

0035 **CANCER RISK IN OIL REFINERY WORKERS: A MORTALITY STUDY IN FOUR ITALIAN PLANTS**

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**Objectives** To examine the mortality experience of workers employed in four Italian oil refineries.

**Method** The cohort included 5112 male workers ever employed between 1949 and 2011. The average follow-up period was 49 years. SMR and 95% CI were calculated using as reference age-gender-calendar specific regional rates. Analyses by duration of employment and latency were performed.

**Results** In the whole cohort, pleural (6 deaths, SMR 1.59; 95% CI 0.7–3.5), brain cancers (14 deaths, SMR 1.47; 95% CI 0.9–2.5) and lymphatic leukaemia (LL) (8 deaths, SMR 1.81; 95% CI 0.9–3.6) showed increased risks. All pleural cancers occurred after 10 years of latency and the highest risk was observed among workers with duration  $\geq$  20 years; the brain cancer excess was confined in the shortest duration and latency. The LL excess regarded workers with latency and duration longer than 10 years. Mortality from Non-Hodking lymphoma (NHL) (13 deaths) and acute myeloid leukaemia (AML) did not differ from the expectation. All AML cases (4 deaths) occurred after 20 years of latency (SMR 1.55, 95% CI 0.6–4.1) and a two fold-increased risk was observed in the longest duration. Mortality for NHL + LL (recently classified as subtypes of NHL) showed increased risks among workers with duration and latency longer than 20 years.

**Conclusions** Our findings confirmed recent epidemiological evidences of an increased risk for pleural cancer and are coherent with most recent meta-analyses suggesting a limited evidence of an increased risk for lymphatic neoplasms in refinery workers possibly due to past exposure to benzene.

0038 **CHILDREN BELOW 5 YEARS OF EMPLOYED MOTHERS ARE LESS EXPOSED TO ACUTE POISONING IN ALEXANDRIA, EGYPT**

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**Objectives** To identify the incidence rate and determinants of acute poisoning among children (1–60 months old) of employed mothers.

**Method** A study was conducted at the poisoning unit of a university hospital. The studied children were from both rural and urban areas, were a mix of boys and girls, did not suffer from any mental disabilities, were aged between 1 month old to 60 months old, and were of Egyptian nationality. Data was collected by using a clinical examination form and a questionnaire. All parents/carers of the studied children were interviewed as well. Clinical assessment of the children included: general health conditions; AVPU (alert, respond to verbal stimuli, respond to painful stimuli, unconsciousness); and clinical examinations.

**Results** 18.5% of total admissions were children (1–60 months old), 62.5% were males, 83.3% did not attend nursery, 79.9% were from urban areas, 33% of mothers were illiterate, and 60.2% of poisonings were due to household products. Kerosene alone was implicated in 24.3% of all cases; 37.4% of cases took

place in the kitchen; 47.4% of cases were poisoned during the period between 8am and 4pm, and 65.4% reached the poisoning unit within 2 to 4 h of accidental poisoning. Risk factors among the studied children were ordered by stepwise regression analysis as the following: non employed mothers; children who did not attend nursery; children of the male gender; and the education and literacy level of their mothers.

**Conclusions** Children of non employed mothers are at more risk for acute poisoning.

0041 **ASSOCIATIONS OF THERMOPHILIC ACTINOMYCETES AND NON-TUBERCULOUS MYCOBACTERIA WITH RESPIRATORY HEALTH IN OCCUPANTS OF A WATER-DAMAGED OFFICE BUILDING**

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**Objectives** We examined microbial correlates of health outcomes in employees in a building with a sarcoidosis cluster and excess asthma.

**Method** We offered employees a questionnaire and pulmonary function tests (PFT) and collected 120 floor dust samples by vacuuming workstation areas or the exterior rim of the floor. We analysed dust for culturable fungi, bacteria, actinomycetes, non-tuberculous mycobacteria, and cell wall components of fungi [(1 $\rightarrow$ 3)- $\beta$ -D-glucan] and Gram-negative bacteria (endotoxin).

**Results** Among 136 employees, 77% participated in the questionnaire, 64% in PFTs, and 49% in both. Of the 105 questionnaire participants, 50 (48%) reported at least one hypersensitivity pneumonitis (HP)-like symptom (shortness of breath on exertion, flu-like achiness, or fever and chills) in the last 4 weeks; 69 (66%) reported at least one HP-like symptom in the last 12 months. PFT results were abnormal or borderline for 13 participants (6 obstruction; 2 restriction; 2 mixed pattern; and 3 borderline obstruction). In multivariate logistic regressions, log-transformed levels of thermophilic actinomycetes (GM=580 CFU/m<sup>2</sup>) were positively associated with HP-like symptoms in the last 4 weeks [odds ratio (OR)=1.6, 95% confidence interval (CI)=1.15–2.35] and 12 months (OR=1.6, 95% CI=1.09–2.32), and with an abnormal/borderline PFT result (OR=1.7, 95% CI=1.04–2.88). Log-transformed mycobacteria levels (GM=960 CFU/m<sup>2</sup>) were marginally positively associated with HP-like symptoms in the last 4 weeks that improved when away from the building (OR=1.9; 95% CI=0.95–3.85). These associations were not confounded by smoking, gender, age, or building tenure.

**Conclusions** Our study suggests that thermophilic actinomycetes and non-tuberculous mycobacteria may have played a role in the respiratory illness among occupants of this water-damaged building.

0043 **BENIGN PLEURAL ABNORMALITIES AND MESOTHELIOMA AMONG ASBESTOSIS WORKERS IN HONG KONG**

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**Objectives** To evaluate whether the presence of pleural abnormalities was a reasonable marker to predict mesothelioma among workers with asbestosis in Hong Kong.

**Method** This is a historical cohort study comprised of 99 male asbestosis workers registered in the Pneumoconiosis Clinic under Hospital Authority of the Hong Kong Government during 1981–2008 who had records of chest radiograph at the time of diagnosis of asbestosis. All asbestosis workers were followed up till 31/12/2008 and the rate of follow-up was 97%. We calculated the sensitivity and specificity of the presence of benign pleural abnormalities (i.e., the presence of benign plaques and/or thickenings at the initial chest radiograph) using mesothelioma deaths as the “good standard”; meanwhile, the positive predictive value (PPV) and negative predictive value (NPV) were also calculated.

**Results** Benign pleural abnormalities appeared in the initial radiograph for 54 asbestosis workers. We observed 15 mesothelioma deaths and 4 of them had benign pleural abnormalities at the initial chest radiographs. The sensitivity, specificity, PPV, and NPV for using the baseline benign pleural abnormalities to predict mesothelioma deaths was 0.27 (95% CI: 0.078–0.55), 0.63 (95% CI: 0.52–0.73), 0.11 (95% CI: 0.032–0.27), and 0.83 (95% CI: 0.71–0.91). These results remained unchanged when workers with co-presenting cancer at the baseline were excluded from the analyses.

**Conclusions** This study suggests a relatively limited value for using benign pleural abnormalities as markers to predict mesothelioma deaths in workers with asbestosis. [Acknowledgement: CUHK Direct Grant (Project code.: 2041587), Hong Kong]

#### 0045 CHARACTERISING ADOPTION OF PRECAUTIONARY RISK MANAGEMENT GUIDANCE FOR NANOMATERIALS, AN EMERGING OCCUPATIONAL HAZARD

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**Objectives** Exposure to engineered nanomaterials, ENM, (substances with at least one dimension of 1–100 nm) has been of increased interest, with the recent growth in production and use of nanomaterials worldwide. Various organisations have recommended methods to minimise exposure to ENM. The purpose of this study was to evaluate the extent to which U. S. companies follow the guidelines for reducing occupational exposures to ENM, including those issued by the National Institute for Occupational Safety and Health (NIOSH).

**Method** We collected and reviewed survey data, field reports, and field notes for all NIOSH nanomaterial exposure assessments conducted between 2006 and 2011 to: (1) determine the level of adoption of precautionary guidance on engineering and administrative controls and personal protective equipment (PPE), and (2) evaluate the reliability of companies’ self-reported use of engineering and administrative controls and PPE.

**Results** Use of PPE was reported by 89% of 46 surveyed or visited companies, and 83% reported using engineering controls for at least some processes to protect workers from

airborne exposures to nanoscale materials. In on-site evaluations, we observed that more than 90% of the 16 engineered carbonaceous nanomaterial companies that responded to an industrywide survey were using engineering and administrative controls and PPE as reported or more stringently than reported.

**Conclusions** Since PPE use was slightly more prevalent than engineering and administrative controls, better communication may be necessary to reinforce the importance of the hierarchy of controls. These findings may also be useful in conducting exposure assessment and epidemiologic research among U. S. workers handling nanomaterials.

#### 0046 THE SHIFTWORK AND THE COMMON MENTAL DISORDERS AMONG NURSING WORKERS

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**Objectives** This study aimed to identify the occurrence of Common Mental Disorders (CMD), and its association with the shiftwork among nursing workers.

**Method** This is an exploratory study, cross-sectional with quantitative approach that aimed to identify the occurrence of Common Mental Disorders (CMD), and its association with the shiftwork among nursing workers. The research was conducted in a public University Hospital specialised in cardiology, pulmonology, thoracic and cardiac surgery. The sample consisted of workers who work in nursing care units, semi-intensive and intensive, paediatric and neonatal, making a total of 92 participants. For quantitative data collection was used an instrument of socio demographic and the Self-Reporting Questionnaire (SRQ-20). The collection period was between June and July, 2012.

**Results** The result of the analysis revealed the occurrence of CMD in 44.60% (41) of the nursing workers. Regarding CMD, the answer of the workers was distributed according to the four groups of prognostic evaluated by the SRQ-20: Somatic Group, Decrease of vital energy, Anxious-depressive humour and Depressive thoughts. In relation to social demographic variables and CMD, there was no statistic association.

**Conclusions** The results show the importance of protective measures of mental health for workers since the shiftwork brings strain processes.

#### 0047 HEALTH DISORDERS BETWEEN NURSING STAFF IN A PUBLIC HOSPITAL OF SAO PAULO

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**Objectives** This study aimed to identify the injuries and disorders occurred with the nursing staff through the Surveillance System for Nursing Workers Health -SIMOSTE and describe the consequences of injuries.

**Method** This is an exploratory and quantitative study conducted in a public hospital of Sao Paulo. The data were