Building Capacity to Tackle Global Occupational Disease

OEH Seminar
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WHWB & ECOH

Presenter Disclosures

- ECOH Consultant (Environmental Consulting and Occupational Health), Mississauga, ON
- Owner, Allbridge Inc. (consulting company)
- Volunteer Board member, Workplace Health Without Borders

Overview

- **Global dimensions of occupational health**
  - Informal work
  - Child Labour
- **The need for occupational health/hygiene capacity**
- **Workplace Health Without Borders**
  - Projects
  - Training

There are 3.4 billion workers in the world…

Nearly 2/3 of them work in unhealthy and unsafe conditions

Source:
World Health Organization (WHO)

The global burden of workplace injury and disease

2.78 million workers die each year from workplace causes

2019 preliminary numbers: 2.91 million

2 million of these die from occupational disease

Source: ILO

That is 1 death every 12 seconds

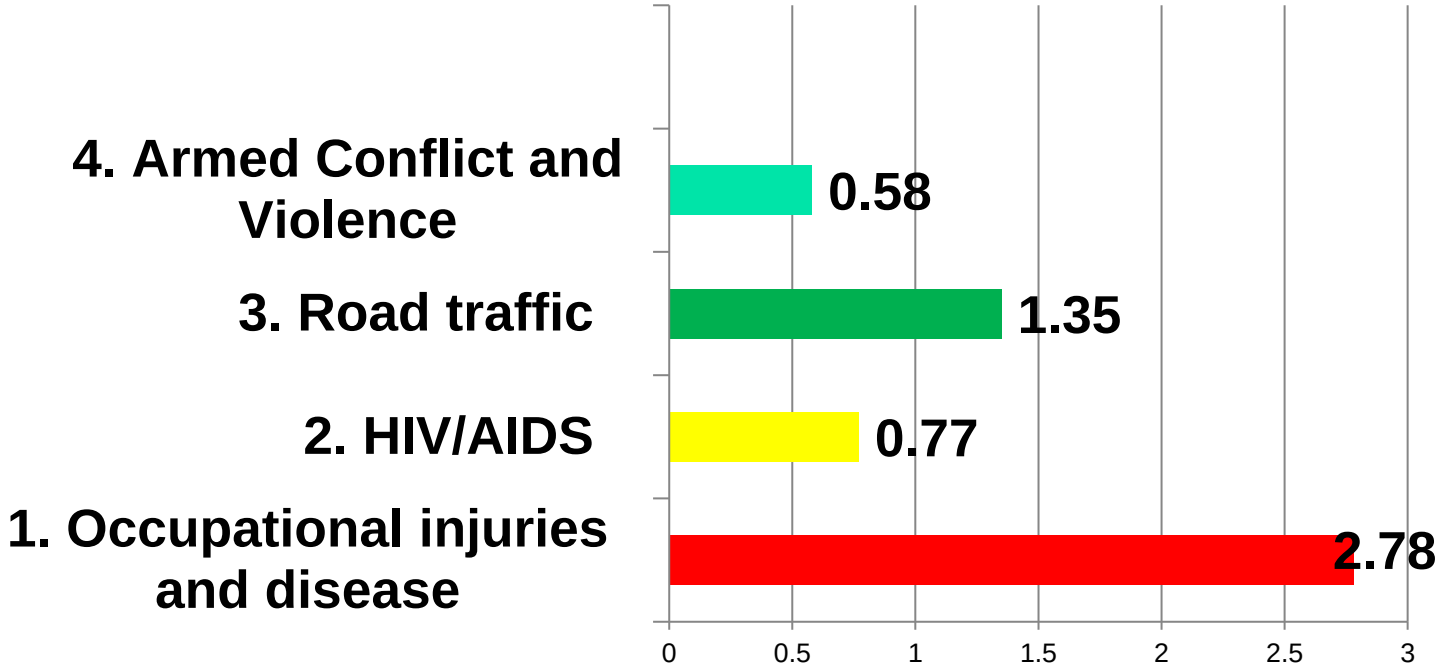
The global burden of workplace injury and disease

In addition….

- 374 million non-fatal work-related injuries & diseases per year
- Occupational injuries, sickness, and disease cost the world economy $2.8 trillion/year USD =
- 4% of Global Gross Domestic Product

Source: ILO

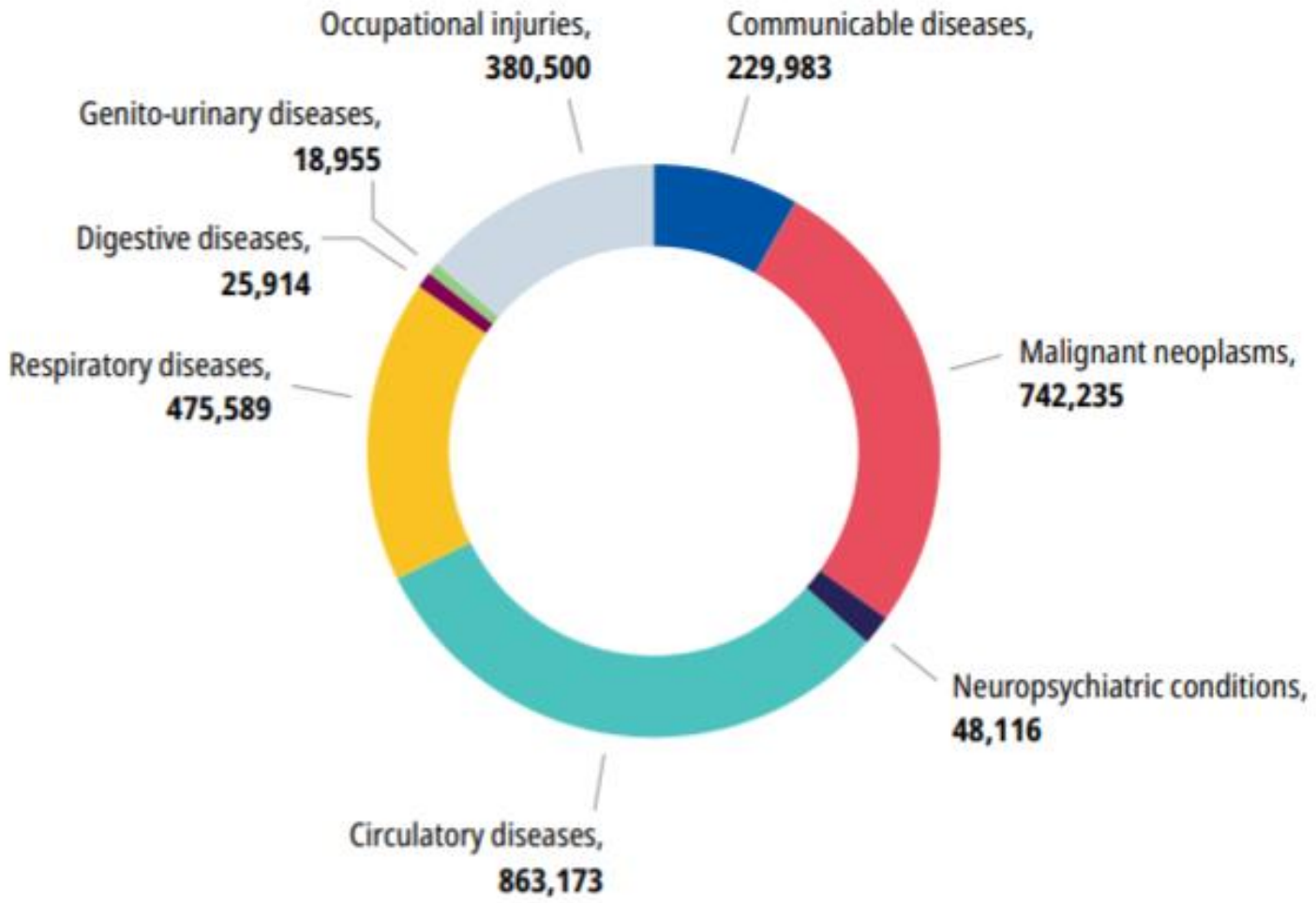
More people die each year from occupational injuries and disease than from other major causes that are much more visible…..



Millions of Deaths per Year Worldwide

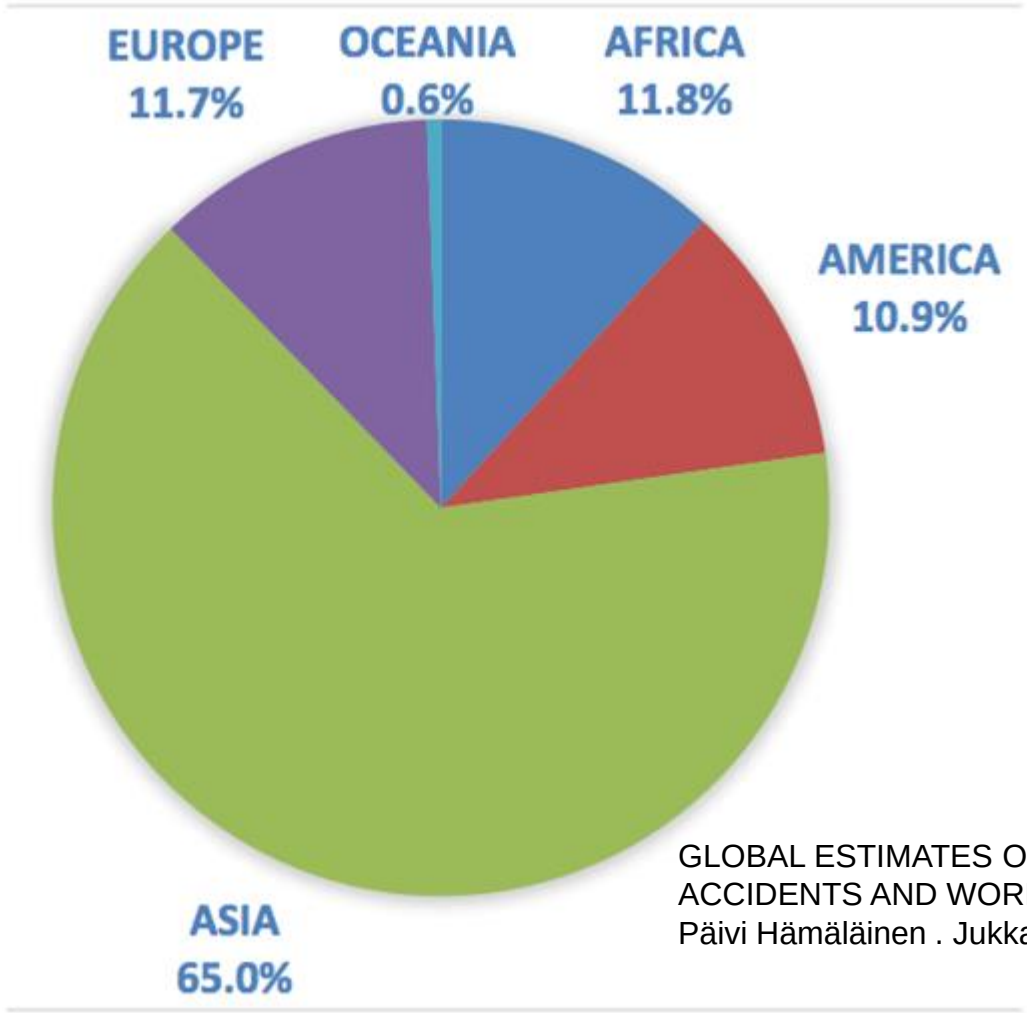
Sources:
ILO (2020); WHO (2018 deaths); WHO (2015 deaths) ; PRIO (2018)

Figure 2. Estimated global work-related mortality, by cause, 2017



Takala et.al. Work-related injuries and diseases, and COVID-19, International Journal of Labour Research • 2021 / Vol. 10 / Issue 1–2

Distribution of work related mortality by Geographical Regions



GLOBAL ESTIMATES OF OCCUPATIONAL ACCIDENTS AND WORK-RELATED ILLNESSES 2017, Päivi Hämäläinen . Jukka Takala . Tan Boon Kiat

Fatal injury rates are up to 12 times higher in low income countries compared to high income countries

Table 3. Fatal occupational injury rates per 100,000 employees by region

Region	Calculated rates by labour sector		
	Agriculture	Industry	Service
High	7.8	3.8	1.5
AFRO	18.9	21.1	17.7
AMRO	9.3	9.5	6.0
EMRO	13.0	14.9	12.3
EURO	15.7	10.3	5.5
SEARO, WPRO	24.0	9.7	5.1

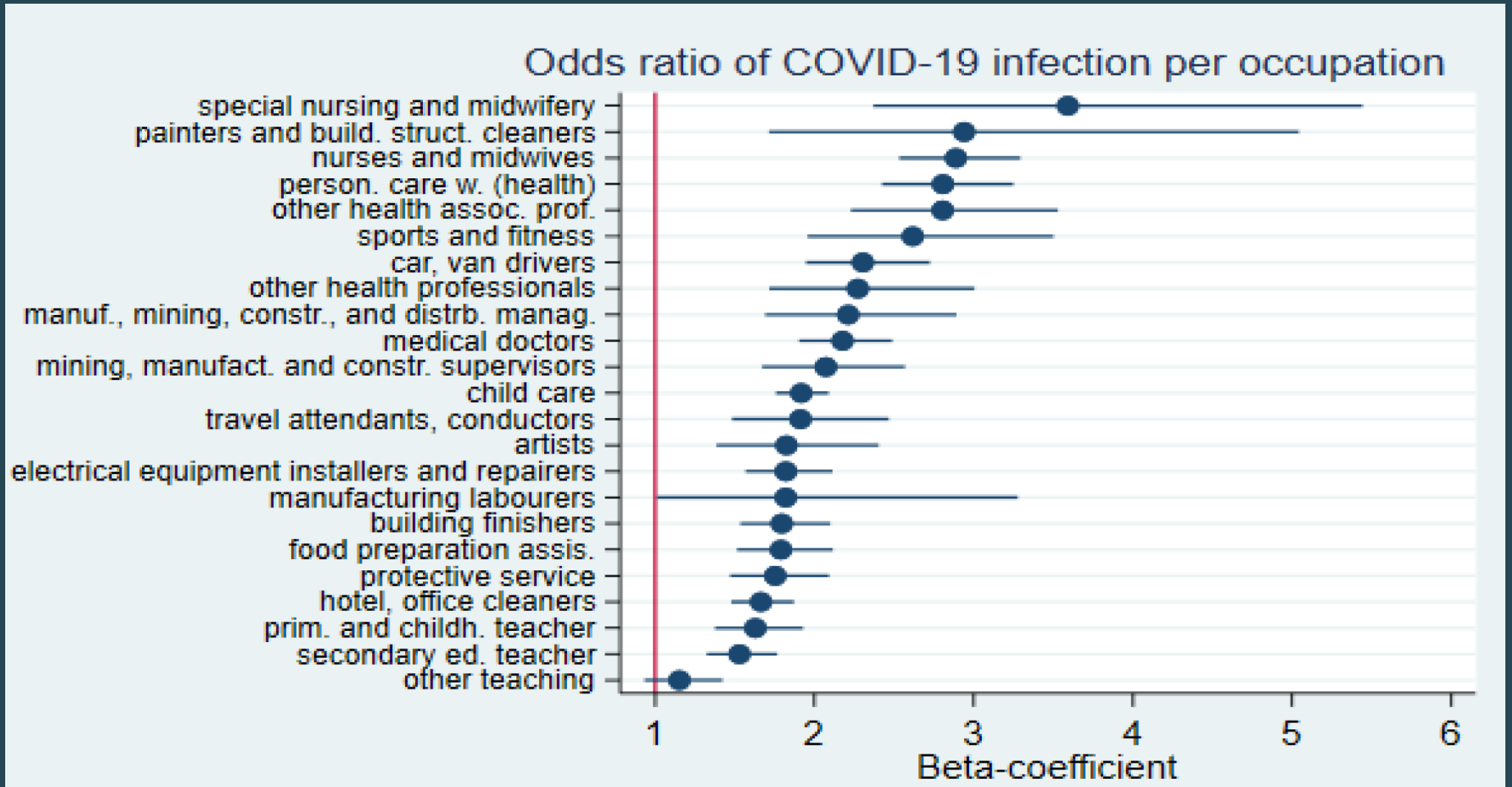
Region code	The World Health Organization regional divisions
HIGH	High income countries
AFRO	Low- and middle- income countries of the African Region
AMRO	Low- and middle- income countries of the Americas
EMRO	Low- and middle- income countries of the Eastern Mediterranean Region
EURO	Low- and middle- income countries of the European Region
SEARO	Low- and middle- income countries of the South East Asia Region
WPRO	Low- and middle- income countries of the Western Pacific Region

Source: Global Estimates of Occupational Accidents and Work-related Illness, 2014, WSH Institute, for the ILO

Is COVID-19 an occupational disease?

- 14% of COVID cases reported to the WHO are health care workers; in some countries it is as high as 35%*
- Estimated occupational COVID fatalities: 110,000
- Risks to non-health care workers:

*Takala et.al. Work-related injuries and diseases, and COVID-19, International Journal of Labour Research • 2021 / Vol. 10 / Issue 1–2



The odds ratio of COVID-19 in Finland with 95% confidence interval, adjusted for age, sex, origin, and home municipality. Non-employed people (20-64 year) is the reference category (OR=1, vertical red line). National Infectious Diseases Registry from year 2020, weeks 1-47.

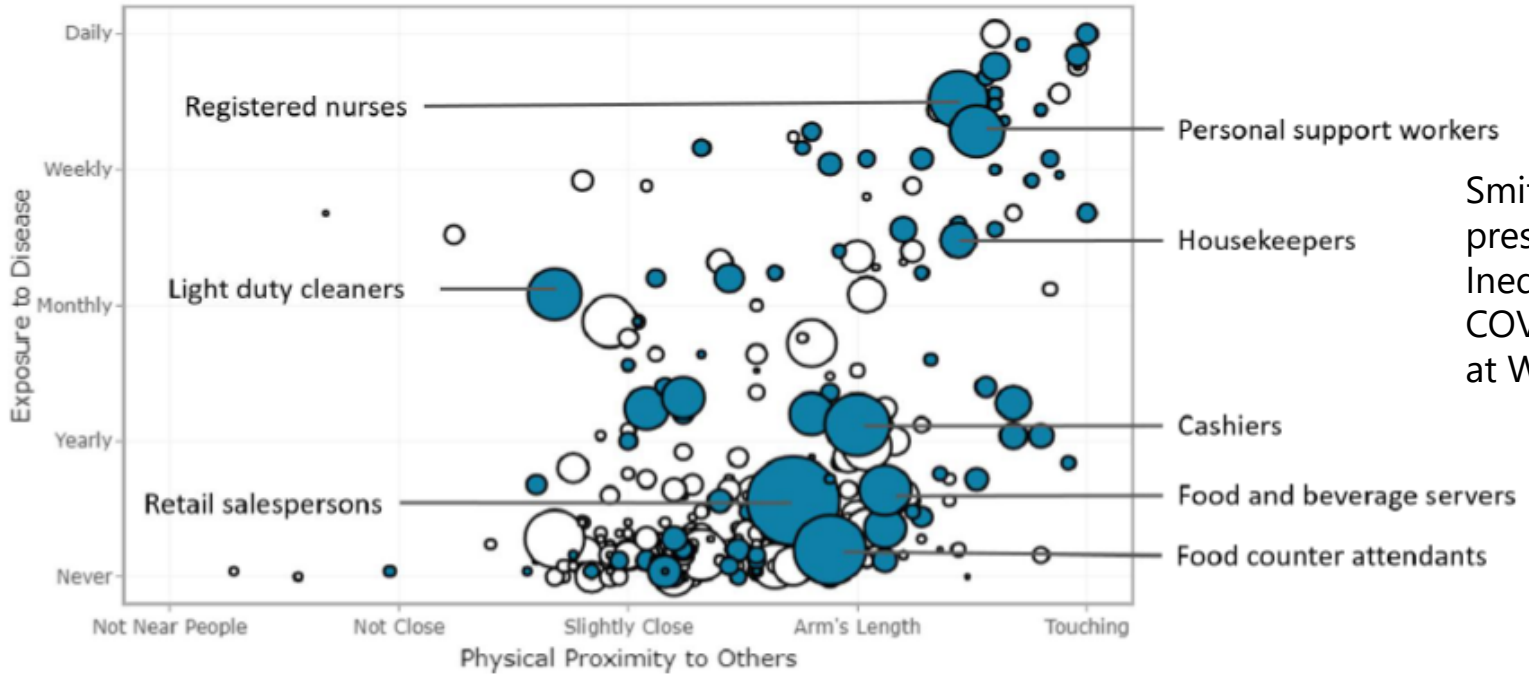
(Covid-19, University of Turku, 2021) https://www.helsinkigse.fi/covid19-data-en/situation-room-report-the-corona-virus-and-health-differences-in-which-socioeconomic-groups-have-the-most-infections-been-observed-in-finland/

From Jukka Takala

Public Health Ontario's interactive tool shows risk by occupation

Occupation and Risk of COVID-19 Exposure at Work, cont.

Occupations with workers >50% female, >12% racialized workers who are unable to work from home



Smith, Warren, presentation, The Inequitable Burden of COVID-19 Exposure at Work

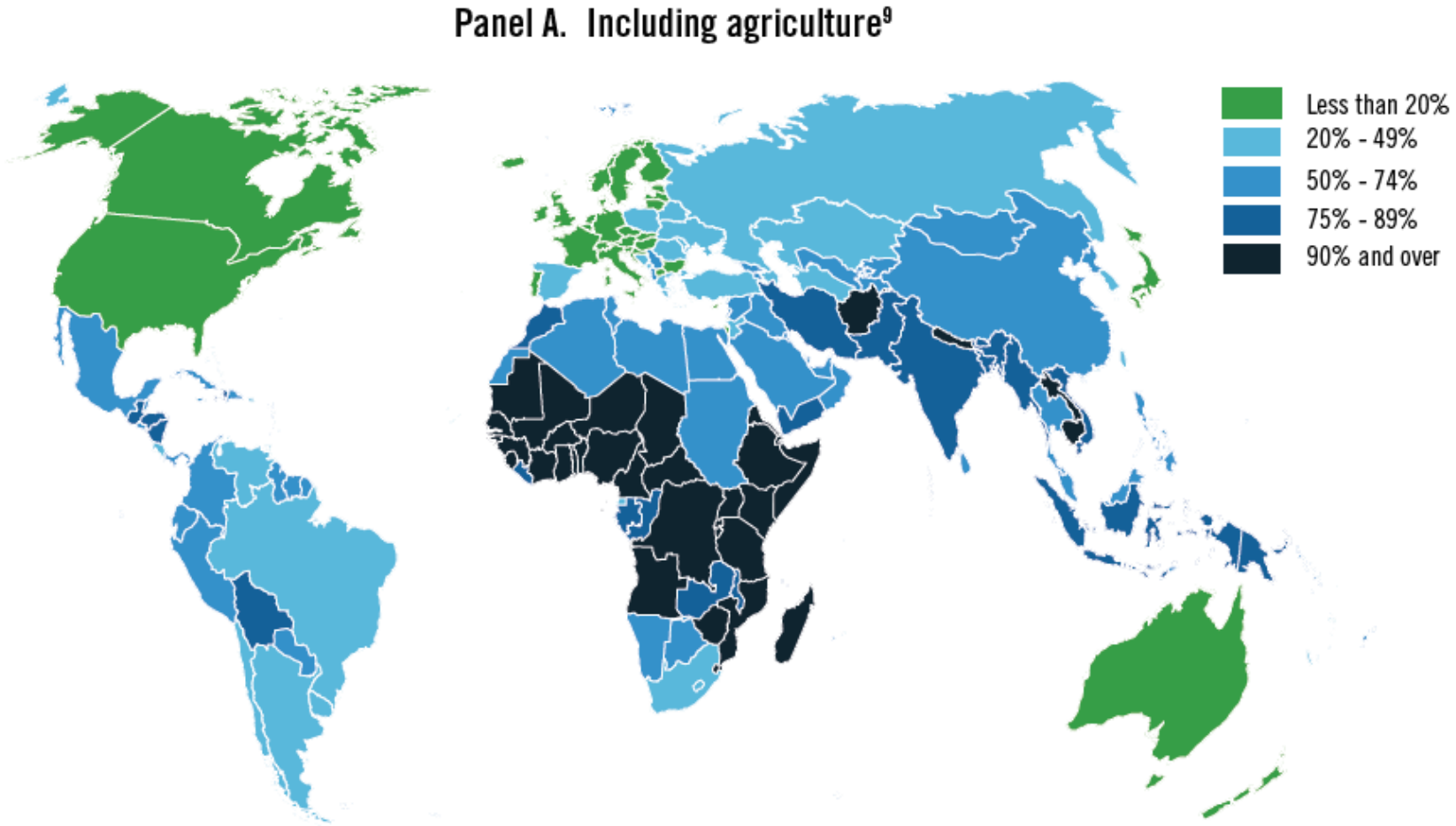
Source: Data as extracted by Ontario Agency for Health Protection and Promotion (Public Health Ontario). Occupational exposure to COVID-19 risk tool: occupation and risk of COVID-19 exposure at work, cont. [Internet]. Toronto, ON: Queen's Printer for Ontario; 2020 [cited 2020 Dec 17].

"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 between workplace, home and community: exposed family members

Nearly 2/3 of global workforce is in the informal economy

Figure 5. Share of informal employment in total employment, including and excluding agriculture (percentages, 2016)



ILO Women & Men in the Informal Economy, 3rd edition

Informal work force

No education on occupational health (but they may know a lot through personal experience)

Poor working conditions,

No workers' compensation

Little access to health care

No paid vacation or sick time

Probably not covered by labour legislation

Child Labour:

218 million children under age 18 work.

151.6 million of these are child laborers.

72.5 million do hazardous work.

73 million are ages 5-11.

Source: ILO

Photo S. Thygersonn

Photo Saeed Awan

REGIONAL PREVALENCE OF CHILD LABOUR

Africa	19.6%
Americas	5.3%
Arab States	2.9%
Asia and the Pacific	7.4%
Europe and Central Asia	4.1%

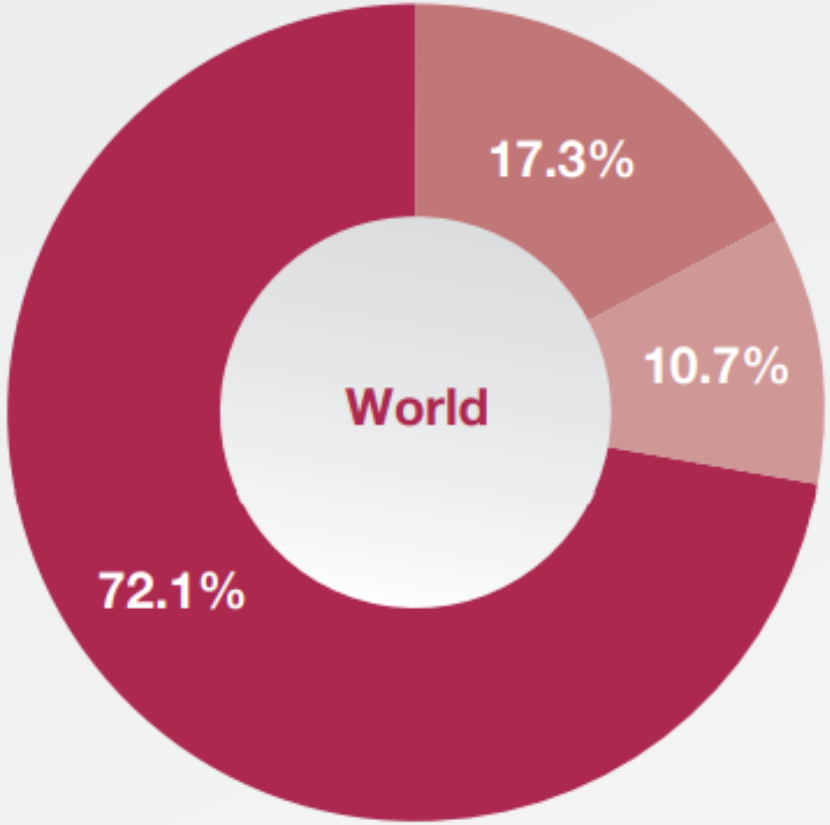
International Labour Office

Global Estimates of Child Labour

8.7 ALLIANCE

Most children in child labour work within their own family unit

Percentage distribution of children aged 5 to 17 years in child labour, by status at work



- Contributing family workers
- Employees
- Own-account workers

Note: Due to rounding, figures in percentages do not add up to 100 per cent.

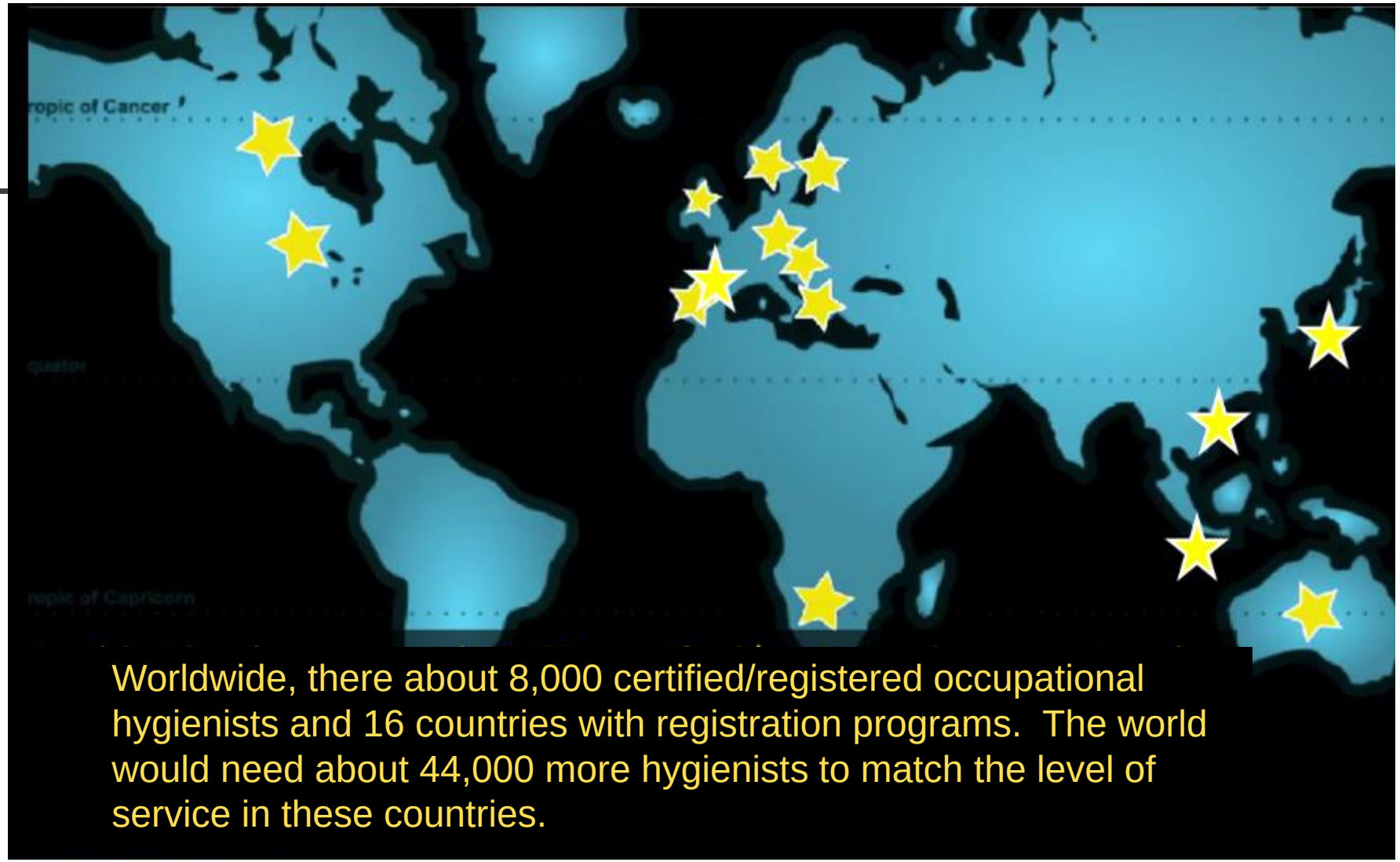
International Labour Office

Global Estimates of Child Labour

8.7 ALLIANCE

Where every day is take your kid to work day

The huge gap in occupational hygiene expertise



Based on information from Noel Tresider

Workplace Health Without Borders: An international non-profit founded in 2011 to address global gaps in OHS knowledge

- Started in Canada; preliminary meetings at AIHce 2009 and 2010
- ≈2000 in our network; ≈ 800 signed-up members from around the world
- All volunteer
- Branches in UK, US, Australia
- Activities:
  - Projects
  - Training

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.

Projects

< Brick kiln project is addressing silica and other hazards in brick plants in Pakistan, Nepal and Tanzania

Designing LEV with local materials >

>Waste workers health and safety projects

>Helping to prevent silica exposure among agate polishers and gem workers in India

Agate Industry, Kambhat, India

- Cottage industry, located in homes, small factories, villages
- Employs men, women and children
- Population experiences high incidence of silicosis

Adapted from Lissa Ceolin

Silicosis in the Agate Industry, Kambhat, India

- **NIOH, 2004 study:**
  - 29.2% among current workers
  - 38.1% among past workers
  - 11% in family members
- **High incidence of acute (onset < 5 years) and accelerated (onset 5-10 years) silicosis**
- In 2015, respirable silica levels avg 1.1mg/m^3
  - Range 0.14 - 3.0mg/m^3
  - > 30X Ontario limit

Adapted from Lissa Ceolin

Economic Barriers to Controls

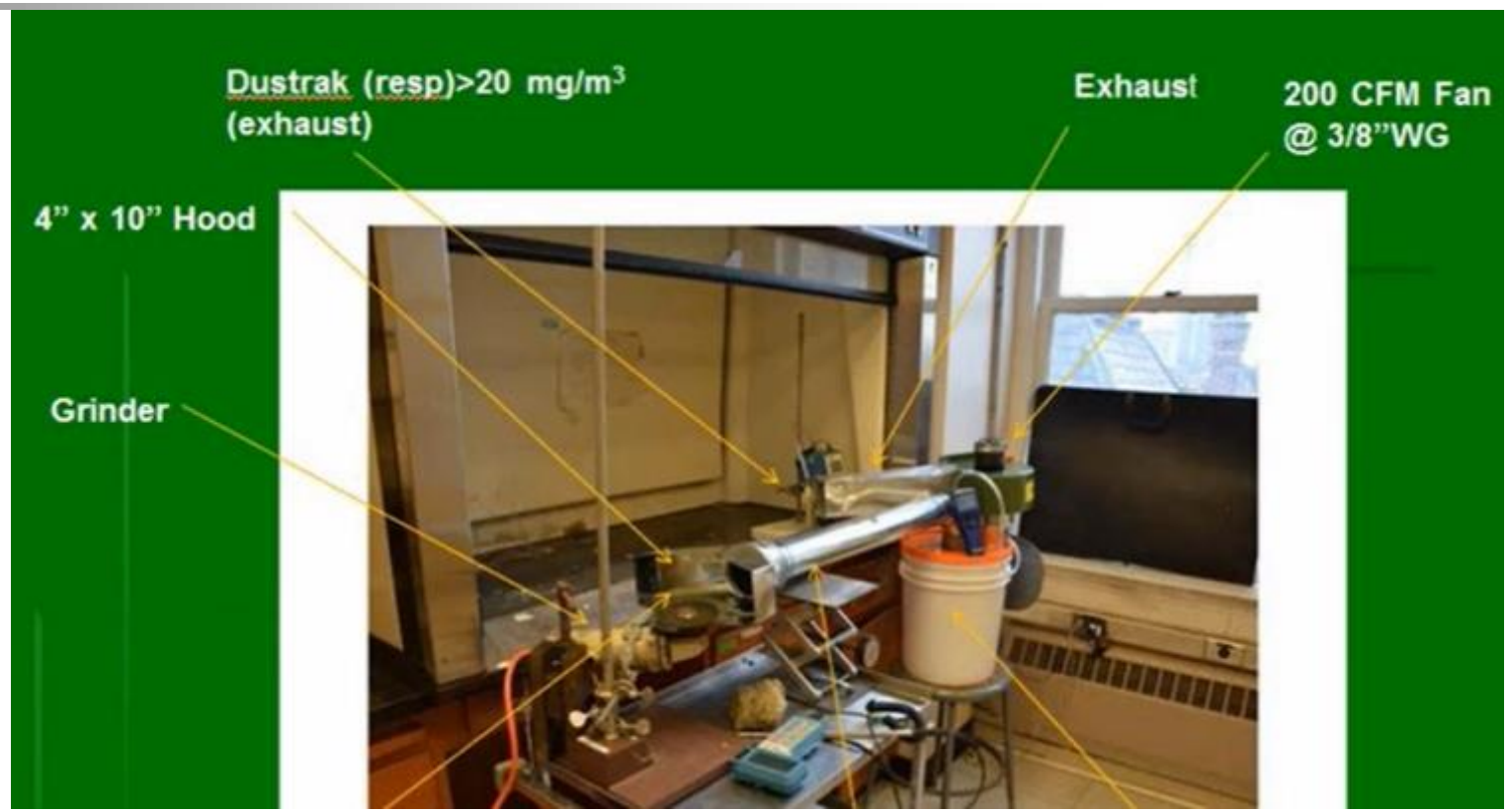
- **Average wage $2-10/day**
- **Economic barriers:**
  - Operating costs
    - Energy
    - Parts
    - Repairs
  - **Portability**
  - **Access to parts**
  - **Value of equipment**

Adapted from Lissa Ceolin

Agate is processed in workers' homes, involving and exposing family members to silica

Approaches to Local Exhaust Ventilation

- Developed by Paul Bozek, OEH Division, Dalla Lana



Example: Agate Grinder

No Ventilation, Feb. 2015

Respirable Dust: 1.7 mg/m^3

Respirable Silica = 1.2 mg/m^3

With local exhaust, October 2015

- Respirable dust 0.64 mg/m^3 (2.6 x lower)
- Respirable silica 0.10 mg/m^3 (12 x lower)

Engaging workers in developing controls

Respirable dust
No LEV 1.9 mg/m³

With LEV 0.4 mg/m³

Stretching

our concept of industrial hygiene

What We Learned

- **Imperfect workplaces - Minimizing exposures preferable to perfect solutions**
- **Reducing exposure will:**
  - increase life expectancy,
  - delay onset of acute silicosis
  - and may reduce chronic silicosis
- **Understand context and barriers to controls**
- **Utilize local resources**
- **Build local knowledge and capacity**
- **Protection and prevention of disease**
  - Focus messages on on prevention of exposure – specific practicable intervention
  - Knowledge about nature of the hazard and prevention techniques among

Adapted from Paul Bozek, Lissa Ceolin

Waste Workers Occupational Safety & Health Committee (WWOSH)

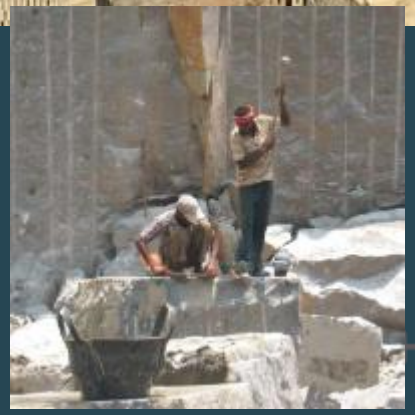
- Safety training for waste workers
- Pilot safety and health interventions
- Research projects, exposure assessment (e.g. analysis of baby teeth, hair)
- Build a database of research
- Design a sustainable model for OSH program for waste workers




Respirator Training for Brazil Waste Workers

Brick Kiln Committee (focus on silica dust)

- Nepal
- Egypt
- Tanzania
- Viet Nam



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
- Exposure to silica, heat stress, combustion products
- Research by WHWB members found silica exposures in brick plants > 15 times the US exposure limit of 0.05 mg/m^3); effects on reproductive health of male adults and children

Toronto Star, use of Canadian asbestos in India

‘Asbestos City’: Kymore, India

- Village in India has been built atop a former hazardous waste landfill
- Historical asbestos dumping and lack of knowledge on health effects of asbestos are creating a hazardous environment for the local residents.
- Numerous cases of asbestos-related diseases are being reported within the local population.

‘Asbestos City’: Kymore, India

Friable asbestos waste in fields at rear of houses

Asbestos at surface in residential yards

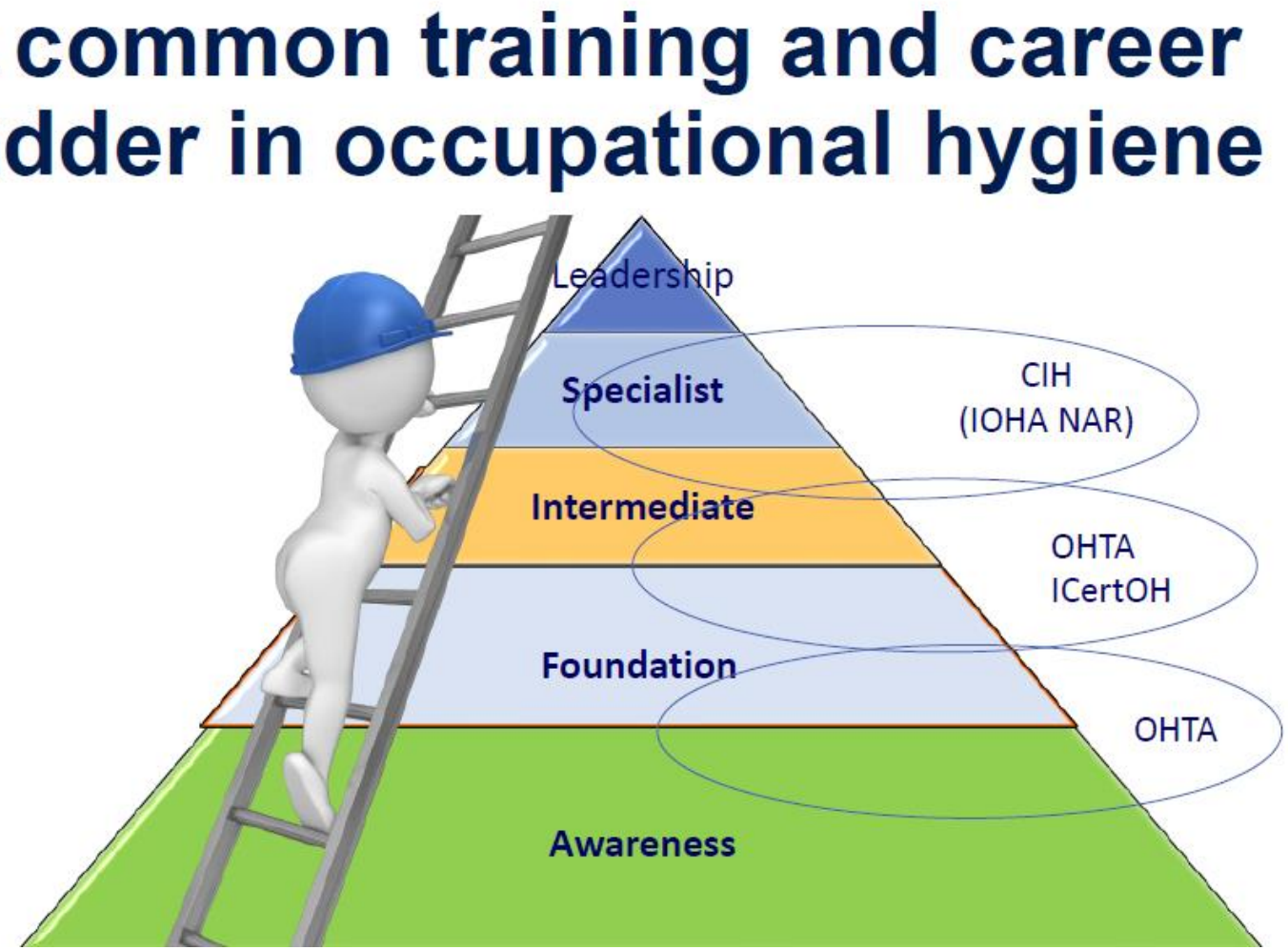
Asbestos sheet and waste being used as part of house construction

Source: ECOH Management Inc.’s volunteer asbestos assessment in Kymore

Live (pre-COVID) training

- A variety of partners – universities, government institutions
- All volunteer-taught
- OHTA courses: mostly W201 (Basic Principles in Occupational Hygiene) but also intermediate courses, e.g. hazard assessment, control
- Customized course for labour H&S inspectors

Occupational Hygiene Training Association (OHTA) A Key Partner in International Occupational Hygiene Education



W501 Measurement of Hazardous Substances

W502 Thermal Environment

W503 Noise Measurement and its Effects

W504 Asbestos and other fibres

W505 Control of Hazardous Substances

W506 Ergonomics Essentials

W507 Health Effects of Hazardous Substances

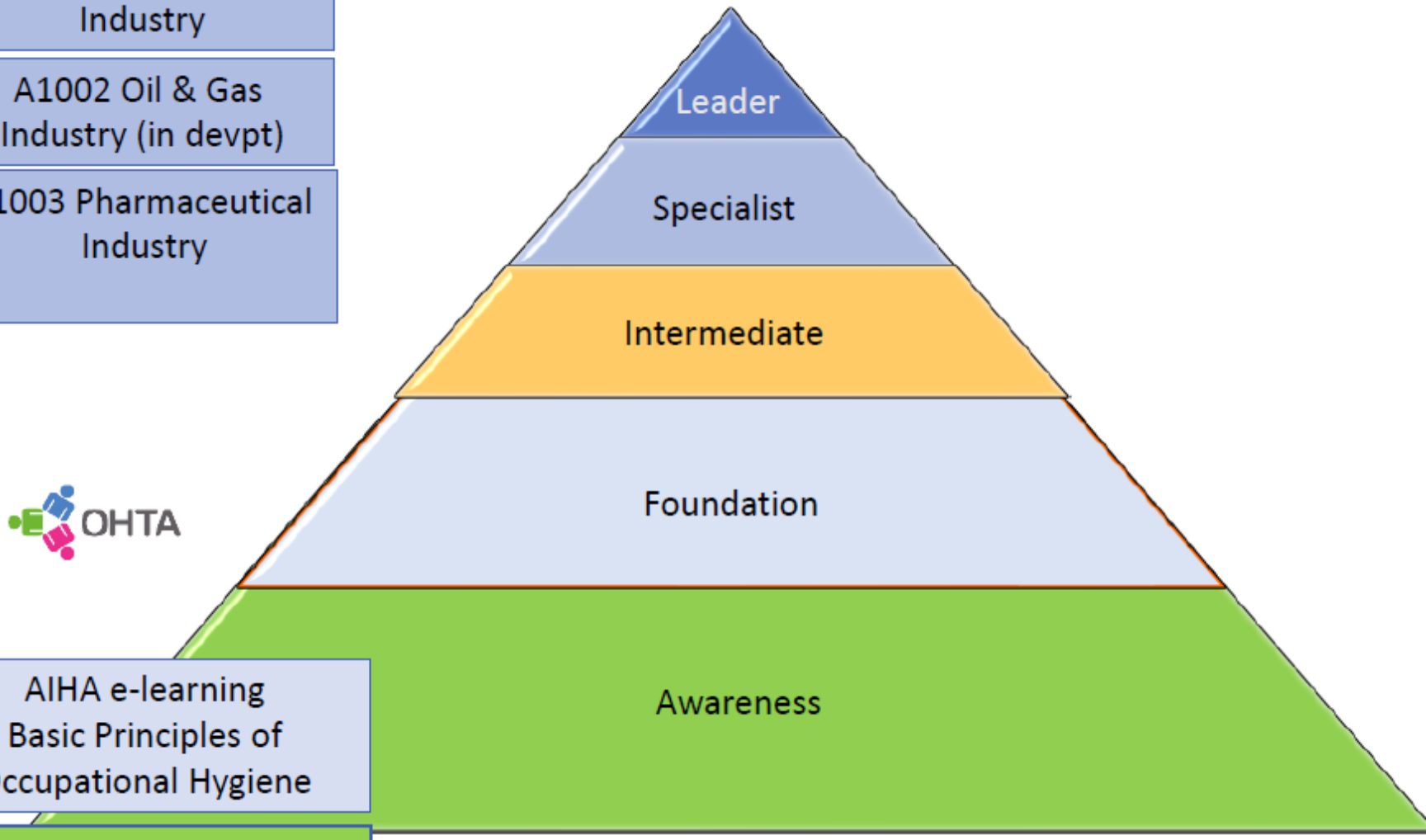
W201 Basic Principles in Occupational Hygiene

Silica Hazard Awareness

A1001 Mining Industry

A1002 Oil & Gas Industry (in devpt)

A1003 Pharmaceutical Industry



OHTA

AIHA e-learning Basic Principles of Occupational Hygiene

H&S Awareness Module

2021

Training programs in India, Tanzania, Viet Nam, Botswana, Mozambique, Swaziland, South Africa, Zambia

India 2012

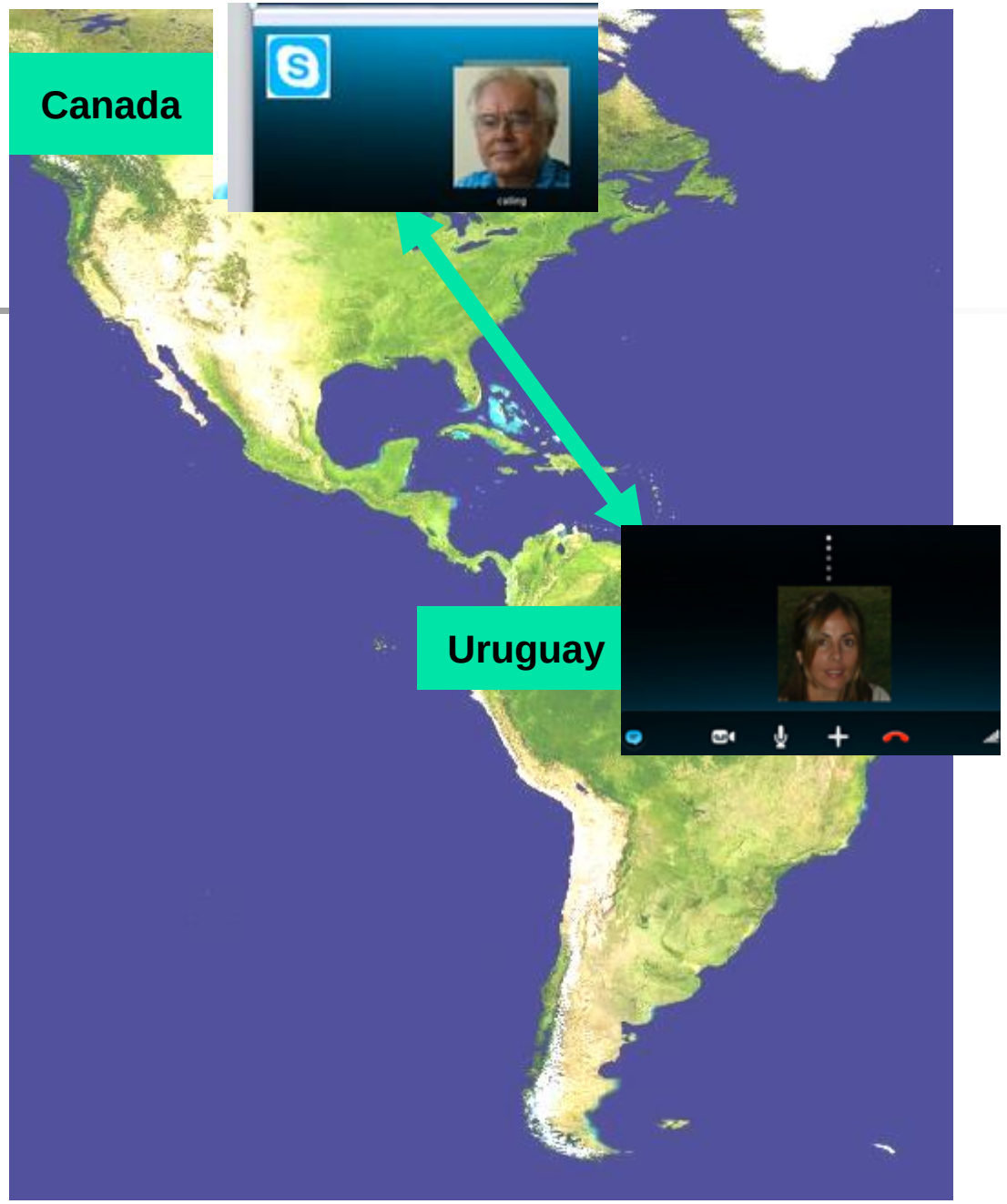
Tanzania 2015

Tanzania 2015

Viet Nam 2016

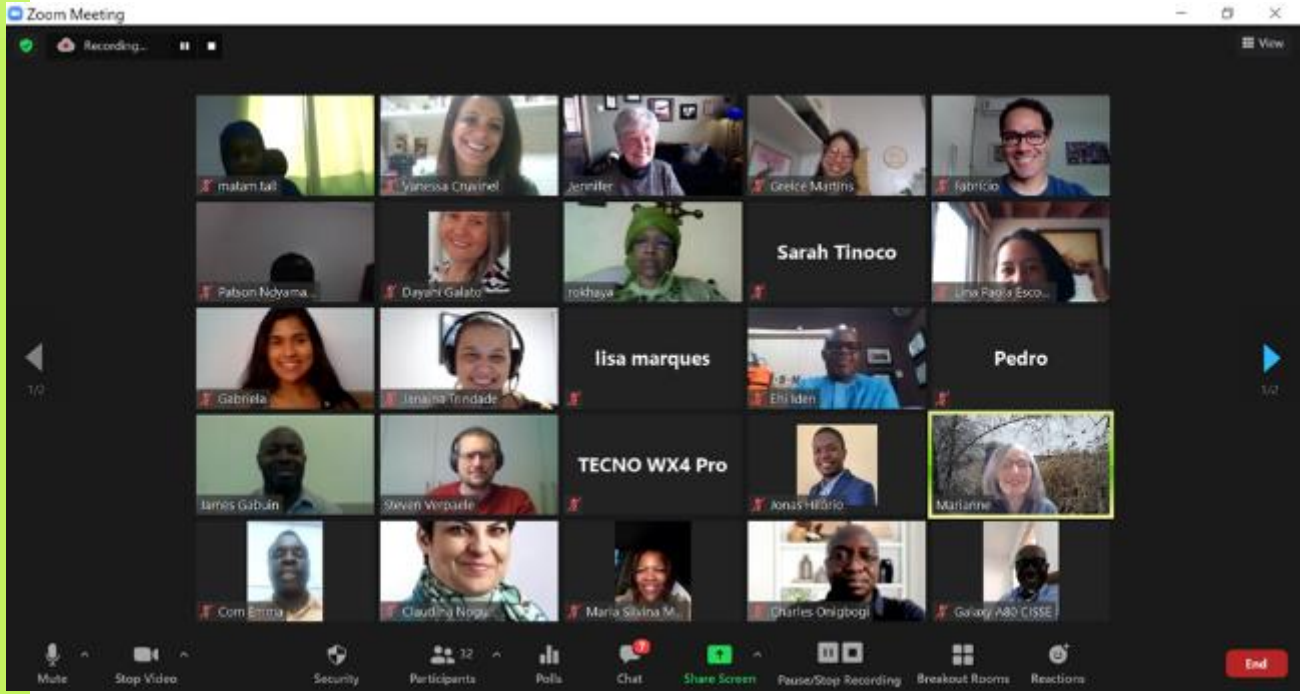
Mentor Program

Our mentor program matches experienced occupational hygienists with new hygienists who want technical and career guidance



During Pandemic: All Virtual Training

Blended, Multilingual Virtual Basic OHA Awareness Training

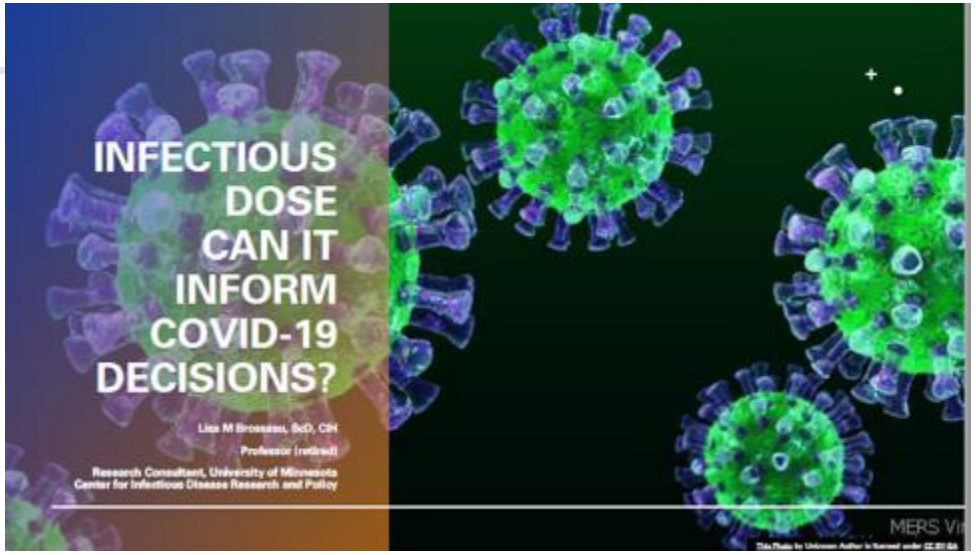


- Combined asynchronous OHTA e-course with live tutorials on Zoom
- Scholarships for e-course sponsored by BECOH Belgian Centre for Occupational Hygiene
- Tutorials in French, Portuguese and English
- Pilot well received; future sessions planned

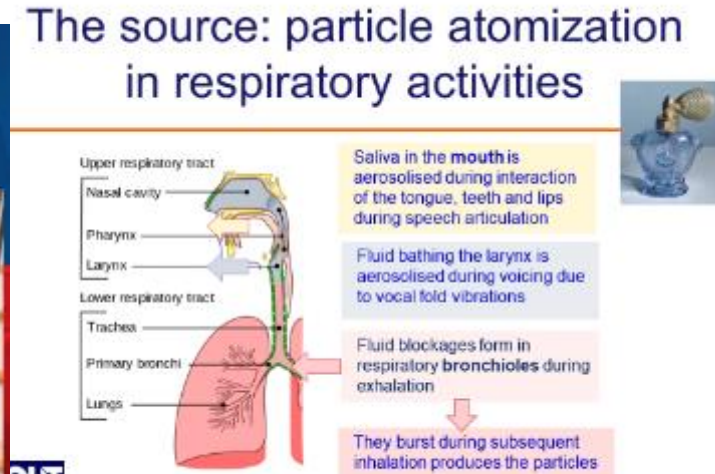
17 COVID Webinars in 2020-21

Topics including:

https://www.youtube.com/channel/UCj5PLvW65Lr0feLYGVLBnmQ



- Aerosol transmission
- Infection control
- Respirators
- Control Banding
- Ventilation
- Infectious Dose
- Schools
- Informal work
- What's happening in
  - China
  - Africa
  - Viet Nam
  - Brazil
  - Worldwide



What Have we Learned About Global Collaboration in Occupational Hygiene Education?

There is a big demand for occupational hygiene training in emerging economies

Demand for occupational hygiene knowledge among allied professionals – not necessarily career stream occupational hygienists – they want certificates for short courses that address a specific need

There is also a great demand for ongoing networking and mutual support activities

Experienced occupational hygienists with training and technical expertise are enthusiastic about volunteering to teach in areas where it is needed

Steadily improving internet capabilities are making online training more feasible

A variety of partner organizations are interested in collaboration with NGOs

Operational Plan - Action Areas

- Governance, Communications, Fundraising
- More co-ordination with branches
- Policy and Advocacy
- Research & Technical Assistance Projects
- Training – building a learning community

For more information

- www.whwb.org
- info@whwb.org
- youtube channel:

https://www.youtube.com/channel/UCj5PLvW65Lr0feLYGVLBnmQ

- Find us on **Facebook, Twitter (@WHWB15) & LinkedIn**

Thank you and questions

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