(bu nedir anlayamadım, yüzde ise parantez içinde yazalım). FVC mean value is 4.06 ± 0.88 ; FVC (%) mean value is 90.22 ± 16.27 . Results of FEV₁/FVC mean value is 80.98 ± 9.34 . According to ILO classification, 2.7% (n=3) of them is category 0, 42.3% (n=47) is category 1; 28.8% (n=32) is category 2% and 26.1% (n=29) is category 3. Five out of 10 cases (50.0%) with radiological major opacity are type A, the remaining five is type B.

Conclusion Silicosis is a preventable occupational disease, but it can be incurable at later stages which might lead to respiratory failure and death. The most common symptom of silicosis is exertional dyspnea. The duration of symptoms is 2 years. Category 3 and major opacities are seen at advanced stages and indicate a delayed diagnosis. We believe that taking preventive measures for risky workers such as dental technicians, monitoring in terms of disease development and providing early diagnosis is important in combating silicosis and its complications.

715 OCCUPATIONAL EXPOSURE TO TRICHLORAMINE AND TRIHALOMETHANES ADVERSE HEALTH EFFECTS IN REHABILITATION SWIMMING POOLS

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Introduction Studies have shown that employees and visitors at indoor swimming pool facilities are experiencing symptoms in the nose and throat, eye irritation and, in some cases, asthma. Due to chlorination, byproduct such as trichloramine and trihalomethanes can be present in indoor swimming pool air. This exposure has not been described in rehabilitation swimming pools that normally consists of smaller facilities and use warmer water compared to ordinary swimming pools.

Methods The occupational exposure of trichloramine and trihalomethanes in air has been studied at ten Swedish indoor swimming pool facilities. The study has also included the prevalence of ocular symptoms and symptoms and effects on the upper and lower respiratory tract. Nitrogen oxide (NO) in exhaled air has been investigated as a measure of early respiratory tract inflammation.

Results The average trichloramine concentration for personal measurements (n=17) was $23 \mu\text{g}/\text{m}^3$, varying between 1 and $76 \mu\text{g}/\text{m}^3$. Corresponding stationary measurements (n=27) performed at the pool side showed an average concentration of $30 \mu\text{g}/\text{m}^3$, varying between 1 and $140 \mu\text{g}/\text{m}^3$. A WHO reference value for trichloramine, based on stationary measurements, is set to $500 \mu\text{g}/\text{m}^3$. The levels of trihalomethanes for both personal (n=20) and stationary (n=35) measurements were less than 1% of the Swedish OEL for chloroform. Measurements of NO in exhaled air showed a change during shift when exposed (n=23) and controls (n=50) were compared.

Discussion Both personal and stationary measurements showed low levels of trichloramine and trihalomethanes. When comparing exposed and controls during shift, a difference of NO in exhaled air was noted.

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RARB GENE-POLYCYCLIC AROMATIC HYDROCARBONS INTERACTION EFFECT ON PULMONARY FUNCTION DECLINE AMONG COKE OVEN WORKERS

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Introduction Accumulating evidence indicates that gene and air pollution are associated with pulmonary function measurements. However, gene-air pollution interaction effect on pulmonary function decline remains largely unknown.

Methods A total of 1243 coke oven workers, followed up from October 2010 to October 2014, were included in the present study. Eighty-three pulmonary function strongly associated SNPs were included in the analysis. Total polycyclic aromatic hydrocarbons (ΣOH-PAHs) were determined in baseline urinary sample. Pulmonary function, forced expiratory volume in one second/forced vital capacity (FEV₁/FVC) and forced expiratory flow between 25% and 75% of vital capacity (FEF₂₅₋₇₅), was measured in 2010 and 2014 by spirometry. The decline meant that the values of pulmonary function parameters in 2010 minus the corresponding values in 2014. Multivariate linear regression model was used to evaluate gene-ΣOH-PAHs interaction effect on pulmonary function decline.

Result For RARB rs1529672, each A allele increase was associated with 0.87 (95% CI: 0.02, 1.73; p=0.045)% increased decline in FEV₁/FVC. When considering interaction of RARB rs1529672 with ΣOH-PAHs on pulmonary function decline, ΣOH-PAHs was not significantly associated with FEV₁/FVC decline in CC carrier [β (95% CI)=-0.55 (-3.80, 2.70)], but each 10-fold increase in ΣOH-PAHs was related to 3.85 (95% CI: 1.01, 6.69), and 9.44 (95% CI: 4.01, 14.87)% increased decline in FEV₁/FVC in AC, and AA carrier, respectively (P for interaction=0.0006). Similar results appeared for RARB rs1529672 and gene-ΣOH-PAHs interaction effect on FEF₂₅₋₇₅ decline.

Conclusion Our findings show that minor allele carrier of RARB rs1529672 is more susceptible to ΣOH-PAHs caused pulmonary function decline than major allele homozygote, and provide evidence for gene-ΣOH-PAHs interaction effect on pulmonary function decline.

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SERUM PROLIDASE ACTIVITY IN SILICOSIS

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Introduction Silicosis is the result of silica exposure. Many chemotactic mediators arise with toxicity resulting from exposure to silica particles and silicotic nodules occur from the

formation of collagen. Prolidase catalyses the hydrolysis of oligo/dipeptides which contains proline or hydroxyproline in the carboxyl terminal position. Many studies have identified prolidase activity at varying levels in fibrotic diseases. The aim of the study is to investigate the relationship between silicosis and prolidase activity.

Methods This study is a cross-sectional study. We reviewed medical records (functional status and radiological findings) and serum prolidase levels of 62 patients who were admitted to our centre between September and December 2015.

Result All cases were male and silicosis was diagnosed in 37 (%) of 62 cases. Prolidase level was significantly higher in patients with silicosis than in normal ($p<0.001$) (4877 ± 2324 vs 815 ± 520). Correlation analysis showed significant positive correlation between prolidase activity and ILO classification ($r:0.723$, $p<0.001$, figure 1A) and age ($r: 0.391$, $p:0.002$). Prolidase activity was negatively correlated with FEV1 ($r:-0.332$, $p: 0.008$) and FVC ($r:-0.295$, $p:0.020$).

Discussion Since prolidase is involved in collagen metabolism, its activity can be used for early diagnosis and follow-up of silicosis. Further studies are needed to clarify the etiopathogenic mechanisms of silicotic nodule formation and early detection of vulnerable population who had silica exposure before nodule formation.

242 PNEUMOCONIOSIS AMONG DENTAL TECHNICIANS

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Introduction Dental technicians are exposed to various chemicals, including silica particles and metals. The aim of this study is to explore the pneumoconiosis risk among dental technicians.

Methods This is a cross-sectional study. We reviewed medical records of patients diagnosed with pneumoconiosis who were admitted to outpatient occupational disease centre between 2013 and 2015. Pneumoconiosis was diagnosed by X-ray radiograms in accordance to ILO procedures and with High Resolution Computerized Tomography (HRCT).

Result Pneumoconiosis was diagnosed in 46 (65.7%) of the 70 dental technicians who were referred to our hospital. There were 45 (97.8%) male and 1 (2.2%) female cases. Radiologically, 16 cases were defined as 2/3 or more of profusion and 11 cases had large opacity. In 3 (6.5%) cases who had profusion 0/1, The most frequent findings are micronodules and lymphadenopathy in HRCT. Consolidation, conglomerate masses and ground glass opacities are also described alongside the reticular opacities. There was a poor correlation between pulmonary function tests and profusion, (correlation coefficient were between: -0.18 and -0.058). There was no correlation observed between profusion and age started to work and exposure duration.

Discussion The study showed that pneumoconiosis among dental technicians is a great risk. Especially sandblasting procedures is raise the risk of pneumoconiosis. This shows that there are serious limitations in control measures and employee' health monitoring.

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RETROSPECTIVE STUDY OF THE PULMONARY FINDINGS IN COMPLEMENTARY EXAMS IN RETIRED MINING WORKERS EXPOSED TO ASBESTOS

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Introduction Asbestos, a silicatum largely used in industry is responsible to harmful effects to the respiratory system, once inhalation and fibre accumulation of these materials in the pulmonary parenchyma are associated to pleural and pulmonary injuries. The objective of this study is to find the most prevalent pulmonary changes evaluated in asbestos' exposed workers and verify if there is any risk factor associated.

Methods This was a cross-sectional study which evaluated 48 retired workers exposed more than 15 years to asbestos at aluminium mining industry at Poços de Caldas – Brazil. The workers were evaluated between June 2015-July 2016 and submitted to a structured analysis for data collection including: gender, age, smoking load, chest X-ray, chest computed tomography (CT), and spirometry (divided in normal, mild, moderate and severe alterations). The CT was applied in workers who had shown clinic, radiographic and spirometric alterations. It was applied Chi-Square method, $p<0.05$ using One-Way ANOVA and Tukey test.

Results All workers were male, mean age of 64 years-old. The mean FEV1 was higher in non-smokers group (95%) in comparison to ex-smokers group (88%) and smokers (82%). The FEV1 decay was proportional to smoking load increase; FVC lowest values were found in the smokers group (mean of 78%) and increasing FVC values in ex-smokers and non-smokers group. Lung emphysema and diffuse bronchial injury were the most prevalent findings, shown on 8 and 7 workers respectively. Only 2 workers presented pleural plaques.

Discussion The results suggested that smoking is an important risk factor for functional lung injuries, enhancing the harmful effects of asbestos chronic exposure. These data may contribute with strategies to enhance smoking cessation and preventive respiratory disease programs within the mining industry in order to prevent pulmonary injuries. These measures may possibly decrease the risk for developing lung diseases associated in asbestos' exposed mining workers.

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UNDER-REPORTED ASBESTOS-RELATED LUNG CANCER IN TAIWAN

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Introduction Mesothelioma is a rare malignancy, primarily caused by exposure to asbestos. The incidence rate of mesothelioma in Taiwan increased steadily in the previous two decades. However, very few of the mesothelioma patients received compensation due to their asbestos-related work. This study aims to examine the status of reported and unreported asbestos-related lung cancer, particularly mesothelioma in