Silica dust, diesel exhaust, and painting work are the significant occupational risk factors for lung cancer in nonsmoking Chinese men

Authors: Tse LA et al.


URL: http://www.nature.com/bjc/journal/v104/n1/full/6606006a.html

Comment: Numerous studies have examined the associations between occupational exposure and lung cancer risk, but only a few studies have explored these associations in lifelong non-smoking males. Smoking is such a strong risk factor for lung cancer that it is difficult to factor out the risk associated with occupational exposures. In this study, a subgroup of lifelong non-smokers from a large population-based case-referent study was investigated, to examine the independent effects of occupational exposures on the risks for all types of lung cancer among non-smoking Chinese men. The study showed that men who had been occupationally exposed to silica dust, diesel exhaust, and paint fumes had an increased risk for all types of lung cancer, and the effects were independent of smoking.
Relationship between indium exposure and oxidative damage in workers in indium tin oxide production plants

Authors: Liu HH et al.
URL: http://www.springerlink.com/content/y17l653033687t04/fulltext.html
Comment: Due to the rapid development of flat panel and liquid crystal displays (LCD), indium tin oxide (ITO) is increasingly being used in production processes. The development of a precursor index to assess health effects in workers exposed to indium would be very important in a variety of industries, including those involved in the manufacture and recovery of LCD-ITO. Therefore, this study compared serum markers of surfactant protein and oxidative damage between indium-exposed workers and a control group. The study showed that inhalable indium bio-accumulated in the ITO-manufacturing workers. It also showed a significant trend for elevation of the concentrations of surfactant protein A and surfactant protein D, which are sensitive markers of interstitial lung disease.

Performance of biomarkers SMRP, CA125, and CYFRA 21-1 as potential tumor markers for malignant mesothelioma and lung cancer in a cohort of workers formerly exposed to asbestos

Authors: Gube M et al.
URL: http://www.springerlink.com/content/r54m08g37207k118/fulltext.html
Comment: Soluble mesothelin-related peptides (SMRP), CA125, and CYFRA21-1 are currently recognized as promising tumour markers for lung cancer and malignant mesothelioma. The aim of this prospective study was to retrospectively determine the performance of these tumour markers, alone and in combination, as screening tools, using serum samples from a surveillance cohort of workers who had been formerly exposed to asbestos. Twelve cases of lung cancer and 20 cases of malignant mesothelioma were observed among the 626 subjects in this cohort. The analyzed tumour markers were characterized by high specificities but low sensitivities and positive predictive values. SMRP, CA125, and CYFRA21-1, alone or in combination, were less suitable as predictors for the diagnosis of these malignancies in a cohort of workers formerly exposed to asbestos.

Asbestos fibre dimensions and lung cancer mortality among workers exposed to chrysotile

Authors: Loomis D et al.
URL: http://oem.bmj.com/content/67/9/580.long
Comment: Animal studies suggest that the carcinogenicity of asbestos fibres increases with their length, but only limited human data is available to support this hypothesis. This study estimated exposure to asbestos fibres of specific sizes, among asbestos textile manufacturing workers exposed to chrysotile, and evaluated the extent to which the risk of lung cancer varied with fibre length and diameter. The study demonstrated that exposure to longer fibres was associated with higher rates of lung cancer among workers with a history of exposure to chrysotile asbestos. More research is needed to analyze the associated risks among workers in other industries.
Effect of gene environment interactions on lung function and cardiovascular disease in COPD

Authors: Hackett T-L et al.
URL: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3144847/
Comment: The objective of this study was to determine if gene-environment interactions between cigarette smoking, and interleukin-6 (IL6), interferon-γ (IFNG), interleukin-1β (IL1B), or interleukin-1 receptor antagonist (IL1RN) single nucleotide polymorphisms (SNPs), were associated with lung function decline and cardiovascular disease in patients with chronic obstructive pulmonary disease (COPD). The results suggested interactions of the IL6 rs2069825 and IFNG rs2069727 SNPs with cigarette smoking on measures of lung function. The IL6 rs2069825 SNP also interacted with smoking to influence the risk of cardiovascular disease in COPD patients. The authors proposed that individuals with the IL6 rs2069825 SNP would be at risk for the development of both COPD and cardiovascular disease and could be targeted in future therapeutic strategies aimed at the IL6 pathway.

Synchrotron soft X-ray imaging and fluorescence microscopy reveal novel features of asbestos body morphology and composition in human lung tissues

Authors: Pascolo L et al.
URL: http://www.particleandfibretoxicology.com/content/8/1/7
Comment: A histopathological hallmark of exposure to asbestos is the presence of asbestos bodies in the lung parenchyma. These asbestos bodies are the final product of biomineralization processes resulting in the deposition of endogenous iron and organic matter (mainly proteins) around the inhaled asbestos fibres. This study demonstrated the potential of advanced synchrotron-based X-ray imaging and X-ray fluorescence (XRF) microscopy techniques for studying the responses of lung tissue to asbestos fibres. These new results obtained by simultaneous structural and chemical analyses of tissue specimens have provided clear evidence that in addition to Fe, Mg is also involved in the mechanisms leading to the formation of asbestos bodies.
Expression of heme oxygenase-1 in the lungs of rats exposed to potassium octatitanate whiskers

Authors: Obata Y et al.

Comment: Potassium octatitanate whisker (PT1) is a man-made fibre that is used as an asbestos substitute. It has been widely used in various applications. Because of its low solubility and high retention in the lung, there has been concern about its potential effects on human health. Oxidative stress is thought to contribute to the pathogenesis of pulmonary fibrosis, and heme oxygenase-1 (HO-1) protects lung tissue against oxidative stress. Nevertheless, some reports suggest that HO-1 expression is associated with lung injury caused by dust. In this study, rats were used to investigate the involvement of HO-1 gene expression in lung injury caused by PT1. HO-1 protein expression increased, and the expression of HO-1 mRNA also increased. Moreover, immunostaining showed that the HO-1 positive cells were mainly alveolar macrophages and bronchial epithelial cells. These findings suggest that HO-1 is involved in lung damage caused by PT1.
A single intratracheal instillation of single-walled carbon nanotubes induced early lung fibrosis and subchronic tissue damage in mice

Authors: Park EJ et al.
URL: http://www.springerlink.com/content/h852379684i19685/fulltext.html
Comment: The use of manufactured nanomaterials is increasing rapidly due to advances in nanotechnology in different industries and in the manufacture of consumer products. However, this represents a potential health hazard. Carbon nanotubes are important nanomaterials. To identify the dominant immune responses induced by single-walled carbon nanotubes (SWCNTs), this study investigated changes in cytokines and cells [natural killer (NK), NK T, B, and T cells]. Furthermore, the proteins associated with lung tissue damage were investigated. The results of this study suggest that a single intra-tracheal instillation of SWCNTs may induce early lung fibrosis and subchronic tissue damage.

Arsenic exposure in pregnancy increases the risk of lower respiratory tract infection and diarrhea during infancy in Bangladesh

Authors: Rahman A et al.
URL: http://ehp03.niehs.nih.gov/article/info%3Adoi%2F10.1289%2Fehp.1002265
Comment: The toxicity of arsenic in drinking water has been one of the worst environmental health disasters. In a retrospective cohort study in Bangladesh, a significant dose-dependent association was observed between infant mortality and arsenic exposure, as measured in tube-well water used by pregnant women. Lower respiratory tract infection (LRTI) and diarrhoea are two of the most common causes of morbidity and mortality in children <5 years of age, especially in low-income countries. The objective of this prospective cohort study was to evaluate the association between prenatal arsenic exposure and LRTI and diarrhoea during infancy in Bangladesh. The estimated risks of LRTI and severe LRTI increased by 69% and 54%, respectively, for infants of mothers with urinary arsenic concentrations in the highest quintile relative to those with arsenic concentrations in the lowest quintile. Arsenic exposure during pregnancy was associated with increased morbidity due to infectious diseases during infancy.

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