consideration of time since median exposure and dose rate) and arsenic no increase in risk below 10 mg/m^3-years was observed. Fixing the parameter estimate of the ERR in this range at 0 provided the best model fit with an ERR of 0.065 (95% CI: 0.043, 0.087) above 10 mg/m^3-years. The silica-induced lung cancer risk decreased with increasing attained age. Data of a nested case-control study did not indicate a major correlation between silica and smoking status.

Conclusions The study confirms a positive exposure-response relationship between silica and lung cancer, particularly for high exposures. No clear evidence was observed in the low-dose range. Confounding by smoking is unlikely but residual confounding cannot be fully excluded.

363 DOES INHALATION OF SILICA DUST CAUSE CHRONIC RENAL DISEASE? - A SYSTEMATIC REVIEW

M M Möhner, Gellissen, Pohrt. *Federal Institute for Occupational Safety and Health, Berlin, Germany*

10.1136/oemed-2013-101717.363

Objective To prove the evidence for a causal relationship between exposure to silica dust and chronic renal disease, in particular Glomerulonephritis (GN)

Methods The review is based on a search of the Medline database for relevant epidemiological studies published between 1987 and 2012. The quality of selected papers was evaluated based on the Newcastle-Ottawa Scale and the CASP checklist. Meta-analyses were performed separately for cohorts of workers compensated for silicosis and for industry-based cohorts. In addition, synopses were undertaken for studies based on quantitative exposure estimates and for studies using end-stage renal disease (ESRD) as the outcome.

Results The review includes 10 cohorts of silicotics, 12 industry-based cohort studies, 5 case-control-studies and one pooled analysis. The pooling of the cohorts of silicotics did not show any excess risk for renal diseases (ICD-9: 580–589; SMR = 1,00 $[0.84–1.18]_{95\%}$). By contrast, the meta-analysis of the industry-based cohort studies showed an elevated risk (SMR = 1,42 $[1.15–1.75]_{95\%}$) when applying a random effects model to account for the strong heterogeneity of these studies. Five of those studies investigated the incidence of ESRD as the outcome. The corresponding relative risk estimators were in the range of 0.77 to 1.97, two of them were significantly elevated ($p < 0.05$). Three studies went further and investigated GN as the outcome. They resulted in markedly higher risk estimators (SIR in the range of 3.85 to 4.27) then for ESRD. Results could have been affected by a possible diagnostic bias and confounding by other occupational risk factors.

Conclusion The review does not provide sufficient evidence for establishing a causal link between exposure to silica dust and chronic renal disease. To clarify this relationship, further longitudinal studies are needed, which should make use of clinical or even pre-clinical data, including data of health surveillance programs for workers with high exposure to silica dust.

364 SMOKING CESSATION AND LUNG CANCER MORTALITY IN A HISTORICAL COHORT OF WORKERS WITH SILICOSIS IN HONG KONG, 1981–2006

[1]Tse, [2]Leung, [1]Qiu, [1]Yu. *[1]The Chinese University of Hong Kong, NT, Hongkong; [2]Pneumoconiosis Clinic, Department of Health, Hong Kong SAR, China*

10.1136/oemed-2013-101717.364

Objectives To evaluate the impact of smoking cessation on the risk of lung cancer mortality among workers with silicosis.

Methods We recruited all 3202 incident cases of silicosis in Hong Kong from 1981 to 2005 and followed up them till 2006 to ascertain the causes of death. The follow-up rate was 97.5%. We collected each worker's socio-demographics, lifetime smoking habits, lifetime occupational history, and medical history at the initial assessment of diagnosis. We obtained the most recent information on smoking status from medical record. Multiple Cox's regression analysis was performed to examine the impact of smoking cessation.

Results A total of 1562 deaths (48.8%) occurred and 157 of them were from lung cancer. Lung cancer mortality was strongly associated with smoking [former smoking: hazard ratio (HR) = 3.41, 95% CI: 1.23 - 9.46; current smoking: HR = 5.80, 95% CI: 2.13 - 15.74], and a significantly positive gradient was indicated with smoking pack-year and the years of smoking. Lung cancer mortality tended to decreasing at the 10th year of cessation (HR = 0.64, 95% CI: 0.40 - 1.04) and a substantial decrease was observed after the abstinence of smoking for 20 or more years (HR = 0.22, 95% CI: 0.11 - 0.44). Relative to never smokers, the hazard ratio for lung cancer mortality for silicotics who had never quit smoking was 7.09 (95% CI: 2.57 - 19.59) and it became 4.75 (95% CI: 1.71 - 13.16) for the new quitters who changed their behaviour during the follow-up period, whist a relatively lower risk (HR = 3.47, 95% CI: 1.25 - 9.61) was found among the persistent quitters.

Conclusions Lung cancer mortality decreased substantially with smoking cessation in workers with silicosis, particularly for those who persistently quit smoking for a longer period.

Acknowledgement Pneumoconiosis Compensation Fund Board, Hong Kong

365 PREDICTORS OF SILICOSIS IN AN INDUSTRY WIDE STUDY IN THE SOUTH AFRICAN GOLD MINING INDUSTRY

[1]R I Ehrlich, [1]Knight, [2]Fielding, [2]Jeffery, [2]Grant, [3]Churchyard. *[1]Centre for Occupational and Environmental Health Research, Cape Town, South Africa; [2]London School of Hygiene and Tropical Medicine, London, United Kingdom; [3]Aurum Institute, Johannesburg, South Africa*

10.1136/oemed-2013-101717.365

Objectives Despite the scale of the silicosis problem in the South African goldmining industry, studies in active miners are scarce. A large randomised cluster trial of isoniazid tuberculosis prophylaxis provided an opportunity to investigate the predictors of silicosis and variation in silicosis prevalence across goldmining shafts.

Methods This analysis was based on a random sample of routine annual chest radiographs of active miners entering the trial, taken between 2004 and 2009. All were read for silicosis using the ILO classification by an experienced lay reader. All films classified as abnormal and a random sample of normals were re-read by a 'B'-reader and these readings substituted for those of the lay reader in case of disagreement. The association between silicosis defined as ILO > 1/0 and age at radiograph, years since first employment, shaft and other occupational markers, was analysed.

Results A total of 14,434 radiographs from 15 goldmining shafts were read. Silicosis prevalence varied from 0.68% to 6.28% across shafts; 7.8 fold across the range in adjusted analysis. Silicosis showed a strong dose response relationship with years since