

**SCIENTIFIC SESSION VI**  
**Work of the Fellows (Oral)**

1. Child labor among Syrian refugees living in Lebanon: A story of deprivation and neglect *Rima R. Habib, Lebanon*
2. The legacy of mercury poisoning and racism: The case of a First Nation community in Canada *Donna Mergler, Canada*
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4. Migrants' health at risk: The Mediterranean case and the public and environmental health agenda *Rodolfo Saracci, Italy*

## Child labor among Syrian refugees living in Lebanon: A story of deprivation and neglect

Rima R. Habib<sup>1\*</sup>

<sup>1</sup>American University of Beirut, Beirut, Lebanon

*Background:* The eight-year Syrian War has resulted in a refugee crisis affecting millions of Syrians. The vast majority of refugees displaced outside of Syria reached neighboring countries, including over one million who are currently residing in Lebanon. Syrian refugees living in Lebanon experience extreme precarity, often lacking the resources and livelihood opportunities to safeguard their wellbeing. Familial poverty has forced many children to forgo schooling and enter the workforce in the agriculture, construction, and service sectors.

*Methods:* A household survey of Syrian refugee children studied the living and working conditions of children between 4 and 18 years, in 2017. The survey included 1,902 households in the informal, tented settlements of the Bekaa Valley in eastern Lebanon, an agricultural land bordering Syria. Face-to-face interviews using structured questionnaires were carried out with female homemakers who answered questions relating to working children between 4 and 8 years. Working children between 8-18 years were directly interviewed.

*Results:* Data analysis showed that out of 6972 children (4-18 years) living in the surveyed households, 4592 were working (66%). The survey reached 4377 working children (52% males and 48% females). The average age for starting work was 10.9 years. Around 50% of the working children did not go to school because of work and only 18.3% were enrolled in some form of schooling. The majority of children (75%) worked in agriculture and 30% reported having been injured at work. Seventy-nine children reported knowing another child who died following a work accident.

*Conclusion:* Widespread child labor is consequential for this generation of Syrian refugee children, as they and their families grapple with the present and future implications of lost childhoods and opportunities. Immediate interventions are needed to protect the children and ensure their wellbeing.

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**\* Presenting author profile:**

Rima R. Habib - E-mail: rima.habib@aub.edu.lb

Dr. Rima R. Habib is a Professor of Environmental and Occupational Health and the Chair of the Department of Environmental Health at the Faculty of Health Sciences. She served as the Chair of the Technical Committee on Gender and Work in the International Ergonomics Association between 2010 and 2017. She has lead research focusing on the health of displaced, refugee and migrant populations. Her research is grounded in principles of social and environmental justice.

## The legacy of mercury poisoning and racism: The case of a First Nation community in Canada

Donna Mergler<sup>1</sup>, Judy Da Silva<sup>2</sup>, Aline Philibert<sup>1</sup>, Myriam Fillion<sup>3</sup>

<sup>1</sup>University of Quebec at Montreal, Montreal Canada; <sup>2</sup>Grassy Narrows First Nation, Ontario Canada; <sup>3</sup>Teluq University, Montreal Canada

*Background:* The presentation begins with a video of Judy Da Silva, Anishinaabe grandmother from Grassy Narrows First Nation, recounting the 50-year old history of mercury (Hg) poisoning of their community and government response. Following the discharge of 10,000 kg of mercury (Hg) from a chlor-alkali plant, they lost their livelihood, health and dietary mainstay. Between 1970 and 1997, health authorities measured Hg in blood, hair and cord blood. Dr. Masazumi Harada from the Kumamoto Gakuen University and founder of the Open Research Center for Minamata Studies and colleagues visited several times and identified cases of Minamata Disease. Despite repeated requests from the community, no epidemiological study was performed. In 2016, Grassy Narrows invited us to (i) participate in a Community Health Assessment (CHA) and (ii) create a historical database of Hg biomarkers (HgDB).

*Methods:* The CHA added questions concerning Hg exposure and affects to the Canadian First Nations Regional Health Survey. Community members designed the recruitment strategy and conducted the survey. Participation rate on the reserve was 78.2%; 424 adults completed the survey for themselves and 353 children. The HgDB, derived from governmental archives, contains 3525 year-based data points for 648 living and deceased persons. Analyses include multiple regression models and longitudinal approaches.

*Results:* Results show that childhood mercury exposure is a major determinant of later life nervous system dysfunction. Illness prevalence in Grassy Narrows is similar to other First Nations in Canada except for Hg-related outcomes, which leaves them in a worse socio-economic situation. Longitudinal HgDB analyses confirmed childhood fish consumption is a major determinant of adult neurologic symptoms and well-being. For children, maternal fish consumption during pregnancy predicts health conditions that impact school performance and behavior.

*Conclusions:* Systemic racism led to non-recognition of serious health issues in this community. Findings support recommendations to improve community health and education.

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Donna Mergler - E-mail: [mergler.donna@uqam.ca](mailto:mergler.donna@uqam.ca)

Dr. Mergler is a Professor Emerita at the University of Quebec in Montreal, where she has been doing research with unions and communities for over forty years. Her research uses an ecosystem, community-based approach, grounded in interdisciplinarity, gender equality and integrating short and long-term solutions into the study design. For the past four years, she has been collaborating with the Grassy Narrows First Nation community to provide a scientific basis for the community's demands.

## 20 years after the Libby Montana asbestos response: Past, current, and future Issues and implications

Aubrey Miller<sup>1\*</sup>

<sup>1</sup>National Institute of Environmental Health Sciences, Bethesda MD USA

*Background:* Libby, Montana, the first U.S. Environmental Protection Agency (EPA) and Department of Health and Human Services (DHHS) Superfund Public Health Emergency involved widespread asbestos contamination and illnesses among workers and non-workers, reenergizing asbestos science and the need for improved health protections. It's been 20 year since the Libby response.

*Methods:* This presentation will focus on the Libby, Montana asbestos response and associated health effects, exposures, toxicology, risk assessment, risk management, and policy efforts. Extensive health and exposure studies at the site are summarized. Efforts to address the community health impacts, as well as environmental contamination at several hundred vermiculite processing locations, attic insulation in millions of homes, and other sites across the US will be presented.

*Results:* Ongoing issues and implications concerning the challenges of characterizing and controlling environmental exposures, "non-asbestos" hazardous mineral fiber exposures, and risks from naturally occurring asbestos contamination will be described.

*Conclusions:* Additional research and opportunities for advancing our occupational and environmental health research and policies to protect human health exist and are needed.

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Dr. Aubrey Miller is Senior Medical Advisor to the Director of the National Institute of Environmental Health Sciences (NIEHS), where he provides leadership and advice on NIEHS programs and policies, including asbestos-related activities. Formerly, as a Public Health Medical Officer for US DHHS and EPA, and co-Chair of the EPA Asbestos Technical Review Workgroup, he led the Libby, Montana health investigations, remediation efforts, health care initiatives, research and policy efforts.

## Migrants' health at risk: The Mediterranean case and the public and environmental health agenda

Rodolfo Saracci<sup>1\*</sup>

<sup>1</sup> Former President, International Epidemiological Association, Chicago IL USA

*Background:* Migrants make media headlines mostly as victims of catastrophic 'in transit' events or because of newly added and tightened security policies aimed at blocking their arrival. The role of natural and man-made environmental hazards in the etiology of migration and the public health dimensions of migration are usually confined to marginal or lip service attention.

*Approach:* Although representing only a small fraction of the total world migration, the Mediterranean flow of migrants to Europe is highly informative of the spectrum of issues involved in today's migration flows, especially to high income countries, and has been selected for analysis.

*Results:* The flow has been characterized by an increase since the early years of this century, reaching a peak in the mid 2010s followed by a marked decrease. In sharp contrast the risk of death at sea has been increasing while the systems of life and health protection have evolved in a disorderly way, often hampering the operations of NGOs specialized in these tasks. Features of origin, transit, and arrival of migrants along different routes are described and compared, attempting to untangle the factors affecting migrants' health.

*Discussion and conclusions:* A most notable feature of the migrant flow to Europe, in particular by sea, is the heavily lopsided 'security' approach to it by governments and in the media and large sections of the population. There is a pressing need - persistent since I called attention to it (BMJ-Opinion/Global Health/31 August 2018) - for a change in perspective and action agendas, regarding migrants flows chiefly as the result of environmental hazards and treating migrants first of all as vulnerable population groups in the public health sense.

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Rodolfo Saracci, MD, FFPH (UK) has held senior positions, including Chief of analytical epidemiology, at the WHO International Agency for Research on Cancer in Lyon, developing international research programs on environmental and occupational cancer and participating in the Monographs program on carcinogenic hazards evaluation. The environmental and social health determinants have been his guiding priorities as founder and teacher of the European "EEPE" Summer School in epidemiology in Florence and while President of the International Epidemiological Association.



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