journal of International and Comparative Law*, 8, 741-769.

Byrne, S., Carter, N., & Senehi, J. (2002). Social cubism and social conflict: Analysis and resolution. *ILSA Journal of International and Comparative Law*, 8, 725-739.

Byrne, S. & Nadan, A. (2011). The Social Cube Analytical Model and Protracted Ethnoterritorial Conflicts. In T. Matyok, J. Senehi, & S. Byrne (Eds.), *Critical Issues in Peace and Conflict Studies: Theory, Practice, and Pedagogy*. New York, NY: Lexington Books.

- Byrne, S. & Senehi, J. (2007). Conflict Analysis and Resolution as a Multidiscipline: A Work in Progress. In D. J. D Sandole, S. Byrne, I. Sandole-Starote, and J. Senehi (Eds.), *Handbook of Conflict Analysis and Resolution*. New York, NY: Routledge/Taylor & Francis.
- Chaffues, E. R. & Mack, A. (2009). *Global issues in water, sanitation, and health: Workshop summary. Forum of Microbial Threats; Institute of Medicine*. Washington, D.C.: National Academies Press.
- Dahl, R. (2003). Finding middle ground: Environmental conflict resolution. *Environmental Health Perspectives*, 111(12), A60-A652.
- Dinardi, S. R. (2003). *The Occupational Environmental: Its Evaluation, Control, and Management* (2<sup>nd</sup> ed.). Fairfax, VA: AIHA Press.
- Fine, L. G. (2011). *The SWOT Analysis: Using Your Strengths to Overcome Weaknesses. Using Opportunities to Overcome Threats*. No Location: Kick It, LLC.
- Fisher, R. J. (2007). Interactive Conflict Resolution: Dialogue, Conflict Analysis, and Problemsolving. In D. J. D Sandole, S. Byrne, I. Sandole-Starote, and J. Senehi (Eds.), *Handbook of Conflict Analysis and Resolution*. New York, NY: Routledge/Taylor & Francis.
- Friis, R. H. (2011). *Essentials of Environmental Health* (2nd ed.). Sudbury Massachusetts: Jones & Bartlett/APHA Press.
- Hardin, B. D., Kelman, B. J., & Saxon, A. (2003). Adverse human health effects associated with molds in the indoor environment. *Journal of Occupational and Environmental Medicine*, 45(5), 470-478.
- Hare, S. M. (2002). Toward a multidimensional model of social interaction as related to conflict resolution theory. *ILSA Journal of International and Comparative Law*, 8, 803-823.

- Harolds, J. & Wood, B. P. (2006). Conflict management and resolution. *Journal of the American College of Radiology*, 3(3), 200-206.
- Ignacio, J. S. & Bullock, W. H. (2009). *A Strategy for Assessing and Managing Occupational Exposures* (3<sup>rd</sup> ed). Fairfax, VA: AIHA Press.
- Jacobsen, K. H. (2008). *Introduction to Global Health* (eBook ed.). Sudbury, MA: Jones and Bartlett Publishers.
- Kelly, D. L. & Johnson, S. P. (2006). Measurement and Statistical Analysis in CQI. In C. P. McLaughlin & A. D. Kaluzny (Eds.), *Continuous Quality Improvement in Health Care: Theory, Implementations, and Applications* (3<sup>rd</sup> ed.). Mississauga, ON: Jones & Bartlett.
- Lemieux-Charles, L. (1994). Physicians in health care management: Managing conflict through negotiation. *Canadian Medical Association Journal*, 151(8), 1129-1132.
- Lorber, M. & Savic, B. S. (2011). Preconceptions of managerial competencies, style, and characteristics among professionals in nursing. *Croatian Medical Journal*, 52, 198-204. doi: 10.3325/cmj.2011.52.198
- Macher, J. (1999). *Bioaerosols: Assessment and Control* (1<sup>st</sup> ed.). Cincinnati, OH: ACGIH Worldwide Press.
- McKay, J. (2001-2002). The use of social cubism in the analysis of community conflicts. *ILSA Journal of International and Comparative Law*, 8, 883-896.
- Mitra, A. K. & Rodriguez-Fernandez, G. (2010). Latin American and the Caribbean: Assessment of the advances in public health for achievement of the Millennium Development Goals. *International Journal of Environmental Research and Public Health*, 7, 2238-2255.

- Minnesota Department of Health. (n.d.). *Fishbone Diagram (Cause and Effect Diagram)*. In Office of Performance Improvement. Retrieved from [www.health.state.mn.us/divs/sfh/ophp/consultation/qi/resources/tools](http://www.health.state.mn.us/divs/sfh/ophp/consultation/qi/resources/tools)
- Morgan, M. T. (2003). *Environmental Health* (3<sup>rd</sup> ed.). Toronto, ON: Thomson Wadsworth.
- Mulhausen, J. R. & Damiano, J. (1998). *A Strategy for Assessing and Managing Occupational Exposures* (2<sup>nd</sup> ed.). Fairfax, VA: AIHA Press.
- Nemerow, N. L., Agardy, F. J., Sullivan, P., & Salvato, J. A. (2009). *Environmental Engineering: Environmental Health and Safety for Municipal Infrastructures, Land Use and Planning, and Industry* (6<sup>th</sup> ed.). Hoboken, NJ: John Wiley & Sons, Inc.
- National Center for Environmental Health & American Public Health Association. (2001). *Environmental Health Competency Project: Recommendations for Core Competencies for Local Environmental Health Practitioners*. Washington D. C.
- National Environmental Health Association. (2000). *Registered Environmental Health Specialist/Registered Sanitarian*. In Credentials. Retrieved from [www.neha.org/credentials/index/shtml#rehsrs\\_cred](http://www.neha.org/credentials/index/shtml#rehsrs_cred)
- National Environmental Health Science & Protection Accreditation Council. (2012). *2011-2012 Update of Accredited Programs*. Retrieved from [http://www.ehacoffice.org/2012%20Annual%20Update%20Report-FinalKM2012Diversity\\_edits\(2\).pdf](http://www.ehacoffice.org/2012%20Annual%20Update%20Report-FinalKM2012Diversity_edits(2).pdf)
- National Institute of Environmental Health Sciences. (2011). *NIEHS aids the global fight against indoor air pollution*. In Environmental Factor. Retrieved from <http://www.niehs.nih.gov/>

news/newsletter/2011/november/spotlight-indoorair/index.cfm

- National Institute of Occupational Safety and Health. (2012). Preventing occupational respiratory disease from exposures caused by dampness in office buildings, schools, and other nonindustrial buildings. *NIOSH Alert, 2013-102*.
- Porter-O'Grady, T. (2004). Constructing a conflict resolution program for health care. *Health Care Management Review, 29*(4), 278-283.
- Pruss-Ustun, A. & Coravalan, C. (2007). How much disease burden can be prevented by environmental interventions. *Epidemiology, 18*(1), 167-177.
- Ramsay, M. A. E. (2001). Conflict in the health care workplace. *BUMC Proceeding, 14*, 138-139.
- Saltman, D. C., O'Dea, N. A., & Kidd, M. R. (2006). Conflict management: A primer for doctors in training. *Postgraduate Medical Journal, 82*, 9-12. doi: 10.1136/pgmj.2005.034306
- Soliman, M. R., Derosa, C. T., Mielke, H. W., & Bota, K. (1993). Hazardous wastes, hazardous materials and environmental health inequity. *Toxicology and Industrial Health, 9*(5), 901-912.
- Stokes, S. C., Hood, D. B., Zokovitch, J., & Close, F. T. (2010). Blueprint for communicating risk and preventing environmental injustice. *Journal of Health Care for the Poor and Underserved, 21*(1), 35-52.
- Tague, N. R. (2004). *The Quality Toolbox* (2nd ed.). Milwaukee, WI: ASQ Quality Press.

The White House Office of the Press Secretary. (2013). *Remarks by the President on the 150<sup>th</sup> Anniversary of the National Academy of Sciences*. Retrieved from <http://www.whitehouse.gov/the-press-office/2013/04/29/remarks-President-150th-anniversary-national-academy-of-sciences>

United Nations. (n.d.). *We Can End Poverty: Millenium Development Goals and Beyond*

2015. Retrieved from <http://www.un.org/millenniumgoals/environ.shtml>

U.S. Institute for Environmental Conflict Resolution. (n.d.). *Types of ECR Processes*.

Retrieved from <http://www.ecr.gov/Basics/SampleProcessOutline.aspx>

Waller, L. A., Louis, T. A., & Carlin, B. P. (1999). Environmental justice and statistical summaries of differences in exposure distributions. *Journal of Exposure Analysis and Environmental Epidemiology*, 9(1), 56-65.

Wilmot, W. W. & Hocker, J. L. (2011). *Interpersonal Conflict* (8th ed.). New York, NY: McGraw Hill.

Wittczak, T., Walusiak, J., & Palczynski, C. (2001). Sick Building Syndrome: A new problem of occupational medicine. *Medical Practice*, 52(5), 369-373.

World Health Organization. (2005). *Health and the Millennium Development Goals*. Geneva: World Health Organization.

World Health Organization. (n.d.). *The Department of Public Health and Environment*. Retrieved from

[http://www.who.int/topics/environmental\\_health/en/](http://www.who.int/topics/environmental_health/en/)

Wu, F., Jacobs, D., Mitchell, C., Miller, D., & Karol, M. H. (2007). Improving indoor environmental quality for public health: Impediments and policy



recommendations. *Environmental Health Perspectives*, 115(6), 953-964.

Wyon, D. P. (2004). The effects of indoor air quality on performance and productivity. *Indoor Air*, 14(7), 92-101.

Xyrichis, A. & Lowton, K. (2008). What fosters or prevents interprofessional teamworking in primary and community care? A literature review. *International Journal of Nursing Studies*, 45(1), 140-53.

Yeager, S. (2005). Interdisciplinary collaboration: The heart and soul of health care. *Critical Care Nursing Clinics of North America*, 17(2), 143-148.

Zwarenstein, M., Goldman, J., & Reeves, S. (2009). Interprofessional collaboration: Effects of practice-based interventions on professional practice and healthcare outcomes. *Cochrane Database Systematic Review*, 8(3), CD000072. doi: 10.1002/14651858.CD000072.pub2

Disclaimer: This research manuscript was written and submitted by the authors, and were not conducted or funded by the Association of Interdisciplinary Doctors of Health Science, Walter Reed Army Institute of Research, Naval Hospital Camp Pendleton, The United States Army or the United States Navy. Furthermore, the findings of this research manuscript are based on the research, professional expertise, and opinions of the authors and do not officially represent findings, opinions, views, or professional recommendations of these organizations.

Corresponding Author: Anton Shufutinsky, DHSc, MSPH, CHMM, REHS/RS  
Association of Interdisciplinary Doctors of Health Science  
Elkins Park, PA 19027760-725-0563execdirector@aidhs.org

# **Availability and utilisation of hand washing facilities in primary schools in Wakiso district, Uganda**

1. Rawlance Ndejjo, 2. David Musoke, 3. Fred Wabwire Mangen

1. Department of Disease Control and Environmental Health, School of Public Health,  
Makerere University College of Health Sciences, Uganda

2. Department of Disease Control and Environmental Health, School of Public Health,  
Makerere University College of Health Sciences, Uganda

3. Department of Epidemiology and Biostatistics, School of Public Health, Makerere  
University College of Health Sciences, Uganda

## **ABSTRACT**

Hand washing has been proved to be an effective and inexpensive means of preventing diarrhoeal diseases and acute respiratory infections which are among the top causes of child deaths in developing countries. Despite this evidence, hand washing at critical times has not been widely adopted and many schools in Africa do not provide favourable conditions for the practice. This study assessed the availability and extent of utilisation of hand washing facilities in primary schools in Wakiso, Uganda.

The study was cross sectional in design and involved both quantitative and qualitative data collection methods. Both multi-stage and simple random sampling techniques were employed. The study was conducted in 10 primary schools and involved 100 pupils.

Observations revealed that hand washing facilities at excreta disposal facilities were present in 60% of the schools while soap for hand washing was only seen in 33% of them. The majority of respondents (81%) stated that soap and water for handwashing were not always available in their schools. Over half (53%) of the respondents said they always washed their hands after latrine use. Most respondents (79%) washed their hands to remove germs while 11% did so to become clean.

Schools should provide hand washing facilities including soap at excreta disposal facilities. In addition, emphasis should be put on educating and

encouraging pupils to always wash their hands after excreta disposal which is a critical time for hand washing.

**Keywords:** availability, utilisation, hand washing facilities, pupils, Uganda.

## **Background**

Hand hygiene is important in primary schools to prevent the spread of infectious illnesses (Ejemot et al., 2008; Snow et al., 2008). It has been proved to be an effective measure for preventing feecal oral transmission of diarrhoeal causing microorganisms (Cairncross and Valdmanis, 2006; Aiello et al., 2008) and respiratory illnesses (Aiello et al., 2008). Diarrhoea is the second leading cause of death in children under five years killing 1.5 million children every year (WHO, 2009). Hand washing with soap can reduce the incidence of acute respiratory infections by around 23% (Rabie and Curtis, 2006) and diarrhea by almost 40% to 47% [Curtis and Cairncross, 2003].

In institutions such as primary schools, hand washing has been shown to significantly reduce the incidence of diarrhoea [Patel et al., 2012; Ejemot et al., 2008]. Critical times for hand washing include after using the toilet, before handling food and after playing for children in particular. The disease pathogens are transmitted through ingestion of contaminated food and water. Hand washing promotion in schools has also been shown to play a role in reducing absenteeism due to illness [Lopez-Quintero et al., 2009; IngeNandrup-Bus, 2009] which would reduce lost school and work days and health care costs on families.

There are over 22,000 primary schools in Uganda (MoES, 2012). The introduction of Universal Primary Education in Uganda saw a rapid increase in the number of children in the primary schools from 5.3 million in 1997 to 8.3 million in 2012 (MoES, 2012). As this trend continues, there is strain on hygiene and sanitation facilities in these schools. A 2006 report by the Ministry of Education and Sports (MoES) stated that about four in ten primary schools (39%) provided hand washing facilities in their schools thus they failed to

provide an enabling environment to students for hand washing (MoES, 2006). This study assessed the availability and extent of utilization of hand washing facilities in primary schools in Wakiso district, Uganda.

## **Methods**

The study was conducted in Wakiso district which is in Central Uganda and encircles Kampala, Uganda's capital city. It was cross-sectional in design and involved both quantitative and qualitative data collection methods. Quantitative data was collected using a standardized pretested questionnaire and an observational checklist while qualitative data was collected using a key informant interview guide. The study population was school pupils while the study units were primary schools. The respondents were pupils in primary five to primary seven classes. The respondents were administered with the questionnaire. The key informants were the 10 head teachers of the selected schools who provided information through face to face interviews. Observations of the presence of hand washing facilities and hand washing practices of 10 respondents were also carried out in the selected schools. The study was carried out in 5 randomly selected parishes and involved 10 primary schools which were also randomly selected. From each parish, 2 schools were randomly selected to participate in the study. A total of 100 respondents, 10 randomly selected pupils from each school, participated in the study.

The quantitative data generated was analyzed using Epi Info version 3.5.1 statistical software. Univariate analyses in form of frequency distributions were made. The information from key informants was analyzed manually where themes derived from the data were identified and matched with the relevant research questions.

Permission to conduct the study was obtained from Makerere University School of Public Health. In addition, permission was obtained from the District Education Officer and the relevant local and administrative authorities. Consent was obtained from the head teachers of the participating schools and verbal assent was obtained from every pupil before answering the

questionnaire, after explaining to them the nature of the study and all their questions answered.

## RESULTS

### Demographic data of the respondents

Majority (61%) of respondents belonged to the age group 7-12 and 56% of them were female. The modal age of the pupils was 12.0 and the mean was 12.2 (SD = 1.9247). There were more Catholics (52%) followed by the Protestants (21%). The largest number of respondents (37%) was from primary seven (Table 1).

**Table 1: Demographic data of the respondents**

Variable		Frequency (n=100)	Percentage (%)
<b>Age</b>	7 - 12	61	61
	13 - 18	39	39
<b>Sex</b>	Male	44	44
	Female	56	56
<b>Religion</b>	Catholic	52	52
	Protestant	21	21
	Muslim	16	16
	Born-again	11	11
<b>Class</b>	Primary five	32	32
	Primary six	31	31
	Primary seven	37	37

### Availability and extent of utilisation of hand washing facilities

Hand washing facilities were observed to be present in only 60% of the primary schools although 80% of the head teachers had reported to have these facilities. All these hand washing facilities were functional. All the schools were observed to have the excreta disposal facilities. Among these, 70% were ventilated improved pit latrines while 30% were water borne. Most (83.3%) of the hand washing facilities were located outside the excreta disposal facility while 16.7% were located inside. Of the schools that had hand

washing facilities, 50% had a tank with running water while 33.3% had jerry cans. Only 16.7% had a sink with running water for hand washing (Table 2).

Majority (81%) of the pupils stated that soap and water for hand washing were not always available at their schools. From observations, all the schools that had hand washing facilities had water provided for hand washing. However, soap was available in only 33.3% of the schools. Among these, only one school had a tank with a tap that contained soapy solution (Table 2).

**Table 2: Hand washing facilities and their utilization in schools**

School no.	Ownership of school	Hand washing facility present (Yes/No)	Kind of Hand washing facility	Water present (Yes/No)	Soap present (Yes/No)	Washing hands after latrine use (n=10)
1.	Private	Yes	Jerry can	Yes	No	8
2.	Government	No	-	-	-	-
3.	Private	Yes	Sink with running water	Yes	No	2
4.	Private	No	-	-	-	-
5.	Private	Yes	Tank with running water	Yes	No	6
6.	Private	Yes	Tank with running water	Yes	Yes	9
7.	Private	No	-	-	-	-
8.	Private	Yes	Tank with running water	Yes	Yes	5
9.	Government	No	-	-	-	-
10.	Government	Yes	Jerry can	Yes	No	7

Most (78%) of the pupils said they washed hands after latrine use. Concerning the frequency of hand washing, over half (53%) of the pupils reported to always wash their hands after latrine use while 13% said that they never washed their hands. From observations of pupils during hand washing, 61.7%

of the respondents did so after latrine use while only 24.3% used soap. Pupils took different times to wash their hands and this ranged from 3 to 16 seconds. Most (51.3%) of the pupils took between 3 to 10 seconds while 48.6% took between 11-16 seconds to wash their hands. The other times for hand washing given were: before eating (85%), after eating (64%) and after playing (11%). In assessing the reasons why pupils washed their hands after latrine use, most respondents (79.3%) reported doing so in order to remove germs. The rest did so to prevent diseases (9.2%) and to become clean (11.5%). The reasons given for hand washing before eating were to remove germs (80%), prevent diseases (13%) and look smart (7%). The reasons for hand washing before eating were similar to those given for hand washing after latrine use though more respondents (80%) stated washing hands to remove germs.

### **Factors affecting availability and utilization of hand washing facilities**

Most head teachers of the primary schools identified inadequacy and lack of resources to purchase hand washing facilities as the major factor affecting the availability of hand washing facilities. The cost of soap and the scarcity of water especially during the dry season were also noted to affect the availability of soap and water as shown below.

*“Everything is very expensive including soap. In addition, hand washing facilities need frequent repair and maintenance. Water and soap also need to be provided daily. This is very expensive for us unless the parents provide us with more resources or with the facilities themselves”.* (Head teacher)

Other factors affecting the availability of hand washing facilities in schools were mishandling of the facilities by pupils thus leading to their breakdown, and lack of resources for their repair and maintenance. It was also noted that once the facilities broke down, it normally took a long time before they were repaired.

Head teachers identified poor culture as the main factor affecting utilization of hand washing facilities by the pupils in the schools as stated by one of the head teachers.

*“Washing hands to some pupils looks like a punishment as some of them do not have hand washing facilities at their homes and hence cannot practice hand washing after toilet use while there”. (Head teacher).*

*“Some of the facilities some schools provide are not friendly for example jerry cans. Therefore the pupils end up not washing their hands due to the failure to operate them” (Head teacher).*

According to the pupils, lack of soap and water, inconsistencies in their provision and forgetfulness usually affected the utilization of the hand washing facilities and thus the hand washing practices.

## **DISCUSSION**

From the study findings, 80% of primary school heads reported having hand washing facilities, while observations revealed that only 60% of schools had these facilities. This is similar to the findings of MoES (2006) which indicated that 67% of primary school heads reported having hand washing facilities and observations revealed that only 41% of schools had these facilities. This is an indication that the head teachers have the knowledge and recognize the importance of having hand washing facilities in their schools thus reported to have them even if they were not present in their schools. A study by Chittleborough et al., showed that students and staff usually have knowledge on the importance of hand washing (Chittleborough et al., 2012). This would imply that with adequate resources, schools could increase on the availability of hand washing facilities.

Hand washing facilities were present in six (60%) of the ten primary schools, almost equal to the proportion of 60.6% reported by Asingwire and Muhangi [Asingwire and Muhangi, 2000] and higher than 39% which was found by a MoES study (MoES, 2006). This could be because all the schools visited were in urban areas and such schools are known to have more hand washing



facilities compared to those in rural areas (MoES, 2006). There were more hand washing facilities in private schools (71.4%) compared to government schools (33.3%) contrary to the findings of a study in Ghana that found more hand washing facilities in public schools (Steiner-Asiedu et al., 2011). This highlights that a lot still needs to be done to ensure the provision of hand washing facilities in all schools so as to facilitate hand washing.

Availability of soap and water for hand washing was low. Among the schools that had hand washing facilities, only 33% had soap for hand washing. Soap was deemed to be expensive and some schools cited soap wastage as a limitation to its provision. This points out that the availability of complementary items like soap continues to hinder the practice of hand washing as only 24.3% of the pupils who were observed during hand washing used soap. Observations also revealed that 61.7% of the pupils washed their hands after visiting the latrine although 69% had reported to always do so when asked about their hand washing behaviours. The difference between observed and reported hand washing practices could be because hand washing is a socially approved behaviour therefore there is a tendency of being over reported. This implies that even where hand washing facilities exist, they may not be used. The pupils were knowledgeable about the reasons for hand washing. This is consistent with other studies that have shown that pupils are aware of the benefits of hand washing [Steiner-Asiedu et al., 2011; Chittleborough et al., 2012]. The critical moments that the pupils reported for hand washing included before eating, after eating, after playing which are same as those reported by other studies [M. Steiner-Asiedu et al., 2011; Chittleborough et al., 2012]. This also indicates that pupils have the knowledge as to when they should wash their hands but the challenge remains of translating the knowledge into practice and sustaining it once adopted. The high knowledge levels were probably because there was theoretical knowledge given to pupils on sanitation and hygiene in the schools though this alone was not enough to foster a hand washing culture among them and thus a difference between levels of awareness and extent of utilization of hand washing facilities. Therefore, a lot more than just education still needs to be done in order to encourage hand washing at all critical times. Hand washing demonstrations

should be carried out so that the pupils learn the right way of washing hands. Reminders for hand washing should be put in places where hand washing is required to remind the pupils to wash their hands.

Most head teachers of the primary schools identified inadequacy and lack of resources to purchase the hand washing facilities to be the major factor affecting the availability of hand washing facilities in the schools just as had been reported in previous studies (Lopez-Quintero et al., 2009; Oswald et al., 2008). This could point out that the provision of hand washing facilities was at a low priority for the schools administration as was also reported by the MoES report (MoES, 2006). Schools should therefore consider water, sanitation and hygiene as a key subject in the wellbeing of pupils due to its public health significance.

The factors affecting the utilization of hand washing facilities included: lack of hand washing facilities, soap being too expensive hence unavailable in schools, lack of water and teachers not emphasizing the importance of hand washing with soap. Similar barriers have been reported by other studies [Chittleborough et al., 2012; Steiner-Asiedu et al., 2011; Lopez Quintero et al., 2009]. To overcome these barriers, effort should be made by the schools' administration to provide appropriate and clean hand washing facilities and provide education and information about hand washing to the pupils to increase their hand washing knowledge as has been recommended by other studies [Chittleborough et al., 2012][Patel et al., 2012]. This should be done with the involvement of teachers and other staff as this has been shown to be a motivator for hand washing and they can play a very important role.

### **Study limitations**

This study had a number of limitations. First, since hand washing is a socially approved behaviour, there was a likelihood of it being over reported by the respondents. The researchers tried to minimize these effects by carrying out observations of the hand washing behaviours though this did not cover all the behaviours. Secondly, the study findings may not be generalizable to the represent all primary schools in Uganda because the schools surveyed were

all in urban areas and yet majority of schools in the country are in rural areas. The study also considered only pupils in the upper primary school classes (primary five to primary seven) and therefore the results may not be generalized to children of all classes.

## **Conclusions**

A significant number of schools still lack handwashing facilities and where these facilities were present, their utilisation was low. The barriers to hand washing would be reduced if proper hand washing practices like hand washing at all critical times are to be adopted by primary pupils. A great hindrance to the hand washing practice was the lack of hand washing facilities in schools and hence the need to provide hand washing facilities including soap at excreta disposal facilities. In addition, emphasis should be put on educating and encouraging pupils to always wash their hands at all the critical times.

## **Corresponding author**

**Email:** [rndejo@musph.ac.ug](mailto:rndejo@musph.ac.ug)

## **References**

Aiello AE, Coulborn RM, Perez V, Larson EL, 2008. Effect of hand hygiene on infectious disease risk in the community setting: a meta-analysis. *Am J Public Health* 2008; 98:1372–81.

Asingwire N, Muhangi D, 2000. Primary school sanitation research: A consultancy report. Government of Uganda / UNICEF sanitation program. Available at: [http://www.unicef.org/evaldatabase/files/UGD\\_01\\_001\\_1.pdf](http://www.unicef.org/evaldatabase/files/UGD_01_001_1.pdf) [Accessed on 14<sup>th</sup> September, 2013].

Cairncross S, Valdmanis V. Water Supply, Sanitation, and Hygiene Promotion. In: Jamison DT, Breman JG, Measham AR, Alleyne G, Claeson M, Evans DB, Jha P, Mills A, Musgrove., editors. *Disease Control Priorities in Developing Countries*. 2nd edition. Washington (DC): World Bank; 2006. Chapter 41. [Available at:

<http://www.ncbi.nlm.nih.gov/books/NBK11755/>, accessed on 18<sup>th</sup> September, 2013].

Chittleborough CR, Nicholson AL, Basker E, Bell S, Campbell R. Factors influencing hand washing behaviour in primary schools: process evaluation within a randomized controlled trial. Centers for Disease Control and Prevention, The Center for Health and Health Care in Schools. [Available at: <http://dx.doi.org/10.1093/her/cys061>, accessed 12<sup>th</sup> September, 2013].

Curtis V, Cairncross S, 2003. Effect of washing hands with soap on diarrhoea risk in the community: a systematic review. *Lancet Infect Dis*. 2003 May; 3(5):275-81.

Ejemot RI, Ehiri JE, Meremikwu MM, Critchley JA. Hand washing for preventing diarrhoea. *Cochrane Database Syst Rev*. 2008 Jan 23;(1):CD004265.

IngeNandrup-Bus R. Mandatory handwashing in elementary schools reduces absenteeism due to infectious illness among pupils: a pilot intervention study. *Am J Infect Control* 2009; 37: 8206.

Lopez-Quintero C, Freeman P, Neumark Y, 2009. Hand Washing Among School Children in Bogota', Colombia. *American Journal of Public Health*. January 2009, Vol 99, No. 1

Ministry of Education and sports (MoES), 2006. Sanitation and Hygiene in Primary Schools in Uganda. Available at:

<http://www.chdc.mak.ac.ug/publications/Jitta%20Jessica%202006%20Sanitation%20and%20Hygiene%20in%20primary%20schools%20in%20Uganda.pdf> [Accessed on 12<sup>th</sup> April 2013].

Ministry of Education and Sports (MoES), 2012. Education and Sports Sector Fact Sheet 2000 – 2012. [Available at: <http://www.education.go.ug/files/downloads/Fact%20Sheet%202012%20final.pdf>, accessed on 12<sup>th</sup> August 2013]

Patel MK, Harris JR, Juliao P, Nygren B, Were V, Kola S, Sadumah I, Faith SH, Otieno R, Obure A, Hoekstra RM, and Quick R. Impact of a Hygiene Curriculum and the Installation of Simple Handwashing and Drinking Water Stations in Rural Kenyan Primary Schools on Student Health and Hygiene Practices. *Am. J. Trop. Med. Hyg.*, 87(4), 2012, pp. 594–601

Rabie T, Curtis V. Handwashing and risk of respiratory infections: a quantitative systematic review. *Trop Med Int Health* 2006; 11: 258–67.

Snow M, White GL Jr, Kim HS. Inexpensive and time-efficient hand hygiene interventions increase elementary school children's hand hygiene rates. *J Sch Health*. 2008; 78:230–233.

Steiner-Asiedu M, Van-Ess S, Papoe M, Setorglo J, Asiedu D and Anderson A. Hand Washing Practices among School Children in Ghana. *Current Research Journal of Social Sciences* 3(4): 293-300, 2011

WHO, 2009. Diarrhoeal disease Fact sheet N°330 [Available at: <http://www.who.int/mediacentre/factsheets/fs330/en/index.html>, accessed on 16th September 2013]

Oswald WE, Hunter GC, Lescano AG, Cabrera L, Leontsini E, Pan WK, Soldan VP, Gilman RH. Direct observation of hygiene in a Peruvian shantytown: not enough handwashing and too little water. *Trop Med Int Health*. 2008; 13:1421–1428.

### **Acknowledgements**

The authors are grateful to the schools that participated in the study. Special appreciation goes to the head teachers and the pupils who provided the information that was used to compile this report.

# **Safe Food Healthy Business**

**Emer Murphy and Michael O Rourke.**

Emer Murphy and Michael O' Rourke are both graduates of Environmental Health from (DIT) Dublin Institute of Technology. Ireland.

They created the free food safety application called Safe Food Healthy Business. The app is free to download on all IOS applications.

The aim of Safe Food Healthy Business is to educate and create awareness of good food hygiene practices for food handlers in the hospitality industry. Safe Food Healthy Business is proving a hit in the USA, Australia, Ireland, the UK and South East Asia and the pair hope to see its popularity grow

"We developed the app due to the increased number of closure orders in Ireland and poor food hygiene standards Worldwide," Emer Murphy said. "The app provides food businesses with concise factual information on the requirements and good practice methods in food safety," Michael O Rourke adds.

The app offers business owners information on food safety that is relevant without being overwhelming. It is a fantastic go to guide when in doubt and gives the user confidence to practice safe trading of food above minimum compliance. It is extremely user friendly and offers concise easy to understand information under a range of different topics. It is a one of a kind app with no other app offering the same high level of information

The app is a must have tool for anyone in the food business.

Features include -

- Guidelines for dealing with food poisoning outbreaks
- Tips for pest control identification and elimination
- Worldwide food alerts
- Advice for setting up a food business in the domestic or commercial setting
- Guidance on managing food allergies
- Guidelines for managing E. coli 0157
- HACCP templates business owners can refer to in order to ensure they comply with food safety laws
- Information about who to contact for food safety products and services

To download now -

<https://itunes.apple.com/tw/app/safe-food-healthy-business/id598196824?mt=8>

Our future plans are to improve the design, increase our presence on social media and ensure all food business operators are using Safe Food Health Business worldwide.

Since the launch of the Safe Food Healthy Business app, it has been featured in numerous Newspapers and Trade magazines over the last year, most notable the Irish Times newspaper where it was featured under Business and Innovation. Also the app was crowned “app of the week” by the Sun newspaper in Ireland. The app has been featured in the media in Australia, New Zealand, South Africa, United States and the United Kingdom as well as France and Portugal.

Michael and Emer believe that one of the main drivers of the apps success is Social Media. The app has nearly secured 18,000 followers across the main

social media networks that are Twitter, Linked-in and Facebook which includes some celebrity chefs. Here they post anything within the realm of food safety and food and promote the companies that they have built partnerships with over the past year. They also interact with their following regularly responding to question as they believe that it's good to put a face to app. Also their app is the first of its kind to have social media integrated into it.

Safe Food Healthy Business has also been presented at the recent national EHAI/CIEH NI conference in Dundalk where feedback from the audience was extremely positive especially from future generation of Environmental Health. Emer and Michael are also excited to present the app at the World Environmental Health Congress to be held in Las Vegas in July, they believe that this is an excellent platform to raise the profile of the app in the United States and to discuss the importance of technology within the food safety industry.



## **Don't Gamble with Norovirus**

Eric Bradley, MPH, REHS, CP-FS, DAAS, Scott County (Iowa) Health Department (USA), [Eric.Bradley@scottcountyiowa.com](mailto:Eric.Bradley@scottcountyiowa.com)

Kristen Obbink, DVM, MPH, RRT Coordinator/Foodborne Illness Epidemiologist, Center for Acute Disease Epidemiology, Iowa Department of Public Health (USA), [Kristen.Obbink@idph.iowa.gov](mailto:Kristen.Obbink@idph.iowa.gov)

Originally named the Norwalk virus, norovirus was first identified in 1968 after an outbreak of gastrointestinal illness in Norwalk, Ohio (CDC Clinical Overview, 2013). More than 40 years later, norovirus remains a significant health issue and is currently the most common cause of human acute gastroenteritis in the United States. The genus Norovirus, belonging to the Caliciviridae family, consists of six recognized genogroups of related, single-strand RNA, non-enveloped viruses; however, only genogroups I, II and IV are capable of causing human illness (CDC Clinical Overview, 2013).

According to the Centers for Disease Control and Prevention (CDC), norovirus causes an estimated 21 million cases of illness in the U.S. annually, resulting in approximately 70,000 hospitalizations and 800 deaths each year (CDC Trends & Outbreaks, 2013). Noroviruses are responsible for more than half of all foodborne outbreaks with known causes in the U.S., and cause more foodborne outbreaks annually than all bacterial foodborne pathogens combined (IDPH Epi Manual Norovirus Chapter, 2014). The virus is most common in winter, but occurs throughout the year. The most common settings where norovirus outbreaks occur include long-term care/assisted living facilities, child care centers, restaurants, group events, hospitals, schools, cruise ships and other places where large groups of people gather in close quarters (IDPH Epi Manual Norovirus Chapter, 2014).

The most frequently reported symptoms of norovirus illness include acute onset of vomiting, nausea, watery, non-bloody diarrhea, and abdominal

cramping (CDC Clinical Overview, 2013). A low-grade fever, chills, headache, muscle aches, and a general sense of fatigue are also possible (IDPH Epi Manual Norovirus Chapter, 2014). The incubation period is typically 24-48 hours after exposure to the pathogen, but symptoms can appear as early as 12 hours from the time of exposure (IDPH Epi Manual Norovirus Chapter, 2014). Duration of illness is typically 24-72 hours (CDC Clinical Overview, 2013). Most people suffering from norovirus make a complete recovery; however, severe dehydration, hospitalization, and death are possible, particularly in the very young, the elderly, and those who are immunocompromised (CDC Clinical Overview, 2013).

Noroviruses are highly contagious and an infected person can shed billions of viral particles in their stool even before they are symptomatic and for two or more weeks after they recover; even so, it is currently unknown whether they remain contagious for this entire period (CDC Clinical Overview, 2013). Infected persons are most contagious while they are symptomatic and for the first three days after they recover (IDPH Epi Manual Norovirus Chapter, 2013). The infectious dose of norovirus is quite low and exposure to as few as 10-100 viral particles can infect another person (IDPH Epi Manual Norovirus Chapter, 2013). Noroviruses are primarily transmitted via the fecal-oral route when a person consumes contaminated food or water or has direct contact with another infected person or contaminated surfaces or objects (CDC Clinical Overview, 2013). It can also be transmitted via aerosolization of vomitus from an infected person which presumably results in droplets contaminating surfaces or entering the oral mucosa and being swallowed (IDPH Epi Manual Norovirus Chapter, 2013).

Because there are many different types of noroviruses, people can become infected multiples times throughout their life (CDC Clinical Overview, 2013). Although it is possible to form immunity against specific types of norovirus, it is unknown how long this immunity lasts (CDC Clinical Overview, 2013). If immunity is short-lived, it may help to explain why people of all ages can become infected, particularly in outbreak situations.

The most widely used diagnostic method for detecting norovirus is a real-time reverse transcriptase-polymerase chain reaction assay (RT-qPCR) (CDC Laboratory Diagnosis & Treatment, 2013). It can be used to detect viral RNA in stool, vomitus and environmental specimens (CDC Laboratory Diagnosis & Treatment, 2013). Enzyme immunoassays (EIAs) are also available for detecting norovirus in outbreak situations, but are not sensitive enough for diagnosing individual cases (CDC Laboratory Diagnosis & Treatment, 2013).

There is no specific treatment for people infected with norovirus. Therapy is targeted at controlling complications from symptoms of vomiting and diarrhea. This may include, but is not limited to, the use of fluid therapy to treat dehydration and correction of electrolyte disturbances (CDC Laboratory Diagnosis & Treatment, 2013). Antibiotics are not beneficial in treating norovirus infections (CDC Laboratory Diagnosis & Treatment, 2013).

Prevention is the most effective way to stop the spread of norovirus. There is no vaccine available; thus, prevention is based on good hygienic practices such as hand washing, proper cleaning and disinfection of contaminated surfaces, avoiding close contact with others when you are ill, and not preparing food for others while you are ill. These prevention strategies will be further detailed below.

Handwashing with soap and water has been scientifically proven to be more effective than use of alcohol-based hand sanitizers at removing noroviruses (CDC Handwashing, 2013; Blaney et al., 2011; Charbonneau et al., 2000; Liu et al., 2010) and should be used when caring for a person with suspected or known norovirus (IDPH Epi Manual Norovirus Chapter, 2014).

Proper cleaning and disinfection of contaminated surfaces is of utmost importance to prevent further spread of norovirus, particularly in facilities which are at high-risk for outbreaks to occur. As described above, these include long-term care/assisted living facilities, schools/childcare centers, healthcare settings, food establishments and other similar settings. Surfaces should be disinfected with a chlorine bleach-based cleaner or other disinfectant that is proven to be effective against norovirus (CDC Norovirus,

2013). Different bleach concentrations are appropriate for different surfaces (i.e. food contact versus non-food contact surfaces and porous versus non-porous surfaces), so be sure to seek guidance from a reliable source when preparing cleaning solutions. Norovirus cleaning documents for various settings are often available from state health departments, food regulatory officials and the CDC. Soiled fabrics and linens should be machine-washed and tumble-dried as quickly as possible (CDC Norovirus, 2013) and carpets should be steam-cleaned (IDPH Epi Manual Environmental Cleaning, 2014). Persons performing norovirus cleaning procedures should wear personal protective equipment including disposable gloves, masks, eye protection or face shields, and a gown or other protective clothing (IDPH Epi Manual Environmental Cleaning, 2014).

Persons infected with noroviruses should remove themselves from their daily duties due to the contagious nature of norovirus. Students, staff and visitors at schools and in the workplace should go home immediately if they become ill with symptoms of norovirus and should remain at home until 24 hours after diarrhea and/or vomiting ceases (IDPH Epi Manual Outbreak Recommendations, 2014). Ill children and staff at childcare centers should remain at home until 48 hours after diarrhea and/or vomiting ceases (IDPH Epi Manual Outbreak Recommendations, 2014). The same recommendation applies to ill staff at hospitals and long-term care/assisted living facilities (IDPH Epi Manual Outbreak Recommendations, 2014). Anyone preparing or serving food for others, including foodservice workers and members of the general public, should refrain from doing so for at least 48 hours after symptoms resolve (IDPH Epi Manual Outbreak Recommendations, 2014).

In outbreak situations, such as in childcare centers and schools, staff may consider sending a letter to parents providing general norovirus information and recommendations for preventing spread of the disease (IDPH Epi Manual Outbreak Recommendations, 2014). Sample templates for such letters are available from many health departments, such as the Iowa Department of Public Health.

As detailed above, norovirus is a significant health issue and has the potential to result in numerous illnesses, particularly in high risk settings. To further illustrate the impact of norovirus illnesses, two norovirus outbreaks that recently occurred in the state of Iowa will be described.

### **Case Study 1**

On Tuesday morning, March 20<sup>th</sup>, 2012, the county health department received a call from a man (Person 1) who believed he and his wife (Person 2) had contracted a foodborne illness from eating at a brunch buffet on Sunday, March 18<sup>th</sup>. Thirty-three members of his extended family had attended his granddaughter's christening and then went out to eat. He knew of five others that were ill, including his son-in-law (Person 3), who had gone to the emergency room on the evening of Sunday, March 19<sup>th</sup>.

Persons 1 and 2 were both interviewed and the following information was collected: identifying information (name, age, address); symptoms; start/end of illness; medical treatment (stool/vomitus culture taken); information on suspect meal; names and phone numbers of everyone that ate with them and if they were ill; and a seven-day food history. Person 1 was a 64 year old male with symptoms of diarrhea, nausea, stomach cramps, muscle aches, and a burning sensation in his throat. These symptoms started at 8 p.m. on Monday, March 19<sup>th</sup> and were ongoing. This individual had not sought medical treatment from a healthcare provider. He ate at the brunch buffet between 10 a.m. and 11:30 a.m. on Sunday, March 18<sup>th</sup>. He mentioned that the salmon and the shrimp were not on ice. Person 2 was a 64 year old female with symptoms of diarrhea, vomiting, nausea, stomach cramps, fever (100F+), chills, headache, muscle aches, and weakness. Her symptoms began at 9 a.m. on Monday, March 19<sup>th</sup> and were ongoing. This individual also had not sought medical treatment from a healthcare provider. The suspect meal was the only meal they had in common with their extended family.

At this time, our Environmental Health Coordinator and Public Health Deputy Director were informed of the potential foodborne illness outbreak and the

county foodborne illness investigation protocol was activated. The Iowa Department of Public Health and the Iowa Department of Inspections and Appeals (Iowa's food regulatory program) were notified of the outbreak investigation and the State Hygienic Laboratory at the University of Iowa was informed that stool and/or vomitus cultures would likely be arriving soon.

Person 3 (Person 1's son-in-law) was then contacted for an interview. This individual was a 35 year old male with symptoms of diarrhea, vomiting, nausea, stomach cramps, chills, muscle aches, weakness and body sweats. His symptoms began at 6 a.m. on Monday, March 19<sup>th</sup> and were ongoing. This individual had gone to the emergency room the evening of the 19<sup>th</sup>. A stool culture was taken and he was treated, diagnosed with a foodborne illness, and released, even though the results of the stool culture would not be available until Tuesday evening, March 20<sup>th</sup>. He noted that some food did not seem as hot as it should have been and the salmon was a whole fish where patrons scraped off what they wanted. We spoke to Person 3's wife (Person 4), who was not ill, and requested a list of everyone who attended the family brunch and their phone numbers.

A food inspector visited the establishment under question and spoke with the General Manager about the complaint. Upon visiting, the inspector observed the following: all hand sinks were accessible and were equipped with soap, paper towels, and hot and cold running water; all refrigeration units had thermometers and units were all at the correct temperatures; and temperatures were being taken periodically on the buffet table, but no written temperature records were being kept. On the day in question, the buffet included more than 70 items, with 102 people total consuming the buffet on that day. The General Manager stated that his chef (Employee A) had called in sick that morning and a line cook (Employee B) had reported to work, but had gone home with gastroenteritis symptoms. The inspector was provided with a list of employees who had worked on Sunday along with their contact information.

A list of buffet items served on the day in question was collected and utilized to create a more detailed interview form to further analyze potential sources of

exposure for ill patrons. The interview form was created in EPI-2000 (outbreak investigation software developed by the Centers for Disease Control and Prevention), which would be used to calculate the average incubation period and determine  $p$  values for each of the buffet items consumed by patrons. Staff then began interviewing meal attendees utilizing an attendee list provided by Person 4.

By the end of the first day, 33 people (including Persons 1-4) had been interviewed. 21 cases reported being ill with nausea, abdominal cramps, fever and diarrhea and/or vomiting. In addition to Person 3, another attendee had visited the emergency room on the evening of Monday, March 19<sup>th</sup>. She was treated, diagnosed with a foodborne illness, and released, although no stool or vomitus culture was taken.

On Wednesday, March 21<sup>st</sup>, our office received the results of Person 2's stool specimen. Although it was negative, there was an error when submitting the necessary test request form and the sample was not tested for norovirus. As such, norovirus results were unable to be obtained on this specimen.

At this time, the outbreak team, consisting of environmental health, clinical, resource and administrative officials, held a conference call with county Medical Director and the State Epidemiologist to discuss current investigational findings and to coordinate next steps in the investigation. The case interview data that had been collected thus far demonstrated similar symptoms among cases (nausea, abdominal cramps, fever, and diarrhea and/or vomiting) with an average incubation period of 30 hours (range of 17.5 - 54.5 hours). Symptoms and incubation period were most consistent with norovirus and this became the primary suspect etiologic agent for the outbreak. It was then decided the restaurant should close and, with guidance from the food inspector, conduct a thorough cleaning for norovirus in order to prevent further cases from occurring. The facility agreed to voluntarily close until norovirus cleaning procedures were completed.

At this time, employee interviews were also taking place. During interviews, it was discovered that one worker (Employee C) had been ill on the day in

question and had worked. Further discussion with the facility's General Manager revealed that Employee C had reported to work earlier this morning, but had been sent home because she was ill. In addition to working while ill on Sunday, she had been sick with vomiting and diarrhea on Saturday starting around 5 p.m. Altogether, 17 employees were interviewed and 11 were currently ill with gastroenteritis symptoms. A list of job duties that each employee performed on the day in question was then collected. Employee C had prepped the tossed salad, served dessert, and unloaded the dish machine.

Case interview data regarding food items consumed was entered into EPI-2000 and the 2-tailed p method was utilized to determine which food item(s), if any, were significantly associated with illness. Analysis revealed that meal attendees who consumed the tossed salad were significantly more likely to become ill ( $p\text{-value} \leq 0.005$ ) than those who did not consume the tossed salad. Eleven meal attendees had consumed the tossed salad and all 11 had become ill. The other ten meal attendees who were ill did not have the tossed salad and none of the twelve meal attendees that were well reported eating the tossed salad.

In order to confirm the etiologic agent responsible for the outbreak, additional stool specimens were collected from Employees A and B and Persons 5, 6 and 7. Test results for Employees A and B as well as Person 5 were received on Thursday, March 22<sup>nd</sup> and all three were positive for norovirus. Also on this day, the facility contacted the food inspector and notified him that the norovirus cleaning procedures were complete and that they were ready to re-open. A conference call was again held with response partners and it was agreed that because an etiologic agent had been identified and cleaning procedures had been completed appropriately, the facility would be allowed to re-open.

On Friday morning, March 23<sup>rd</sup>, another call was received from a second group that had eaten the brunch buffet an hour after the first group on Sunday, March 18<sup>th</sup>. The caller had spoken to 26 of the 34 people in her



group and 19 of them were ill with vomiting, diarrhea, nausea, abdominal cramps, and fever. This information was reported to the Iowa Department of Public Health and health department staff immediately began interviewing the new group of cases. Four cases were interviewed and when their interview data was entered into EPI-2000 and added to the initial group's dataset, the results of the data analysis remained unchanged. Since this group had eaten at the facility prior to the norovirus cleaning procedures being completed, the General Manager at the facility was notified of the new cases, and that no further action would be required at this time.

On the afternoon of March 23<sup>rd</sup>, we held our final conference call with the Iowa Department of Public Health and the Iowa Department of Inspections and Appeals. Final investigational findings were as follows: two groups (67 people total) had eaten the brunch buffet on Sunday, March 18<sup>th</sup>, one hour apart; 40 of them were ill with vomiting, diarrhea, nausea, abdominal cramps and fever; six stool specimens were tested and all six were positive for norovirus (including Employee C); Employee C had been ill with vomiting and diarrhea 12.5 hours prior to the first group eating; Employee C had prepared the tossed salad and the salad was significantly associated with illness; Employee C had also served desserts and unloaded the dish machine which could account for illnesses reported by the other ten meal attendees from the first group who did not report consuming the tossed salad but became ill; and the facility had conducted norovirus cleaning procedures and had re-opened.

On Monday, March 26<sup>th</sup>, the General Manager from the facility called the health department and said he had just spoken to a third group of patrons who reported 24 out of 48 people in their group were ill with vomiting, diarrhea, nausea, abdominal cramps and fever. They had consumed foods from the menu, rather than the buffet, on Thursday, March 22<sup>nd</sup>, the day the facility re-opened after norovirus cleaning procedures were completed.

The complainant was contacted and verified the information she had given to the General Manager. Contact information for all meal attendees in her group was requested so that further interviews could be performed. The complainant

stated that she would call back with the information; however, she did not call back and was then lost to follow up.

Because this group of patrons had visited the restaurant after norovirus cleaning procedures had been completed, the facility voluntarily closed again for further norovirus cleaning. During this round of cleaning, the facility used a virucidal disinfectant spray effective against Feline Calicivirus (a closely related virus to norovirus which is often used as surrogate during experimentation) rather than a chloride bleach solution as they had used during the previous round of cleaning. The cleaning was completed on Tuesday, March 27<sup>th</sup> and the facility re-opened with no further reports of new illnesses.

## **Case Study 2**

On Wednesday, October 18<sup>th</sup>, 2006, an Iowa Department of Public Health Field Epidemiologist forwarded the county health department a report of seven people who had consumed the buffet and stayed at a hotel at a casino facility on Friday, October 13<sup>th</sup> and had become ill on Saturday, October 14<sup>th</sup>. Further discussion with the facility's office revealed there had been an increase in the number of employees calling in sick from Friday, October 13<sup>th</sup> through Sunday, October 15<sup>th</sup>. They also reported that they had hosted a banquet for 700 people attending an event at the facility and that hotel guests had made an increased number of calls (eight total) for emergency services over the weekend. The hotel had called in reserve employees on Saturday, October 14<sup>th</sup>, and the majority of these reserve employees called in sick on Sunday, October 15<sup>th</sup>. The hotel had also received calls from former guests stating that they had been ill with vomiting and diarrhea at some point between October 12<sup>th</sup> and October 15<sup>th</sup>. Management had also contacted its sister facility in a neighboring town and there had not been a spike in employee absenteeism there.

On October 19<sup>th</sup>, the county health department's Incident Command team met with the county Medical Director to establish a plan of action and three food

inspectors visited the facility in question. Interviews with 90 employees, both ill and non-ill, were performed and the following information was collected: identifying information; what part of the hotel facility they worked in (property includes three public buildings); whether they had worked on Thursday, Friday, Saturday or Sunday (October 12<sup>th</sup>-15<sup>th</sup>); whether they had been ill since Thursday, October 12<sup>th</sup> and if yes, when did illness start; description of symptoms; name, age and symptoms of any family members that were ill; and where they ate on Thursday, Friday, Saturday and Sunday (October 12<sup>th</sup>-15<sup>th</sup>).

Symptoms reported by employees included abdominal cramps, nausea, fever, and rapid onset of vomiting and diarrhea that ended in 24-48 hours. While there were 10 food workers that were sick, the majority of ill employees were dealers, tellers, and administrative personnel that spent most of their time in the casino. Most of the ill employees had brought their own food or left the property to eat on the days in question. Although the interviews indicated that the outbreak was centered in one area, the restaurants and bars were still inspected to support the belief that the outbreak was not food-related. Inspections included the buffet, a coffee shop, two bars, a fine dining restaurant, and a catering kitchen. Inspection findings supported the belief that the outbreak did not appear to be food-related.

On Friday, October 20<sup>th</sup>, stool kits were provided to ill employees and on October 23<sup>rd</sup>, patrons that had stayed at the hotel between October 10<sup>th</sup> and 19<sup>th</sup> were interviewed to see if any had been ill. On Tuesday, October 24<sup>th</sup>, two of the stool specimens were reported as being positive for Norovirus.

Our office continued to receive reports from ill patrons, so a conference call was held on Friday, October 27<sup>th</sup> between health department staff, the county Medical Director, casino management, and the casino's supplier. Casino management was made aware of the difficulties of dealing with a norovirus outbreak, particularly in a facility that serves as a restaurant, hotel and entertainment facility, by detailing the problems cruise ships have previously encountered with this pathogen. Goals of the investigation were to develop interventions that would stop the spread of the virus and prevent new cases;

to prevent spread of the virus to sister facilities in neighboring towns through co-mingling of ill patrons and employees; to avoid closing the facility (if possible); and to determine the most effective way to clean all commonly-touched surfaces in the casino and its facilities.

Casino management created and posted signs throughout the facility and also at its sister facility that warned customers of the outbreak and requested the following: customers wash their hands after restroom visits, changing diapers and before eating food; no eating or drinking in entertainment areas; keep hands away from mouth; and do not enter if you have been ill with nausea, vomiting and/or diarrhea during the past 48 hours. Management also provided hand sanitizer to every customer that entered, but requested that customers use the hand sanitizer after washing their hands and not in place of hand washing.

On Saturday, October 28<sup>th</sup>, in order to determine if the outbreak was ongoing, health department staff interviewed more than 100 customers who had stayed at the hotel between October 23<sup>rd</sup> and 25<sup>th</sup>. Twenty-six had been ill with norovirus-like symptoms. The majority of those interviewed were over the age of 65 and even though they were ill, most reported that they had continued to frequent the casino's entertainment facilities despite their illness.

Because the outbreak was ongoing, the facility voluntarily closed all of its food service operations on Saturday, October 28<sup>th</sup> to clean and sanitize all surfaces with a chemical sanitizer developed to eliminate norovirus. Any open bottles of liquor or mixers that may have been contaminated were discarded. On Monday, October 30<sup>th</sup>, food service operations re-opened using bagged ice, as all of the ice machines were closed down through November 20<sup>th</sup>.

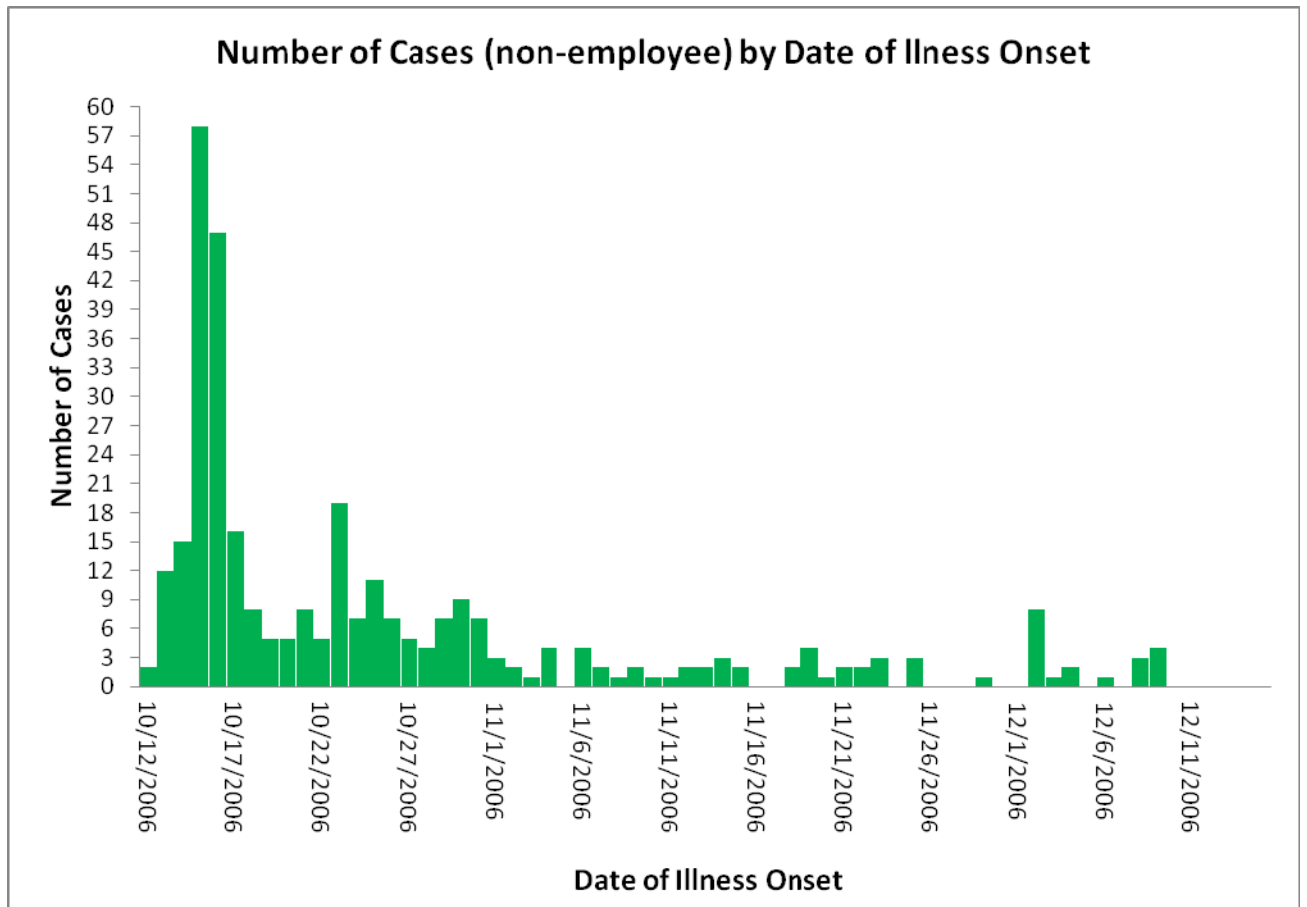
On Tuesday, October 31<sup>st</sup>, another conference call was held with response partners and casino staff to discuss additional action plans. It was decided that facility management would continue to distribute hand sanitizer to all patrons and hold employee training regarding hand washing, hygiene practices and norovirus outbreaks, using norovirus outbreaks on cruise ships

as a learning example. Since employees were coming to work while ill, management decided to provide sick pay to encourage workers to stay home if they were sick. It was also determined that all gambling chips, counter-tops, table-tops, and slot machines should be disinfected at least once every shift.

Our staff continued illness surveillance for this outbreak until December 15<sup>th</sup>. A random sample of 30 hotel guests were contacted daily, 48-72 hours after they had checked out of the hotel, to determine illness rates with norovirus-like symptoms. Employee absenteeism was monitored for the case definition (diarrhea and/or vomiting starting within 72 hours of arrival at the casino/hotel). Anyone that reported symptoms was encouraged to submit a stool sample. The few samples that were submitted were negative for norovirus. As the number of cases began to decrease, casino management began to discontinue some of the interventions.

The outbreak lasted from October 12<sup>th</sup> until December 10<sup>th</sup>, with surveillance continuing until December 15<sup>th</sup>. Over 1900 individuals were interviewed and 320 were found to have met the outbreak case definition. The number of cases reported throughout the course of the outbreak by date of illness onset can be seen in the epidemiologic curve below.

Figure 1



The first case study demonstrates what can occur if an employee works when they are ill. Employees must understand why they should stay home when they have diarrhea and/or vomiting and should not return to work until at least 48 hours after their symptoms have stopped (IDPH Epi Manual Outbreak Recommendations, 2014). The second case study demonstrates that some things are out of a facilities control such as ill customers continuing to enter the establishment. Better efforts need to be made to make the general public aware of the importance of hand washing (CDC Handwashing, 2013; Blaney et al., 2011; Charbonneau et al., 2000; Liu et al., 2010) and staying home for at least 24 hours after their diarrhea and/or vomiting has stopped to prevent the spread of illnesses like Norovirus (IDPH Epi Manual Outbreak Recommendations, 2014).

## References:

- (1) CDC. (July 26, 2013). Clinical Overview. In *Norovirus*. Retrieved from <http://www.cdc.gov/norovirus/hcp/clinical-overview.html>
- (2) CDC. (July 26, 2013). Trends and Outbreaks. In *Norovirus*. Retrieved from <http://www.cdc.gov/norovirus/trends-outbreaks.html>
- (3) Iowa Department of Public Health. (2014). Norovirus Chapter. In *IDPH Epi Manual*. Retrieved from [http://www.idph.state.ia.us/idph\\_universalhelp/main.aspx?system=IdphEpiManual](http://www.idph.state.ia.us/idph_universalhelp/main.aspx?system=IdphEpiManual)
- (4) CDC. (July 26, 2013). Laboratory Diagnosis and Treatment. In *Norovirus*. Retrieved from <http://www.cdc.gov/norovirus/hcp/diagnosis-treatment.html>
- (5) CDC. (December 11, 2013). Show me the Science: When to Use Hand Sanitizer. In *Handwashing: Clean Hands Save Lives*. Retrieved from <http://www.cdc.gov/handwashing/show-me-the-science-hand-sanitizer.html>
- (6) Blaney, D.D., Kirkland, K.B., Tongren, J.E., Kelso, P.T. and Talbot, E.A. (March 16, 2011). Use of alcohol-based hand sanitizers as a risk factor for norovirus outbreaks in long-term care facilities in northern New England: December 2006 to March 2007. *Am J Infect Control*, 39(4):296-301. doi: 10.1016/j.ajic.2010.10.010
- (7) Charbonneau, D.L, Ponte, J.M. and Kochanowski, B.A. (April 2000). A method of assessing the efficacy of hand sanitizers: use of real soil encountered in the food service industry. *J Food Protection*, 63(4):495-501.

- (8) Liu, P., Yuen, Y., Hsiao, H.M., Jaykus, L.A. and Moe, C. (November 20, 2009). Effectiveness of liquid soap and hand sanitizer against Norwalk virus on contaminated hands. *Applied Environmental Microbiology*, 76(2):394-99. doi: 10.1128/AEM.01729-09
- (9) CDC. (July 26, 2013). Norovirus. In *Norovirus*. Retrieved from <http://www.cdc.gov/norovirus/index.html>
- (10) Iowa Department of Public Health. (2014). Norovirus Environmental Cleaning Fact Sheet. In *IDPH Epi Manual*. Retrieved from [http://www.idph.state.ia.us/idph\\_universalhelp/main.aspx?system=IdphEpiManual](http://www.idph.state.ia.us/idph_universalhelp/main.aspx?system=IdphEpiManual)
- (11) Iowa Department of Public Health. (2014). Norovirus General and Outbreak Recommendations. In *IDPH Epi Manual*. Retrieved from [http://www.idph.state.ia.us/idph\\_universalhelp/main.aspx?system=IdphEpiManual](http://www.idph.state.ia.us/idph_universalhelp/main.aspx?system=IdphEpiManual)



# **Smokefree Ireland 10 Years On – A Work In Progress**

**Laura Garvey. HSE, National Tobacco Control Office, Ireland**

10 years ago many people thought smoke-free bars in Ireland was an impossible dream or for some a nightmare. Today the measure is widely accepted by smokers and non smokers alike and by businesses across all sectors. Providing further protection from exposure to environmental tobacco smoke (ETS) was a key recommendation of the Oireachtas (Parliament) all party Joint Committee on Health and Children's proposed National Anti-Smoking Strategy (1999).

This recommendation was reflected in the National Tobacco Control Policy (2000), which included protection from ETS as a key strategic objective. To inform the debate the Office of Tobacco Control and the Health and Safety Authority jointly commissioned independent scientists to review the evidence on ETS in the workplace.

The Allwright Report (2003) concluded that ETS exposure causes serious diseases that employees need to be protected from ETS in the workplace and that legislative measures were required. In particular they noted IARC's designation of ETS as a carcinogen. The Minister for Health and Children at the time, Micheal Martin, subsequently announced his intention to make enclosed workplaces, including bars and restaurants, smoke-free. Ireland was the first and possibly least likely nation to adopt the world's first Clean-In-Door air law. Through this law Ireland's contribution to global health became immeasurable. Irish action affirmed the ability of all nations to do the same. However, it was not without its difficulties with fierce opposition from the tobacco industry and intensive lobbying by various allied industries and associations. The law was necessitated by the harmful effects of exposure to ETS and the need to protect people, especially workers, from involuntary exposure.

Why was it a success in Ireland? Many elements contributed to its success – robust scientific evidence base including the Allwright Report; strong political support across all parties, highly committed Minister for Health, engagement of key groups such as trade unions and professional bodies; support from NGOs; comprehensive communications campaign to engage public support for the measure; active enforcement by the Environmental Health Officers and excellent planning and co-ordination by the Office of Tobacco Control. There was also huge international support from the World Health Organisation and other tobacco control advocates and scientists.

Smoke-free workplace law continues to enjoy widespread public support. There is overwhelming public acceptance of the health reasons for the law and strong support reported at the outset grew post introduction of the measure. There was 67% support before the ban, this increased to 82% in July 2004 in research carried out by the Department of Health. The measure was voted no. 1 “high” of 2004 in the RTE National New Year’s Poll. In 2005 a TNS MBRI poll showed overwhelming support for the ban with 98% believing workplaces are healthier (inc. 94% of smokers), 96% think the law is a success (inc. 89% of smokers), 93% think it is a good idea (inc. 80% of smokers) and 81% thought publicans should comply with the law including 60% of smokers.

Active enforcement by Environmental Health Officers in the HSE over the last 10 years has played a hugely important role in building and maintaining compliance with the smoke-free workplace legislation. Over 30,000 inspections were carried out per annum in the first 3 years with a reported compliance rate of 95%. With such high levels of compliance generally, inspection levels were decreased to approx 15,000 per annum with no adverse impact on compliance which remains at 98%. Breaches do occur and when compliance building efforts are unsuccessful Environmental Health Officers initiate proceedings in the District Courts. Encouragingly the vast majority of cases have been successfully prosecuted. A total of 253 cases

have been taken for breaches of the smoke free legislation in the last 10 years with 261 convictions.

However this legislation has not been without its challenges. The Public Health (Tobacco) Acts allow for exemptions under Section 47. 85% of the cases taken by the HSE relate to pubs, night clubs or hotels and in recent years over 50% of these cases relate to non-compliant 'exempt' /smoking areas. There is no provision for approval of these exempted/ smoking areas. The decision on whether a particular structure is exempt is ultimately a matter for the courts. As with all legislation, questions of interpretation will arise that ultimately must be decided by the courts. Three such cases were the subject of High Court scrutiny with successful outcomes in all three that clarified and restricted the application of the exemptions in Section 47. These decisions / interpretations by the High Court create precedent to be followed in the District and Circuit Courts. Enforcement of these areas in licensed premises is a priority with the Environmental Health Service Business Plan for 2014

Much progress has been made across a range of other measures during the last 10 years. These along with the smokefree workplace ban have contributed to smoking prevalence in Ireland has declined from 28.25% in 2003 to 21.5% in 2013 according to tracker data from the National Tobacco Control Office. That equates to a reduction in actual smokers of over 100,000. Smoking rates among young people have decreased from 18% to 12% between 2002 and 2010 as highlighted in the Health Behaviour in School-Aged Children surveys. Yet we cannot be complacent – we still have 750,000 smokers and over 5,000 tobacco related deaths per annum and 50 children being recruited every day as smokers.

Ireland is now recognised as a world leader in Tobacco Control. The Public Health (Tobacco) Acts are significant tool in our fight against tobacco and will continue to underpin the Government's recently launched policy Tobacco Free Ireland 2025, which would make Ireland the first country in the world to have smoking rates below 5%. As part of implementation of this new policy the Irish Government recently announced to become the first country in the European

Union to introduce legislation on plain packaging for tobacco products. The tobacco industry has invested heavily in pack design in order to communicate specific messages to specific groups and if this legislation is enacted It will remove all forms of branding including trademarks, logo, colors and graphics from packs, except for the brand and variant name which will be presented in a uniform typeface. Once again the world is watching.

# **International Federation of Environmental Health**

## **Sponsorship Program**

### **Robert W Bradbury, Chair, IFEH Sponsorship Committee**

At the International Federation of Environmental Health Board of Directors' meeting held in January of this year, the Board granted approval for the development and creation of an IFEH Sponsorship Program. The Board approved the establishment of a Committee reporting through the Honorary Treasurer, Stephen Cooper, to develop a sponsorship program designed to create on-going additional revenue streams for the Federation through the sponsorship of various IFEH initiatives. This Committee is chaired by myself as Immediate Past President and the membership includes Caitriona Stack of Ireland, Vic Andrich of Australia and Mel Knight of the United States of America.

The program is planning to build on the IFEH Hedgerow Bursary program created last year to assist Member Association delegates to attend Council Meetings and of course World Congresses. The first bursary recipients will be attending the World Congress in Las Vegas, Nevada hosted by the National Environmental Health Association. As well, we have just finished developing the GPS Locator Site, which is a job portal site on the IFEH web site for environmental health professionals. Although only operational for a couple of months, the portal should prove to be a very effective and efficient means for attracting the best international and local job applicants at a very inexpensive cost...definitely well worth the advertising costs! The GPS Locator is projected to reach a target audience of some 60,000 individuals who are part of the membership cadre in over forty (40) member counties, as well as the academic environmental health community around the world plus others who access the IFEH website on a routine basis. This service is designed to contain many of the dimensions of quality including: timely, relevant, accessible, efficient, cost effective and ethical.

The general purpose of the sponsorship program is to build on and leverage the existence and recognition of the global IFEH brand by using a client centered focused approach within the value matrix to pursue sponsorship for the various World Congresses and emerging Academic Conferences hosted by the Federation as well as the numerous operational initiatives within the organizational framework. A prime example of the latter would be sponsorship of the web page or the newly created Emerson Essay Contest. Going forward, the opportunity to standardize and brand our World Congresses and Academic Environmental Health Conferences can only support the recognition of the IFEH brand. As an organization, we need to be multi-dimensional and develop sustainable private-public partnerships through professional and strategic business approaches to stakeholder engagement that is designed to continue to organically grow the organization and unlock the potential of the IFEH brand. We need to have a uniqueness or point of differentiation that allows us the competitiveness needed in today's fast paced environment.

This is a new venture for the IFEH, one that many member associations have already developed with significant successes. The Federation clearly needs to develop a 'value added' approach that soundly demonstrates to potential sponsors the significant reward for investing in the IFEH brand. As noted above, the opportunity for sponsors to inexpensively reach out to the IFEH membership in the five Regions of the Federation further demonstrates the value added potential of the various components of the sponsorship program. We have a unique opportunity through the utilization of strategic direction principles to leverage technology and use a customer focused approach to business relations which incorporates leadership, information & technology; bound within a 'Kaizan' approach to business processes that include planning, assessing, doing and verifying to help strategically position the organization and our partners.

Branding is not marketing nor is it advertising, although both activities will help with enhancing organizational branding. What we are attempting to do, is translate all the positive aspects of the IFEH; its memberships, policies and

procedures, and governance model and develop a sponsorship program that will allow us to seek monetary opportunities that are best associated with the organizational values and are mutually beneficial to the Federation and our various sponsors. When you think of not-for-profit organizations such the American Red Cross, the Salvation Army, or Doctors Without Borders, these great iconic organizations are so well branded that when you think of each of them, the very thought brings up a myriad of associations, memories, positive feelings, and the satisfaction that you know them. This is what organizational branding is designed to do.

The Board and the Sponsorship Committee both recognize the need for developing a sponsorship programs that is in concert with the vision, mission, goal, values and aims of the IFEH and is similarly matched by potential funding partners. Our quest for partnerships must encompass and embrace all that if the IFEH.

More information is soon to be available on the Federation's website under 'Sponsorship Opportunities'. In the interim, please check out the website at [www.ifeh.org](http://www.ifeh.org) for further information and updates on this initiative. While on the web, visit the GPS Locator Site, our newly created job portal and pass this information on to colleagues, other environmental health professionals, employers, and potential recruiters. We need your assistance to make this endeavour successful,



Robert W Bradbury, Chair, Sponsorship Committee,  
International Federation of Environmental Health