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Silicosis in denim sandblasters

Authors: Bakan ND et al.
URL: http://chestjournal.chestpubs.org/content/140/5/1300.abstract
Comment: Pneumoconiosis is a major occupational lung disease worldwide. Occupational exposure to fibrogenic inorganic dusts occurs in a wide variety of occupational settings, including some industries not traditionally associated with such exposure. In this study, sandblasting of denim in the textile industry has been found to lead to outbreaks of severe forms of pneumoconiosis in young and unprotected workers. Silicosis has also been reported among “tatami” mat workers in China, who are exposed to rush smear dusts (derived from mud). Increased awareness of these hazards, and implementation of stringent control measures are therefore necessary to prevent such tragedies.
Effectiveness of dust control methods for crystalline silica and respirable suspended particulate matter exposure during manual concrete surface grinding

Authors: Akbar-Khanzadeh F et al.

Comment: Currently enforced permissible exposure limits for respirable silica vary widely across different countries. These standards have not been validated by epidemiological studies as being fully protective. Concrete grinding exposes workers to unacceptable levels of crystalline silica dust. While existing dust control methods reduce dust levels substantially, this study showed that no combination of dust reduction methods was able to reduce 8-hour exposure levels to below the recommended US criterion of 0.025 mg/m³ for crystalline silica. Further refinement in engineering controls, administrative controls, or the use of respirators is necessary to afford better protection to workers.

Associations of IL-4, IL-4R, and IL-13 gene polymorphisms in coal workers' pneumoconiosis in China: a case-control study

Authors: Wang M et al.
URL: [http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3150141/?tool=pubmed](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3150141/?tool=pubmed)

and

Possible effect of gene polymorphisms on the release of TNFα and IL1 cytokines in coal workers' pneumoconiosis

Authors: Ates I et al.

Comment: In these two reports, gene polymorphisms related to different host immune mediators were found to be associated with coal workers’ pneumoconiosis. Such associations, if confirmed by further studies, may shed light on the pathogenesis of this disease. While these genetic factors may partly account for the varying host susceptibility among workers exposed to similar levels of coal dust, their effect sizes were quite moderate in most cases. With the low prevalence of some of the involved alleles and their low predictive values, they would not be useful as clinical biomarkers for susceptibility to the disease.
**Occupational exposure to asbestos and ovarian cancer: a meta-analysis**

Authors: Camargo MC et al.


URL: [http://ehp03.niehs.nih.gov/article/info:doi/10.1289/ehp.1003283](http://ehp03.niehs.nih.gov/article/info:doi/10.1289/ehp.1003283)

Comment: In this meta-analysis that included a total of 18 cohort studies of women, who were occupationally exposed to asbestos, the overall pooled standardized mortality ratio estimate for ovarian cancer was 1.77 (95% confidence interval 1.37-2.28), with a moderate degree of heterogeneity among the studies ($I^2 = 35.3\%$, $P = 0.061$). This lends support to the conclusion by a Monographs Working Group of the International Agency for Research on Cancer that there is sufficient evidence to indicate a causal association between exposure to asbestos and ovarian cancer. Occupational exposure to asbestos and other fibrogenic inorganic dusts is therefore associated with a wide spectrum of conditions, both neoplastic and non-neoplastic.

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**Prevalence of connective tissue disease in silicosis (1985-2006) - a report from the state of Michigan surveillance system for silicosis**

Authors: Makol A et al.


Comment: Silica exposure has been associated with a number of immunological disorders, including connective tissue diseases. In this study involving 790 confirmed cases of silicosis, prevalence rates of rheumatoid arthritis, scleroderma, and anti-neutrophil cytoplasm antibody vasculitis were significantly increased among silicosis patients, as compared with relevant reference populations. While it would be exceedingly difficult to control for various confounders in such retrospective prevalence surveys, there were no differences with respect to age, race, type of industry, history of tuberculosis, application for workers' compensation, or severity of fibrotic changes on chest X-ray, between silicosis patients with or without connective tissue disease. The magnitude of the effect size also lends support to the association between silicosis and scleroderma or anti-neutrophil cytoplasm antibody vasculitis, despite the small number of observed cases.

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**Coal dust exposure and mortality from ischemic heart disease among a cohort of U.S. coal miners**

Authors: Landen DD et al.


Comment: In this study, cumulative exposure to coal dust and coal rank were shown to be associated with increased risk of mortality from ischaemic heart disease. This observation is biologically plausible, as similar associations were reported between particulate exposure and mortality due to ischaemic heart disease in air pollution studies. The healthy worker effect may have accounted for some of the inconsistent results in previous reports. It is therefore important to reduce particulate exposure in coal mining and other relevant occupational settings.
**Comparison of digital direct readout radiography with conventional film-screen radiography for the recognition of pneumoconiosis in dust-exposed Chinese workers**

Authors: Mao L et al.

**Intra- and inter-modality comparisons of storage phosphor computed radiography and conventional film-screen radiography in the recognition of small pneumoconiotic opacities**

Authors: Laney AS et al.
URL: [http://chestjournal.chestpubs.org/content/early/2011/05/25/chest.11-0629.abstract](http://chestjournal.chestpubs.org/content/early/2011/05/25/chest.11-0629.abstract)

Comment: Digitization is a rapidly growing trend in diagnostic radiology in developed countries. The detection of pneumoconiosis has been heavily dependent on the interpretation of conventional X-ray films. Relatively few studies have examined the performance of digital imaging in this regard. In these two reports, digital direct readout images and storage phosphor computed radiography images were shown to be largely equivalent to conventional films for recognition and classification of small pneumoconiotic opacities according to the International Labour Organization (ILO) scheme, at least under optimal conditions, using standardized methods and equipment. However, variability in ILO classification between readers remains high, and in excess of that observed between different imaging modalities. Alternative approaches would be needed to address such variability.

**Lung function loss in relation to silica dust exposure in South African gold miners**

Authors: Ehrlich RI et al.
URL: [http://oem.bmj.com/content/68/2/96.long](http://oem.bmj.com/content/68/2/96.long)

Comment: Silica exposure has been associated with chronic obstructive lung disease. In this study, loss of lung function was demonstrable among South African gold miners, whether due to silicosis (224.1 mL in FEV₁ and 123.6 mL in FVC), tuberculosis (347.4 mL in FEV₁ and 264.3 mL in FVC) or an independent effect of dust (18.7 mL in FVC and 16.2 mL in FEV₁, per mg-yr/m³ cumulative respirable dust exposure). A miner working in the setting of a respirable dust intensity of 0.37 mg/m³ for 30 years would lose, on average, an additional 208 mL in FVC (95% CI 3, 412) in the absence of silicosis or other disease. Such data highlights the need for improved dust control in mining industries in Africa and other developing areas.
**Lung diffusing capacity relates better to short-term progression on HRCT abnormalities than spirometry in mild asbestosis**

Authors: Nogueira CR et al.


Comment: Pulmonary function tests are not very well correlated with radiological findings on conventional chest radiographs in patients with pneumoconiosis. On the other hand, both spirometry and lung diffusing capacity for carbon monoxide (DLCO) have been considered useful methods for monitoring disease progression in asbestosis, as indicated by progression of interstitial abnormalities on high-resolution computed tomography (HRCT). In this study, DLCO better reflected the functional consequences of progression of HRCT abnormalities in mild-to-moderate asbestosis, as compared with spirometric changes, thus confirming the role of DLCO measurement in asbestosis and similar diffuse interstitial fibrosis, despite its higher between test variability.

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**Early detection of central airway lung cancer in smokers with silicosis**

Authors: Lo AI et al.


Comment: Silicosis has been associated with increased risk of lung cancer, but early detection of the malignancy is often hampered by the presence of multiple background silicotic nodules on conventional radiography or computerized tomography. In this study, autofluorescence bronchoscopy was used after sputum examination, to detect intraepithelial lung cancers and pre-neoplastic lesions (squamous metaplasia or above) in 4.2% and 29.2% of patients with silicosis and a smoking history of 20 pack-years or more. The proportions of current smokers (75.0% vs. 40.6%) and those exposed to asbestos (37.5% vs. 9.4%) were significantly greater among subjects with the above lesions, as compared to those without. Despite these encouraging findings, such an approach may have important limitations for detection of more peripherally located lesions, especially among silicosis patients with low or no tobacco exposure.

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