Respiratory effects/Diseases

0-214 SILICOSIS IN ARTIFICIAL STONE BENCHTOP WORKERS: A WARNING FROM AUSTRALIA

Doctor Ryan Hoy, Deborah Glass, Christina Dimitriadis, StellaMay Gwini, Fiona Hore-Lacy, Javier Jimenez-Martin, Michael Abramson, Malcolm Sim, Karen Walker-Bone. Monash University, Melbourne, Australia

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Introduction The stone benchtop industry is a multi-billion dollar sector worldwide. High-silica content artificial stone has rapidly become a very popular material used to produce benchtops in many countries, including Australia. The Victorian Silica-associated Disease Registry was developed to record incident cases of silicosis occurring in Victoria, Australia.

Material and Methods Since mid-2019 cases of silicosis have been voluntarily reported by respiratory physicians to the Registry. During the same period a protocolised, government funded screening programme for stone benchtop workers has been in operation. The screening protocol includes high resolution CT chest imaging, respiratory function tests and a panel of blood tests for at risk workers.

Results Two hundred and two stone benchtop industry workers with silicosis were reported over a 30 month period. Twenty-three percent had complicated silicosis. Seventy percent were male with a median age of 42 years (interquartile range 35 – 50), and 46% were born overseas in an Asian country. The median duration of work in the benchtop industry was 13 years for those with simple silicosis and 15 years for complicated silicosis. Ninety-six percent of the benchmark workers were produced with artificial stone, and 99% had been exposed to dry processing of stone. Eighty-two percent worked mostly in a factory environment and 18% were installers of benchtops. Respiratory function test parameters were significantly lower and median serum angiotensin converting enzyme level higher for complicated compared to simple silicosis. Anti-nuclear antibodies were detectable (titre ≥ 1:80) for 32% with silicosis.

Conclusions There has been a major outbreak of silicosis in the stone benchtop industry in Victoria, Australia. Considering the rapid increase in the use of high silica content artificial stone internationally, urgent action is required to ensure the occupational health and safety of workers in this industry.

Exposure assessment

0-22 PRESCHOOL TEACHERS’ WORKING ENVIRONMENTAL CONDITIONS – A PRELIMINARY SURVEY OF INDOOR AIR QUALITY IN NORTH TAIWAN

Hsi-Chen Kirthin Liu, 2Chin-Sheng Tang, 2Yu-Wen Lin, 2Department of Labor and Human Resources, Chinese Culture University, Taipei, Taiwan; 2Department of Public Health, Fu Jen Catholic University, New Taipei City, Taiwan

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Introduction Preschool teachers are special population comparing to other teachers because they almost have no individual time to leave classrooms except when bringing children to play outside. Therefore, this study aims to explore environmental conditions and examine the relationships between indoor air quality (IAQ) and environmental conditions.

Material and Methods IAQ data and environmental conditions were collected in three different types of preschools by portable IAQ monitor and activity log. Description of classroom was recorded by questionnaire including type of preschool (building with windows or not), location of building (beside street or not), and age of students. Portable IAQ monitor was used to collect data of PM10, PM2.5–10, PM2.5, Total VOCs, HCHO as well as CO, CO2, temperature, and relative humidity. Activity log was collected daily environmental conditions including type of activity (static class, dynamic class, snack/lunch time, nap time, or outside class), type of ventilation (natural or air conditioner), and occupant density. Random Forest Models were used to examine the relationships between indoor pollutants (PM10, PM2.5–10, PM2.5, Total VOCs, and HCHO) and environmental conditions.

Results The preliminary result shows that type of preschool, age of students, type of ventilation, type of activity, and occupant density were the top 5 factors associated with IAQ. It is recommended that the indoor lectures and outdoor activities can be arranged alternately in the school daily schedules to allow sufficient air exchange of the classrooms.

Work organisation, including precarious work/Working conditions

0-223 OCCUPATIONAL HEALTH & SAFETY SERVICES IN INFORMAL SECTORS IN INDIA: A LITERATURE REVIEW

Khyati Desai, Bhavin Dave. Reliance Industries Limited, Vadodara Manufacturing division, India

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Introduction Most of our workforce in India (92%) are working in informal sectors, while providing OHS services to them is a legal framework exclusion. This study is a literature review of existing OHS service provision in informal sector and identify opportunities to address them.

Methods This is a narrative review of the studies, which reported provision any occupational health services in informal sectors of India. A literature review was done by general web search using ‘google scholar’; specific website search using ‘cochrane, pubmed, academia, science direct, mendeley’ etc; government official websites and company official websites. The review included government reports, company reports, original articles, editorials and review articles. A total of 147 studies and reports were reviewed which mentioned key words ‘occupational health’, ‘informal sector’ and ‘India’.

Results While 99% literature mentioned about at least one of the OH services provision in informal sector, only 13% actually quantified any service provision. No literature reported active surveillance and notification of the occupational health hazards and diseases. Employer gave medical insurance to 2%-10% employees of informal sector. Only one original article reported use of PPEs in fishery by 1.2% employees. A few project-based OHS services provision reported. A bill for OHS code passed in parliament in 2020 again excluded informal sector by not defining beneficiaries.
Two studies reported Basic Occupational Health Services including Primary health care system as a promising strategy to fulfill the gaps in areas of surveillance, prevention and treatment of OH hazards and health issues.

**Conclusion** Occupational Health service provision even though excludes current legal framework in informal sectors, few efforts are done towards recognizing and fulfilling this gap. The solidification of OHS can be done by exploring its integration with primary health care set up of India in existing scenario.

### Respiratory effects/Diseases

**O-227** EFFECT OF OCCUPATIONAL EXPOSURE TO VOLATILE ORGANIC COMPOUNDS AND INORGANIC DUSTS ON RESPIRATORY HEALTH

1Priscilla Johnson, 2Lavanya Sekhar, 3Durai Santhanam, 4Vidhya Venugopal. 1Professor and Head Department of Physiology Sri Ramachandra Medical College and Research Institute SRIHER (DU) Porur, Chennai, India; 2Tutor, Department of Physiology, Sri Ramachandra Medical College and Research Institute, SRIHER (DU), India; 3Project Manager, Department of Environmental Health Engineering, Faculty of Public Health, SRIHER (DU), India; 4Professor and Certified Industrial Hygienist (BOHS), Department of Environmental Health Engineering, Faculty of Public Health, SRIHER (DU), India

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**Introduction** Worldwide, workplace exposure to inorganic dusts and volatile organic compounds (VOCs) have detrimental effect on respiratory health and is a major public health challenge among industrial workers. The characteristic of the respiratory disease outcome is influenced by nature of the inorganic dust or VOCs, dose, duration of exposure and genetic factors. Hence, this study was conducted to evaluate the impact of occupational exposure to varied air pollutants among workers in unorganised and organised industrial sectors.

**Methodology** This cross-sectional study was conducted among 150 workers of age within 30–60 years after getting approval from Institutional Ethics Committee and authorities. Subjects with known history of tuberculosis, malignancy, and recent surgery were excluded. Exposure assessment was obtained using a validated questionnaire. The airborne concentration of top 10 VOCs were measured using gas chromatography. Respirable dust and total dust monitoring were carried out with area air samplers as per NIOSH guidelines. Pulmonary function parameters were measured using spirometry.

**Results** This study showed that cumulative VOC exposure index of construction painters was 5.73ppm. Total and respirable dust concentration ranged from 0.1 – 13.7 mg/m³ and 0.07 – 5.2 mg/m³ respectively. The mean Forced Expiratory Volume and peak expiratory flow rate of industry workers were 2.69 ±0.48L and 5.89 ± 1.7L/s respectively. The chief lung function parameters were lower in high exposure (above threshold limit) group than the low exposure group in steel industry.

**Conclusion** This study demonstrated a decline in the pulmonary function parameters among steel industrial workers than the painters exposed to VOCs. However, the strength of association varied with age, region and duration of exposure. The findings of this study has provided a clear insight about the varied health impacts of VOCs and industrial dusts which would pave way for creating awareness and developing appropriate protective intervention programs.

**Noise**

**O-23** PREVALENCE AND FACTORS ASSOCIATED WITH OCCUPATIONAL NOISE INDUCED HEARING LOSS AMONG EMPLOYEES OF AN INTERNATIONAL AIRPORT OF WEST BENGAL, INDIA

1Alapan Bandyopadhyay, 2Abhijit Mukherjee, 3Arup Jyoti Rout, 4Gautam Dhar. 1Senior Resident, Department of Community Medicine, North Bengal Medical College and Hospital, India; 2Associate Professor, Department of Community Medicine, NRS Medical College, Kolkata, India; 3Assistant Professor, Department of Community Medicine, North Bengal Medical College and Hospital, India; 4Professor, Department of Community Medicine, Bankura Sammilani Medical College and Hospital, India

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**Introduction** Occupational noise induced hearing loss (ONIHL) is the commonest occupational disease globally, affecting workers spanning a wide range of industries. However, literature on ONIHL in workers of airports in developing countries is scarce. The current study tries to address this gap by assessing the burden of ONIHL and its associated factors among employees working at an international airport of Eastern India.

**Methodology** A cross-sectional study was conducted from April 2020 to March 2022 among 212 airport employees divided into 3 groups based on their area of employment, viz. airfield (97), terminal (89), and administration (26). All employees had been working in the airport for >1 year. Noise induced hearing loss among the employees was measured using a portable audiometer, and data regarding associated factors collected using a questionnaire.

**Results** The mean age was 34.1±9.2 years, 89.2% were men. Most participants were from the upper and middle socioeconomic classes. 50% of the employees wore hearing protection equipment when working, with earplugs being the most common. The prevalence of ONIHL was found to be 7.6%, with the highest among employees working in the terminal area (8.9%). Only the non-use of hearing protection equipment was significantly associated with the development of ONIHL (p-value 0.003). No significant association was observed for age, sex, education, years of work, area of employment and number of primary working stations.

**Conclusion** ONIHL was found to be prevalent among employees working at the airport, and focus should be on ensuring use of protective equipment to combat the problem.

### Occupational epidemiology in unorganised sectors: agriculture, construction, service sectors

**O-235** CLIMATE CHANGE IMPACTS ON OUTDOOR WORKERS – PRESENTING EPIDEMIOLOGICAL EVIDENCE FROM AGRICULTURE AND CONSTRUCTION SECTORS

Vidhya Venugopal. Department of Environmental Engineering, Faculty of Public Health, SRIHER, Porur, Chennai, India

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**Introduction** Climate change and extreme heat events threaten the global work force. Outdoor workers are particularly at...