

Occupational Optometry Clinic, and if required is referred to an ophthalmologist.

Results Based on the screening criteria, 20 000 employees are eligible for the program. Approximately 3000 employees are scheduled for screening annually. Nearly 60% of enrolled employees are assessed per department. Many of those screened require health awareness related to ocular dryness and prescription-related changes. In addition early vision changes were found to be due to diabetes, cataracts, and glaucoma. About 50 annually require specialist referral.

Discussion Using a visual task analysis, the program has improved visual deficiency at Saudi Aramco. Prior to the program, many participants had not been aware of a problem. In the poster, three cases (early onset glaucoma, diabetic retinopathy, and retinitis pigmentosa) where early diagnosis and intervention prevented permanent visual impairment will be discussed.

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RISK OF PROSTATE CANCER AMONG FIREFIGHTERS: A REVIEW AND META-ANALYSIS OF STUDIES PUBLISHED AFTER 2007

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Introduction Prostate cancer is the most common cancer among men; however, little is known about its aetiology. Several studies have indicated that firefighters have an increased risk, but the results have not been consistent. Firefighters are exposed to many harmful substance in their work, some of which are carcinogenic. Two reviews with meta-analyses, including studies through 2003 and 2007, respectively, found that firefighters had approximately 30% elevated risk of prostate cancer. Our objective was to perform an updated review and meta-analyses of studies published after 2007.

Methods We performed a literature review of original articles of prostate cancer in firefighters, published between January 2008 and May 2017. For the meta-analysis, we selected relevant longitudinal studies and calculated summary risk ratios (sumRRs).

Result Six studies, published 2008–2016, with a total of 5097 prostate cancer cases, were selected for the analysis; four were cohort studies and two case-control. Eight risk estimates were included in the meta-analysis, seven incidence based, one mortality based. All showed weak to moderate positive associations between firefighting and prostate cancer, although some not statistically significant. Meta-analysis of five incidence based risk estimates from cohort studies, gave sumRR 1.20 (95% CI: 1.05 to 1.36). Results based on the two case-control incidence studies gave sumRR 1.24 (0.90–1.70). When all eight risk estimates were included in the meta-analysis, sumRR was 1.19 (1.08–1.32). Further analyses, however, showed significant heterogeneity between the studies.

Discussion The results showed that firefighters had approximately 20% increased risk of prostate cancer, somewhat lower than the previous two meta-analyses found. However, occupational title may be an inaccurate measure of carcinogenic exposures and thus lead to underestimation of the cancer risk. On the other hand, reasons other than a causal relationship, particularly surveillance bias, caused by regular health examinations among firefighters, cannot be excluded.

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POLYCHLORINATED BIPHENYLS AND DEPRESSION – FIRST HINTS FOR A PATHOMECHANISM VIA THE THYROID AND DOPAMINE SYSTEM IN HUMANS

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Introduction After PCB (polychlorinated biphenyls) exposure the development of depression has been described (Fitzgerald, *et al.* 2008). In general, depressive symptoms are associated with lower dopamine concentration and disturbed thyroid function. Thyroxin (T4) is necessary for dopamine synthesis in the brain (Hassan, *et al.* 2013). Bound to transthyretin (TTR); T4 is transported into the brain. Since PCB can displace T4 by binding to TTR itself (Hamers, *et al.* 2011); the concentration of free T4 (fT4) increases under PCB exposure. This study investigates the interaction of PCBs and fT4 related to the dopamine metabolite homovanillic acid (HVA) as well as to depression in humans.

Methods This study is part of the HELPCB (Health Effects in high Level exposure to PCB) surveillance program. Altogether, 109 occupationally exposed individuals [m=101 (92.7%); age: mean=44, SD=12.8] participated at three yearly assessments. Individuals with thyroid- or dopamine-relevant medication were excluded. PCBs were measured in plasma (µg/L), fT4 in serum, HVA in urine and depression was assessed with the PHQ-9 (Löwe, *et al.* 2002). PCB-congeners were summed up to LPCB (lower-chlorinated), HPCB (higher-chlorinated) and dlPCB (dioxin-like). A sum variable was generated for the PHQ-9. The interactions of PCBs and fT4 related to HVA and depression were tested with mixed models.

Result Significant interactions related to HVA were found for all PCB-subtypes (e.g. LPCB: B=-0.5, p<0.01). Under high PCB-exposure high fT4 levels are associated with a lower HVA concentration and vice versa. The interaction related to depression was only significant for LPCB (B=0.1, p<0.01). More depressive symptoms were found for high PCB-exposure with increasing fT4 level and vice versa.

Discussion The interactions related to HVA support the postulated pathomechanism via TTR. Individual and environmental factors may be a reason that the interactions for the behavioural outcome of depressive symptoms were only partially confirmed.

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ANNUAL CHECK-UP: A RELEVANT TOOL FOR WORKER'S WELLBEING AND WORKPLACE HEALTH PROMOTION

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Introduction Annual check-up is one important component of periodical medical examination legally instituted by labour code in workers' health surveillance. It allows the assessment of the health status of the worker in order to renew his/her medical fitness to his/her job and to detect any illness related or not to work. Thus the outcomes obtained help us to design appropriate action plan for both prevention of occupational hazards and health promotion.

Methods Annual check-ups done every year from 2012 to 2016 in two medium-sized enterprises allow me to conduct a retrospective study on records of more than 300 workers every year. Then I compare the outcomes between the workers of the same enterprise and between the workers of the two companies in terms of prevalence, and of types of illnesses and occupational risk factors related to them.

Results and discussion Annual check-up is legal prescription for every enterprise in Senegal and more than 90% workers undergo this medical survey done by an occupational physician. The company profile is established and allow us to see interesting differences and or similarities.

Conclusion Annual check-up is a powerful tool and a good opportunity for both occupational hazards prevention and health promotion for the wellbeing of workers and for the performance of enterprises.

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MINI SYMPOSIUM FOR ASEAN DIAGNOSTIC CRITERIA FOR OCCUPATIONAL DISEASES

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Introduction The Association of South East Asian Nations (ASEAN) was formed in August 1967 as a regional grouping to promote economic growth and socio-cultural progress. The founder members were Indonesia, Malaysia, Philippines, Singapore and Thailand. It expanded to a group of ten Asian countries, with the further inclusion of Brunei, Cambodia, Laos, Myanmar and Vietnam. By the end of 2015, it was intended that a closer ASEAN community linkage would be fully established through economic integration, cooperation and harmonisation which we can foresee the migration of workforces between ten ASEAN countries. With the formation of ASEAN community, there was also a recognition that there should be harmonisation of occupational health services, especially the standards and procedures including diagnostic criteria for occupational diseases.

Methods There were 5 meeting on these ASEAN Diagnostic Criteria for Occupational Diseases (ADCOD).

Results The ADCOD that was finished were Occupational Asthma, Occupational contact dermatitis, Heat stress, Occupational Noise Induced Hearing Loss, Chronic Silicosis, Occupational Pesticide Poisoning: Organophosphate and Carbamate Poisoning, Disease caused by lead and its Toxic Compounds: Inorganic Lead Poisoning, Carpal Tunnel Syndrome and Asbestosis. The criteria that was recently discussed in the 5th meeting are Diseases caused by Arsenic and its toxic compounds, Poisoning due to Trichloroethylene, Occupational diseases due to Vibration, Occupational Hepatitis B viral disease, Rotator cuff tendinopathies, Decompression illness and Mercury poisoning. We will discuss further how to execute these criteria to the ASEAN country. We also discuss about the ASEAN Network on Occupational Diseases Reporting-ANODE in which we will have the statistic of Occupational Diseases in each country in real time. This is very useful for preventing diseases.

Conclusion After we finished the meeting in June. We will have 16 ADCOD. This is very helpful for the Occupational Health system in ASEAN for we will have the criteria for

diagnosis in the same in all ASEAN country. The diagnosis will be accurate for monitor the occupational health system. If there is a disease there will be some mistake in the system that need to correct. We will soon have the Network for Occupational Diseases reporting that will be very useful for ASEAN countries.

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OCCUPATIONAL METHANOL EXPOSURE IS NOT RELATED TO CANCER MORTALITY: 12-YEAR FOLLOW-UP STUDY FOR TWENTY-FIVE THOUSAND MALE WORKERS IN KOREA

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Introduction An International Agency for Research on Cancer (IARC) Advisory Group recommended priorities for IARC Monographs during 2015–2019 in Lyon on April, 2014. They recommended methanol as medium priority of review. The background was three animal carcinogenicity studies. However there were no available studies of cancer in humans and has not been previously evaluated by IARC. So we analysed the cancer mortality of methanol exposed male workers in Korea.

Methods A cohort was comprised of 25 218 methanol workers working between January 1, 2000, and December 31, 2004. These cohort members were matched with the mortality data of the Korean National Statistical Office to follow-up for cancer mortality between 2000 and 2011. Standardised Mortality Ratios (SMRs) of methanol exposed workers with reference to Korean men were calculated. Also controlling age, calendar year and other carcinogen exposure including hepatitis B and C, the Adjusted Hazard Ratios (AHRs) of workers categorised by the 2 groups of methanol exposure level (10% to 50%, over 50% of TLV) with reference to workers with less than 10% were calculated.

Result There were no significantly increased SMRs. But, significantly decreased SMRs were observed overall cancer (SMR=0.70, 95% CI: 0.58 to 0.84) and liver cancer (SMR=0.68, 95% CI: 0.47 to 0.94). There were no significantly increased or decreased AHRs of cancer mortalities in workers exposed to methanol with 10%–50% of TLV and over 50% of TLV compared to workers with less than 10% of TLV.

Discussion In this study short follow-up periods and healthy worker effect (HWE) may hamper observation for increasing cancer mortality of methanol exposed workers comparing to that of Korean male. However based on no increased AHRs of workers with relatively higher level of methanol exposure, methanol might not be related to cancer development considering metabolic pathway different from ethanol. Continuous follow-up to overcome HWE and cancer morbidity study are needed to confirm this study result.

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