Workplace Health Without Borders (WHWB) - *Expanding the Practice of Industrial Hygiene*

YPSW 42nd Annual Meeting
San Diego, CA
January 20, 2017

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Director, Workplace Health Without Borders
Update

- Why is occupational health a global health concern?
- What needs to be done?
- Where does it go wrong?
- What is the status of Industrial Hygiene on the International Scale?
- What can we do?
There are over 3 billion workers in the world...

Nearly 2 billion of them work in unhealthy and unsafe conditions

2.34 million workers die each year from workplace causes

2 million of these die from occupational disease

That is 1 death every 15 seconds

Source: World Health Organization (WHO) & ILO
In addition….

- 160 million workers get sick each year due to non-fatal work-related diseases
- Occupational injuries, sickness, and disease costs the world economy $2.8 trillion/year USD

Source: ILO
More people die each year from occupational injuries and disease than from other major causes that are much more visible.....

1. Occupational injuries and disease
   - Millions of Deaths per Year Worldwide
     - 1.1

2. HIV/AIDS
   - 1.25

3. Road traffic
   - 0.65

4. Armed Conflict and Violence
   - 2.34

Sources:
1. ILO, 2013
2. WHO, 2013 deaths
3. WHO, 2010 deaths
4. Armed conflict, 2016 (IISS) + homicides, 2012 (WHO)+ terrorism, 2015 (Statista)
“Official” statistics don’t reflect

- Environmental impacts of workplace agents
- Synergy between workplace hazards and other disease risk factors (e.g. silica-TB; asbestos-smoking)
- Informal work
- Blurred lines of workplace, home and community: exposed family members
- The costs to a family with no provider
The informal economy

In the developing world, employment in the informal sector may reach 70 percent, with the contribution to the gross domestic product (GDP) ranging from 10 to 60 percent.

168 million of the world’s children are child labourers. More than half of them do hazardous work: ILO

Saeed Awan, Glass bangle manufacture, Pakistan
Where every day is take your kid to work day
Exports of Hazardous Materials

- Asbestos
- Lead paint

Lead Paint, Other Toxic Products Banned In U.S. Exported To Unsuspecting Customers Abroad

In this 2013 photo, a worker covers his face with a handkerchief as he sees people photographing him and his co-worker handling asbestos sheets at the Ramco Industries Ltd. Factory in Bhojpuri district of Bihar state, India (AP/Saurabh Das)
Workplace Health Without Borders

Our Vision
A world where workers, their families and communities do not get ill because of their work.

Our Mission
To prevent work-related disease around the world through shared expertise, knowledge and skills.
What can we do?

- Training Programs
- Mentoring Programs
- Professional and Public Awareness
- Support for International NGOs
- Projects
- PPE and Equipment
Teaching and Professional Development

- Renaissance University Nigeria - helped develop proposal and curriculum for an Industrial Hygiene/Occupational Hygiene (IH/OH) program.
- IH/OH for Physicians at Maulana Azad Medical College in India – 2015
- OHTA W201 Basic Principles in IH/OH at Muhimbili University, Dar Es Salaam, Tanzania - 2015
- OHTA W201 Basic Principles in IH/OH to National Institute for Occupational and Environmental Health in Hanoi, Vietnam – 2016
- Facilitated donating IH/OH equipment to Uruguay, Pakistan, Tanzania, and Ebola PPE to Sierra Leone
THE POWER OF ONE IN TANZANIA

WHAT WE REALLY NEED TO DO IS PREVENT INJURIES

WE DON'T HEAR ENOUGH ABOUT IT IN THE MEDIA

BRIDGING THE GAP

WORKPLACE HEALTH & SAFETY

INJURED WORKERS

GAP

CHAMPION OF O&H EDUCATION IN TANZANIA

ONITA PRINCIPALS COURSE

AFFORDABLE TO LOCAL STUDENTS

26 PARTICIPANTS

TAUGHT BY WHBW VOLUNTEERS

PARTNER WITH MUIHAS UNIVERSITY

MUHAS PROFESSORS DELIVERED MODULES

WHBWB MENTORSHIP PROGRAM

FALL ABOUT ISSUES

CAREER & TECHNICAL ADVICE

WE LEARNED THE POWER OF ONE AND THE POWER OF MANY

PEOPLE KNOW THEY'RE SICK HAVE TO TAKE WHATEVER DAY JOBS THEY CAN FIND TO SURVIVE

WHAT'S NEXT

OFFER MORE COURSES IN AFRICA

WE HAD TO HELP STUDENTS TAKE THE EXAM SO THEY COULD BE CERTIFIED

ALL STUDENTS CAME UP WITH THE EXAM FEE

VIEWED AS OPTIONAL

WHWB-US, AIHA, OHMS Australia, OHTA
IOHA View of the World

IOHA’s Focus is Growing the World of IH/OH
Global Need for IH/OH

IOHA 2016-20 Strategy Document;
IOHA’s Mission
Global Status of IH/OH

Worldwide, there are only 7600 certified/registered occupational hygienists and 15 countries with registration programs. The world would need 44,000 more hygienists to match the level of service in these countries.

Based on information from Noel Tresider
Global Program in Occupational Health Practice (GPOHP)

Program is completely online

Workplace-based assignments
144 Students – 41 Countries

- Abu Dhabi
- Argentina
- Azerbaijan
- Bahamas
- Bosnia/Herzegovina
- Botswana
- Brazil
- Canada
- China
- Dominican Republic
- Egypt
- Germany
- Ghana
- Haiti
- India
- Indonesia
- Iran
- Iraq
- Ireland
- Jamaica
- Kenya
- Liberia
- Libya
- Luxembourg
- Madagascar
- Mexico
- Nigeria
- Pakistan
- Peru
- Poland
- Romania
- Singapore
- South Africa
- Switzerland
- Trinidad/Tobago
- Uganda
- United Arab Emirates
- United Kingdom
- Uruguay
- United States
- Zambia
8 Years – 41 Countries

Where do our participants come from?

- 2009-2010 trained 18
- 2010-2011 trained 25
- 2011-2012 trained 36
- 2012-2013 trained 25
Nearly Half Students – Reduced Fees

Where do our participants come from?

UIC is a Non-Profit

* Philippines
* South Africa
* Uganda
* Nigeria
* Uruguay
* Indonesia
* Botswana (3 recipients)
* Dominican Republic
* Switzerland (for WHO)

* Liberia
* Mongolia
* India
* India
* Zambia
* Kenya

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OH learning.com
APPROVED TRAINING PROVIDER
8 Years – 41 Countries

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Bridge Building; The Future of IH/OH

IOHA 2016-20 Strategy Document; IOHA’s Mission
Mentor Program

Our mentor program matches experienced IH/OH professionals with new hygienists who want technical and career guidance.

Mentors to early career IH/OH practitioners in Africa, South America and Asia.
Addressing hazards and industries with shared problems around the world

Projects - **Silica**

- Agate Workers in India
- Stone Crushers in India
- Brick Plants in Africa and India
Silica – Gujarat Agate Jewelry Industry

- 2004, NIOH of India
  - Estimated 1 million exposed in this industry
  - Prevalence of silicosis is 20-30% (workers) and 11% in family members
  - Elevated levels of accelerated silicosis, Tuberculosis
  - Silica levels measured 2-15 mg/m³
Agate production Gujarat, India
Agate is processed in workers’ homes, involving and exposing family members to silica.
Stone quarrying in India

* Some estimates: 10 million workers in quarries; 1 million are children

* Silica exposure: one study of 165 exposed workers found 68% had silicosis and/or TB
Workers loading bricks in Nepal
Photo by Steve Thygerson, WHWB member

Silica exposure in construction,
Mozambique
Photo by Custodio Muianga, WHWB member

WHO & ILO: millions of workers are exposed to silica; 10 million in India alone. 30-50% of workers in primary industries and high risk sectors in developing countries suffer from silicosis and other pneumoconiosis
Brick plants are common in Africa & Asia, often employing children

- ILO Child Labour Project: 65% of child brick plant workers suffer from work-related injury or illness
- Exposures to silica, heat stress, musculoskeletal system, combustion products, and more
Brick plant projects: Nepal, Pakistan, Tanzania

Photos by Steve Thygerson, BYU & WHWB
Highest exposures: removal of baked bricks from ovens

Source: Saeed Awan, Dr. Abdul Rehman Alvi
## Free Silica measurements in dust samples

<table>
<thead>
<tr>
<th>District</th>
<th>Making Bricks (mg/m³)</th>
<th>Stacking Raw Bricks (mg/m³)</th>
<th>Feeding Fire (mg/m³)</th>
<th>Removing Baked Bricks (mg/m³)</th>
<th>Loading Bricks (mg/m³)</th>
<th>Average Silica Exposure (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OKARA</td>
<td>0.08</td>
<td>0.17</td>
<td>1.69</td>
<td>21.29</td>
<td>0.25</td>
<td>4.69</td>
</tr>
<tr>
<td>RAWALPINDI</td>
<td>0.16</td>
<td>0.12</td>
<td>1.53</td>
<td>9.93</td>
<td>0.23</td>
<td>2.39</td>
</tr>
<tr>
<td>BAHAWALPUR</td>
<td>0.11</td>
<td>0.17</td>
<td>1.72</td>
<td>18.01</td>
<td>0.19</td>
<td>4.04</td>
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<tr>
<td>SUKKUR</td>
<td>0.10</td>
<td>0.25</td>
<td>2.72</td>
<td>29.77</td>
<td>0.21</td>
<td>6.55</td>
</tr>
<tr>
<td>HARIPUR</td>
<td>0.08</td>
<td>0.19</td>
<td>2.05</td>
<td>12.33</td>
<td>0.13</td>
<td>2.96</td>
</tr>
</tbody>
</table>

- Respirable Silica measurements in dust samples by X-Ray diffraction NIOSH method No. 7500.

Source: Saeed Awan, Dr. Abdul Rehman Alvi
Project Objectives Include…

- Engaging workers/employers to develop exposure controls that are feasible and practical for the users (low cost & power usage, available materials)

Outcomes Transferable to other countries
Vertical Grinder – Dry

No Ventilation, Feb. 2015
Respirable Dust:  1.7 mg/m$^3$
Quartz =  1.2 mg/m$^3$

Outcomes Transferable to other countries
With local exhaust, October 2015

- Respirable dust 0.64 mg/m$^3$
- Respirable silica 0.10 mg/m$^3$

Outcomes Transferable to other countries
Engaging workers in developing controls
Research & Development Needs/future directions

- Local exhaust ventilation solutions that can be made with inexpensive, locally sources materials, low or alternate energy consumption
  - WHWB LEV Committee

- Respiratory protection

- Other common hazard exposures:
  - Welding
  - Artisanal mining
Current activities

Branches

❖ WHWB-US
  o President – Dr Mary O’Reilly
  o Offices at University of Michigan
  o US Charitable Status
  o Project – Beauty salon nail treatments
  o Website: www.whwb-us.org

❖ WHWB-UK
  o President – Mike Slater
  o Project – Seeking BOHS/ILEVE Award for best design of cheap and efficient LEV for application in developing countries
Current activities

WHWB International Collaborations

⭐️ OHTA
- Develop Trainings for OHTA
- Give OHTA Trainings where most needed

⭐️ IOHA
- Assist in Global Training requirements
- Efforts to Achieve WHO/ILO Objectives

⭐️ ICOH
- Collaborate with Scientific Committees
- Deliver Occupational Health Training

⭐️ WHO
- Achieve NGO Status with WHO
- WHO Collaborating Centres, Occupational Health
Access Information

- Maintain a web site, Facebook page, LinkedIn page, YouTube channel, Instagram and Twitter feed to share information

- WHWB – Global - Monthly teleconference presentations on topics relevant to global occupational health; ~700 members

- WHWB – National Programs – Expand to Australia and Africa; countries with unique capabilities and information sharing
Take Personal Action!

Join the Community

Volunteer

Fundraise, Donate to support our programs

Join WHWB teleconferences every month

Mentor

Link to the websites!

Translate a course!
Expanding the Practice of IH/OH
Questions & Discussion

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Imagine a world where everyone goes home at least as healthy as when they came to work

Workplace Health Without Borders

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