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Agricultural health and safety : workplace, environment, sustainability / Helen H. McDuffie (ed.), ...[et.al.]. - Boca Raton : Lewis Publ., 1995. - 617 σ. ISBN 0-87371-617-5

This comprehensive book, Agricultural Health and Safety, provides extensive coverage of issues arising in the interrelated fields of health, agriculture, and the environment. The significance of this book is a direct result of the increasing number of health and safety issues in agriculture and its associated industries. It contains sections written by experts, and includes papers presented at the Third International Symposium for Issues in Health, Agriculture and the Environment.

Agricultural seed dust as a potential cause of organic dust toxic syndrome / L. A. M. Smit, ...[et.al.], Occupational and environmental medicine, 2006, 63(1), σ. 59-67

Aims: Episodes of serious work related health problems resembling organic dust toxic syndrome (ODTS) in workers of a grass seed quality inspection laboratory prompted the authors to study personal endotoxin exposure levels in this facility and in the agricultural seed processing industry. In addition, microbial and inflammatory characteristics of agricultural seeds were studied. Methods: The authors assessed inhalable dust and endotoxin levels in 101 samples from 57 workers in grass, cereal, and vegetable seed plants who were handling mainly grass seeds as bulk product, and horticulture seeds in smaller quantities. Additionally, real-time dust exposure was measured using a DataRAM monitor in 12 grass seed workers to obtain more information on exposure patterns during specific tasks. Endotoxin concentrations in seed extracts were determined by LAL assay and seed samples were analysed by scanning electron microscopy. Release of inflammatory cytokines was measured in supernatants of whole blood samples stimulated with lipopolysaccharide (LPS) or agricultural seed extracts in a human whole blood assay (WBA). Results: Endotoxin concentrations in personal samples were high (geometric mean 1800 EU/m3), particularly in the grass seed quality inspection lab where endotoxin levels up to 274 000 EU/m3 were measured. The recommended health based endotoxin exposure limit of 50 EU/m3 was amply exceeded in almost all personal samples. Job tasks dumping and mixing were associated with highest dust and endotoxin exposures, which was confirmed by real-time measurements. Microbial infestation was found in almost all seed samples. WBA results showed that most seed extracts were capable of inducing a pronounced dose dependent cytokine release. Conclusions: Workers handling grass, cereal, or vegetable seeds are at risk of exposure to high levels of endotoxin containing seed dust. Occupational exposure to inhalable agricultural seed dust can induce inflammatory responses, and is a potential cause of ODTS.

Assesment of exposure to organic dust in a hemp processing plant / David Fishwick, Lisa Allan, Anthony Wright, [et al.], The annals of occupational hygiene, 2001, 45(7), σ. 577-583

The aim of this preliminary study was to assess exposure to various constituents of the organic dust generated during the processing of hemp in a small group of exposed workers. Airborne levels of inhalable dust, endotoxin and soluble protein, and the respirable, thoracic and inhalable fractions of fungal, bacterial and actinomycete contamination were measured in the personal breathing zone of exposed workers. Inhalable dust, endotoxin, fungal and bacterial contamination all exceeded levels found in similar vegetable fibre processing factories, since inhalable dust levels ranged from 10.4 to 79.8 mg/m^3 and inhalable bacterial levels between 4.7 and 190×10^6 cfu/m^3. Soluble protein and endotoxin ($r=0.99$, $P<0.0001$), endotoxin and inhalable dust ($r=0.94$, $P<0.005$) and inhalable dust and protein ($r=0.98$, $P<0.0001$) were significantly correlated, suggesting that there was little variation in the composition of the dust from different sites or activities around the workplace. Andersen sampling gave an indication of background microbe levels, although no attempt was made to identify the specific microorganisms as all plates were significantly overgrown. Airborne assessments demonstrated that exposures were highly task specific. For example, sweeping the floor generated the highest exposure levels of total dust, protein, endotoxin, bacteria and fungi. Therefore, we have shown that a modern-day hemp fibre processing plant produces significant quantities of respirable dust which is highly contaminated with endotoxin and microorganisms. This organic dust has the potential to cause a range of ill health problems.

Assessment of the exposure of islanders to ash from the Soufriere Hills volcano, Montserrat, British West Indies / A. Searl, A. Nicholl and P.J. Baxter, Occupational and environmental medicine, 2002, 59(8), σ. 523-531

Background and Aims: The Soufriere Hills volcano, Montserrat, has been erupting since July 1995 and volcanic ash has fallen on the island throughout most of the eruption. The ash contains substantial quantities of respirable particles and unusually large amounts (15–20%) of the crystalline silica mineral, cristobalite. The purpose of the surveys described here, undertaken between December 1996 and April 2000, was to determine levels of personal exposure of islanders to volcanic ash and cristobalite in order to inform advice on the associated risks to health and the measures required to reduce exposure. Methods: Surveys of personal exposure to respirable dust and cristobalite were undertaken using cyclone samplers. In addition, direct reading instruments (DUSTTRAK) were used to monitor ambient air concentrations of PM_{10} at fixed sites and also to provide information about exposures to airborne particles associated with selected activities. Results: Environmental concentrations of airborne ash have been greatest in the areas

where the most ash has been deposited and during dry weather. Individual exposure to airborne ash was related to occupation, with the highest exposures among gardeners, cleaners, roadworkers, and police at roadside checkpoints. During 1997 many of these individuals were exposed to concentrations of cristobalite that exceeded the ACGIH recommended occupational exposure limit. Since the population became confined to the north of the island in October 1997, even those in relatively dusty occupations have received exposures to cristobalite well below this limit. Conclusions: Most of the 4500 people who have remained on island since the eruption began have not been exposed to sufficiently high concentrations of airborne dust for long enough to be at risk of developing silicosis. However, more than a dozen individuals continued to experience frequent high occupational exposures to volcanic ash, some of whom may have had sufficient exposure to crystalline silica to be at risk of developing mild silicosis. If volcanic activity were to deposit further ash over the occupied areas of the island during the coming years, the risks of silicosis will become more substantial.

Bronchoalveolar lavage fluid cellular profile in workers exposed to chrysotile asbestos / F. P. Kokkinis, …[et.al.], Toxicology and industrial health, 2011, 27(9), σ. 849-856

The cellular profile of bronchoalveolar lavage fluid (BALF) in asbestos-exposed population remains controversial. We, therefore, aimed to investigate BALF in apparently healthy individuals that were exposed in asbestos-related work for a long period of time. Participants were selected among employees of a car brakes and clutches factory that used chrysotile asbestos. Selection criteria were an employment history of ≥ 15 years and the absence of severe respiratory disease. The total number and type of BALF cells, the existence of dust cells, iron-laden macrophages and asbestos bodies were assessed. Thirty-nine workers (25 men), with a mean age of 46.2 ± 4.2 years and a mean employment time of 23.5 ± 4 years, participated. Asbestos bodies were observed in 14 out of 39 (36%) specimens, dust cells in 37 and iron-laden macrophages in all. Those with asbestos bodies had at least 3 times higher probability to have lymphocytosis (lymphocytes > 11%: 64% vs 28%, p = 0.027) and had an increased percentage of iron-laden macrophages compared to those without asbestos bodies (median values: 42% vs 13%, p = 0.08). Smokers (36%) had less lymphocytes compared to non and ex-smokers (median values: 6% vs. 13%, p = 0.002), and iron-laden macrophages count had a positive relation (r = 0.31, p = 0.05) to lymphocyte count. Asbestos-exposed asymptomatic individuals with the presence of asbestos bodies in the BALF are more likely to have lymphocytic alveolitis while concurrent dust exposure and smoking habits hold a significant role.

Cancer risk from occupational exposure to wood dust : a pooled analysis of epidemiological studies / P. A. Demers, P. Boffetta. - Lyon : IARC, 1998. - iii, 97 σ. - (IARC Technical report ; 30) ISBN 90-832-1444-7

Describes the design and findings of a pooled re-analysis of epidemiological studies investigating carcinogenicity in workers exposed to wood dust. The analysis included a large number of studies whose results have not been fully explored due to limitations, mainly linked to small size, inherent in each study. By pooling these studies the IARC analysis allowed a more powerful interpretation of previously published case-control studies of sino-nasal cancer and cohort studies of workers in wood-related industries. The result is the largest data set ever assembled to examine the relationship between exposure to wood dust and human cancer. Although exposure to wood dust has long been associated with a very high excess of sino-nasal cancer, the IARC analysis aimed to answer several remaining questions concerning the possible excess risk of cancer at other sites, the level of wood dust exposure needed to cause cancer, the differences between exposure to dust from soft- and hardwood, and the reasons for the wide range of relative risks for sino-nasal cancer and the results observed for other cancers. A uniform exposure assessment strategy was applied in order to classify study subjects according to levels of exposure.

A cohort mortality and nested case-control study of French and Austrian talc workers / P. Wild, ...[et.al.], Occupational and environmental medicine, 2002, 59(2), σ. 98-105

Objectives: To study whether the mortality from non-malignant and malignant respiratory diseases of workers employed in French and Austrian talc mines and mills is related to their long term occupational exposure.
Methods: Two historical cohorts were set up comprising all male subjects who had been working continuously for at least 1 year in a series of talc producing companies in France and Austria. The French cohort consisted of those employed at a site in the French Pyrenees and working between 1 January 1945 and 31 December 1994. The Austrian cohort consisted of the workers employed between 1 January 1972 and 31 December 1995 in one of four industrial sites in the Austrian Alps. The mortality within the cohorts was compared with local death rates. Two nested case-control studies focusing on non-malignant and malignant respiratory diseases were set up to estimate possible dose-response relations with cumulative exposure to talc dust based on an industry specific job exposure matrix. Results: Mortality from lung cancer was in small excess in both cohorts (France, standardised mortality ratio (SMR) 1.23, 21 cases observed, 95% confidence interval (95% CI) 0.76 to 1.89; Austria, SMR 1.06, seven observed, 95% CI 0.43 to 2.19). A non-significant excess mortality was found for all non-malignant respiratory diseases in the French cohort due to a significant excess for pneumoconiosis (SMR 5.56, three observed, 95% CI 1.12 to 16.2). The case-control study of non-malignant respiratory disease showed an increased mortality in the highest exposure groups (odds ratio (OR) 2.5 for a cumulative exposure ≥800 y.mg/m^3) with a significant trend (OR/100 y.mg/m^3 1.08) with cumulative exposure to talc. On the contrary, no increasing trend could be found in the

case-control study of lung cancer. This result must be interpreted considering the small cohort size. Adjustment on smoking and exposure to quartz did not influence these results to any extent. Conclusions: The mortality from non-malignant respiratory disease was found to be related to high cumulative exposure to talc dust. The small excess in lung cancer does not seem to be attributable to talc.

Comparative personal exposures to organic dusts and endotoxin / J.C. Simpson, …[et.al.], The annals of occupational hygiene, 1999, 43(2), σ. 107-115

The aims of the study were to provide valid comparative data for personal exposures to dust and endotoxins for different occupations and to calculate comparative data for the contamination of organic dusts with endotoxin. Nine different occupational settings were studied, drawn from the textile, agricultural and animal handling industries. Samples were collected by personal sampling techniques, using the Institute of Occupational Medicine (IOM) sampling head, glass fibre filters and rechargeable sampling pumps. The dust exposures were calculated by gravimetric analysis and using the calculated volume of air sampled were expressed as mg/m3. Endotoxin exposures were measured using a simple water extraction from the collected dusts, followed by a quantitative turbidimetric assay. Results were expressed as ng/m3, using the calculated volume of air sampled. In addition, the levels of the contamination of dusts with endotoxin for individual industries were expressed as ng/mg of collected dust. Two hundred and fifty-nine samples, collected from 9 different industries and across 36 different sites were analysed. This represented a sampling rate of 25% for the total work force. The average sampling time was 4.62 h. For all the dusts collected, a significant correlation between the collected dust and endotoxin was seen ($r = 0.7$ and $p < 0.001$). The highest dust exposures occurred during cleaning activities (grain handling: 72.5 mg/m3). The individuals exposed to the highest median level of dust and endotoxin were the animal handlers (poultry handlers, dust: 11.53 mg/m3, endotoxin: 71,995 ng/m3). Weaving and mushroom cultivation had the lowest exposures for dust and endotoxins. The mostly highly contaminated dusts (median values expressed as ng of endotoxin per mg of collected dust) were found in the animal handling (poultry: 1,030 ng/mg, swine: 152 ng/mg) and cotton spinning (522 ng/mg) industries. Processing of cotton and wool fibres was found to reduce the levels of contamination of dusts with endotoxin. In the study, valid comparative data for personal exposures to organic dusts and endotoxins have been presented. The highest exposures were found amongst animal handlers and during cleaning activities. The results highlight that dust exposures are greater in a number of industries than the set exposure standards. In addition, endotoxin exposures are found to be greater than levels at which harmful effects have been demonstrated.

Control of health hazards from crystalline silica / Daniel P. Mahoney,

Professional safety, 1999, 44(5), σ. 31-33

Mining operations have a high incidence of "dust diseases of the lung" with 3.4 per 10000 workers experiencing respiratory illness from occupational exposure to dusts

Control of inhalable dust in coal mines : the coal mines (control of inhalable dust) regulations 2007. - Sudbury, Suffolk : HSE, c2007. - iv, 56 σ. ISBN 978-0-7176-6254-8 (5894)

Guidance on how to comply with the Regulations, which are presented in full. Particularly relevant to mine owners and managers, any employer with employees who work below ground in mines and self-employed contractors working below ground in mines. The Approved Code and guidance cover general issues of assessment (to health), hazard prevention, exposure control, maintenance, examination and testing (of control measures), sampling for respirable dust, health surveillance and training. Also including two key appendices as they pertain to exposure control limits, time-weighting calculations, gravimetric analysis and assessment of quartz content. Colour-coded throughout to enable easy distinction between texts relating to the Regulations, the Approved Code and guidance.

Controlling exposure to poultry dust : guidance for employers.- Sudbury, Suffolk : HSE, 2012.- 22 σ.

Cumulative exposures to dust causes accelerated decline in lung function in tunnel workers / B. Ulvestad ...[et.al.], Occupational and environmental medicine, 2001, 58(10), σ. 663-669

Objectives : To examine whether underground construction workers exposed to tunnelling pollutants over a follow up period of 8 years have an increased risk of decline in lung function and respiratory symptoms compared with reference subjects working outside the tunnel atmosphere, and relate the findings to job groups and cumulative exposure to dust and gases. Methods : 96 Tunnel workers and a reference group of 249 other heavy construction workers were examined in 1991 and re-examined in 1999. Exposure measurements were carried out to estimate personal cumulative exposure to total dust, respirable dust, α-quartz, oil mist, and nitrogen dioxide. The subjects answered a questionnaire on respiratory symptoms and smoking habits, performed spirometry, and had chest radiographs taken. Radiological signs of silicosis were evaluated (International Labour Organisation (ILO) classification). Atopy was determined by a multiple radioallergosorbent test (RAST). Results : The mean exposure to respirable dust and α-quartz in tunnel workers varied from 1.2–3.6 mg/m^3 (respirable dust) and 0.019–0.044 mg/m^3 (α-quartz) depending on job task performed. Decrease in forced expiratory volume in 1 second (FEV_1) was associated with cumulative exposure to respirable dust ($p<0.001$) and α-quartz ($p=0.02$). The multiple regression

model predicted that in a worker 40 years of age, the annual decrease in FEV_1 would be 25 ml in a non-exposed non-smoker, 35 ml in a non-exposed smoker, and 50–63 ml in a non-smoking tunnel worker (depending on job). Compared with the reference group the odds ratio for the occurrence of new respiratory symptoms during the follow up period was increased in the tunnel workers and associated with cumulative exposure to respirable dust. Conclusions: Cumulative exposures to respirable dust and α-quartz are the most important risk factors for airflow limitation in underground heavy construction workers, and cumulative exposure to respirable dust is the most important risk factor for respiratory symptoms. The finding of accelerated decline in lung function in tunnel workers suggests that better control of exposures is needed.

Determinants of exposure to respirable quartz dust in the construction industry / Mieke Lumens, Ton Spee, The annals of occupational hygiene, 2001, 45(7), σ. 585-595

Because most masonry building materials contain quartz and because these materials are subjected to a variety of treatments during the building process, quartz is encountered everywhere in building operations. The level of exposure to respirable quartz has been measured for some highly exposed groups of employees. At 30 construction sites personal air sampling (PAS) measurements of respirable dust and quartz have been performed and 171 samples have been taken. Both respirable dust and quartz levels were high. Respirable quartz exposures of more than ten times the Dutch limit value of 0.075 mg/m^3 TWA were common, but exposures up to 200 times the Dutch limit value were also found. The measurements were task oriented. By statistical analysis the contribution of the different determinants to the total exposure has been identified. With this approach, directions for an effective control measures programme can be given.

Development in harmonisation of proficiency testing (for vapours, gasses, and dusts) in the European Union / Peter Stacey, Barry Tylee, Archives of industrial hygiene and toxicology, 1998, 49(4), σ. 307-317

A network has been established of the 11 major proficiency schemes in the European Union concerned with the occupational hygiene and environmental analyses of chemicals and dusts in the air. A comparison of all the schemes was carried out and a compendium is being produced. This will allow users of the schemes such as testing laboratories, customers, and regulatory bodies to choose the scheme that is most suited to their purpose. All schemes have been compared with the revised ISO Guide 43, published in 1997. The performance statistics in most schemes conform to the criteria in European Standard EN 482 that define the acceptability limits for overall uncertainty in measurement. However, the performance statistics and assessment strategies of the different schemes vary. While many of the schemes supply similar

sample material such as lead on filters and benzene on charcoal, there are a number of sample types that many schemes would like to introduce. However, it would be uneconomic to do this on a national basis and the network is developing procedures to introduce them throughout the member countries. Additionally, there are countries that have no schemes at present and may wish to introduce them. The network will provide a framework to help set up schemes in these areas.

Dust control handbook / Vinit Mody, Raj Jakhete. - Westwood, New Jersey : Noyes, c1988. - x, 257 σ. ISBN 0-8155-1182-5 (6740)

Consolidates information developed by industry and government laboratories on dust control engineering techniques. Designed for the minerals processing industry, the technology applies to other industries as well. Dust, its prevention, formation and control are examined, including wet and dry control systems, personal protection, and testing methods.

Dust control in the working environment (silicosis) / A. Andersson, ...{et.al.}. - Geneva : ILO, 1977.- 161 σ.. – (Occupational safety and health series ; 36) ISBN 92-2-101791-5 (146)

Dust explosions in the process industries / Rolf K. Eckhoff. – 2η εκδ. - Oxford ; UK : Butterworth - Heinemman, 1997. -vii, 633 σ. ISBN 0-7506-3270-4 (2496)

A comprehensive account of the existing practical and theoretical knowledge of the origin, development, prevention and mitigation of dust explosions in the process industries. It offers an up to date evaluation of prevalent activities, testing methods, design measures and safe operating techniques in a detailed and comprehensive critique of all the significant phases relating to the hazard and control of a dust explosion. An invaluable reference work for industry, safety consultants and students.

Dust explosions in the process industries / Rolf K. Eckhoff.- 3η εκδ.- Amsterdam : Gulf Professional Publishing, c2003.- xxi, 719 σ. ISBN 978-0-7506-7602-1 (6224, 6659)

Unfortunately, dust explosions are common and costly in a wide array of industries such as petrochemical, food, paper and pharmaceutical. It is imperative that practical and theoretical knowledge of the origin, development, prevention and mitigation of dust explosions is imparted to the responsible safety manager. The material in this book offers an up to date evaluation of prevalent activities, testing methods, design measures and safe operating techniques. Also provided is a detailed and comprehensive critique of all the significant phases relating to the hazard and control of a dust explosion. An invaluable reference work for industry, safety consultants and students.

Dust exposure and impairment of lung function at a small iron foundry in a

rapidly developing country/ J. Gomes ...[et.al.], Occupational and environmental medicine, 2001, 58(10), σ. 656-662

Objectives : A cross sectional prospective study was carried out among iron foundry workers (exposed) and soft drink bottling and supply company workers (unexposed) to assess their occupational exposure to ambient respiratory dust in their work environment and its effect on their lung function profile. Participants : Lung function was measured in 81 exposed and 113 unexposed workers. Personal respirable dust concentrations were measured for all the exposed and the unexposed workers. Information on respiratory signs and symptoms was also collected from the participants. Results : Among the exposed workers, midexpiratory flow (FEF_{25-75}), forced expiratory volume in 1 second (FEV_1), peak expiratory flow (PEF), FEV_1/FVC, and FEV_1/VC ratios were significantly lower whereas the vital capacity (VC) and forced vital capacity (FVC) were non-significantly higher. Job at the iron foundry was a significant predictor of lung function. Exposure to high concentration of respirable dust at the iron foundry was also a significant predictor. Workers working in high exposure areas (general works, furnace, continuous casting areas, and fabrication workshop) had lower lung function values than workers in medium and low exposure areas. Smoking did not enhance the effects of exposure to dust on lung function. Conclusions : Exposure to respirable dust was higher among the iron foundry workers; and among these, general, furnace, rolling mill, and fabrication workers had higher exposures to dust than did workers in continuous casting, the mechanical workshop, and the bottling plant. Job type and exposure to dust were significant predictors of lung function. Implementation of industrial hygiene and proper and efficient use of personal protection equipment while at work could help to protect the respiratory health of industrial workers.

Dust in the workplace : guidance for health and safety representatives / TUC, Oct. 2011 (http://www.tuc.org.uk/workplace/tuc-19974-f0.pdf)

The effect of environmental pollution on the respiratory system of lignite miners : a diachronic study / L. Sichletidis, …[et.al.], La medicina del lavoro, 2004, 95(6), σ. 452-464

Background : It is not known whether working in surface lignite mines can cause x-ray lesions or disorders of respiratory function. Objectives : The aim of the study was to investigate the diachronic impact of environmental pollution on the respiratory system of lignite miners at mines in Eordea, Greece. Methods : Cases of 199 workers (Group A) residing permanently in the Eordea valley and 151 (Group B) living outside the Eordea valley were studied during Phase I and then re-examined after three years (Phase II). These cases were compared to those of 71 office workers living in Eordea valley (Group C) and to 96 living in Grevena, a region without pollution (Group D). The study included the completion of the MRC questionnaire for the detection of respiratory diseases, pulmonary function tests, measurement

of diffusion capacity, otorhinolaryngologic examination, rhinomanometry as well as chest and paranasal cavity X-rays. Results : Chronic bronchitis was reported by 26.8%, 24.8%, 17.9% and 10.6% respectively of the subjects of groups A, B, C and D according to the answers of the questionnaire ($p<0.001$). The spirometry and diffusion capacity findings presented no considerable differences either in the 4 groups or between phases I and II of the study. The main problems were detected in the upper airways. A very high prevalence of severe nasal obstruction (73%, 71.2%, 55.7% and 19.3% in Groups A, B, C and D respectively) was detected. Furthermore, a high percentage of atrophic rhinitis (14%) was detected both among workers (Groups A and B) and subjects living in the Eordea valley who participated as controls (Group C). From the X-rays, hypertrophy of nasal turbinates-cartilage and polyposis was observed as follows: Group A: 53.9%, Group B: 48.1%, Group C: 46.5% and Group D: 20.3% ($p<0.001$). The findings related to the upper respiratory system may be due to excessive pollution by airborne particles (fly ash) pollution in the region and particularly to chromium, nickel, cobalt and lead found at high concentration levels in airborne dust. A marked association between the total air-flow in the nose and the mid-expiratory flow ($p<0.01$) was detected. Conclusions : We conclude that subjects working in lignite mines under conditions of excessive pollution by airborne contaminants have a high prevalence of atrophic rhinitis and, in addition to other standard examinations, should undergo rhinomanometry testing and X-ray imaging of the paranasal cavities.

Estimating factors to convert chinese "total dust" measurements to ACGIH respirable concentrations in metal mines and pottery industries / Bean T. Chen, ...[et.al.], The annals of occupational hygiene, 2000, 44(4), σ. 251-257

Historical data on the dust exposures of Chinese workers in metal mines (iron/copper, tin, tungsten) and pottery industries are being used in an ongoing joint Chinese/United States epidemiological study to investigate the exposure-response relationship for the development of silicosis, lung cancer, and other diseases. The historical data include 'total dust' concentrations determined by a Chinese method. Information about particle size distribution and the chemical and mineralogical content of airborne particles is generally not available. In addition, the historical Chinese sampling strategy is different from a typical American eight-hour time-weighted average (TWA) sampling strategy, because the Chinese samples were collected for approximately 15 minutes during production so the sample could be compared to their maximum allowable concentration (MAC) standard. Therefore, in order to assess American respirable dust exposure standards in light of the Chinese experience, factors are needed to convert historical Chinese total dust concentrations to respirable dust concentrations. As a part of the joint study to estimate the conversion factors, airborne dust samples were collected in 20 metal mines and 9 pottery factories in China during 1988 and 1989 using three different samplers: 10mm nylon cyclones, multi-stage 'cassette' impactors, and

the traditional Chinese total dust samplers. More than 100 samples were collected and analysed for each of the three samplers. The study yielded two different estimates of the conversion factor from the Chinese total dust concentrations (measured during production processes) to respirable dust concentrations. The multivariate analysis of variance (MANOVA) reveals that, with a fixed sampling/analysis method, conversion factors were not statistically different among the different job titles within each industry. It also indicates that conversion factors among the industries were not statistically different. However, the two estimates consistently showed that conversion factors were the lowest in the pottery industry. Average conversion factors were then calculated for each of the estimates across the industries studied. A pooled mean conversion factor, 0.25+/-0.04, was then derived for all the job titles and industries. Respirable dust levels were estimated from the historical 'total dust' concentrations collected between 1952 and 1992 by adopting the American standard.

Exposure assessment to airborne endotoxin, dust, ammonia, hydrogen sulfide and carbon dioxide in open style swine houses / C. W. Chang, …[et al.], The annals of occupational hygiene, 2001, 45(6), σ. 457-465

Information is limited for the exposure levels of airborne hazardous substances in swine feed buildings that are not completely enclosed. Open-style breeding, growing and finishing swine houses in six farms in subtropical Taiwan were studied for the airborne concentrations of endotoxin, dust, ammonia, hydrogen sulfide and carbon dioxide. The air in the farrowing and nursery stalls as partially enclosed was also simultaneously evaluated. Three selected gases and airborne dusts were quantified respectively by using Drager diffusion tubes and a filter-weighing method. Endotoxin was analyzed by the Limulus amoebocyte lysate assay. Average concentration of airborne total endotoxin among piggeries was between 36.8 and 298 EU/m(3), while that for respirable endotoxin was 14.1-129 EU/m(3). Mean concentration of total dust was between 0.15 and 0.34 mg/m(3), with average level of respirable dust of 0.14 mg/m(3). The respective concentrations of NH3, CO2 and H2S were less than 5 ppm, 600-895 ppm and less than 0.2 ppm. Airborne concentrations of total dust and endotoxin in the nursery house were higher than in the other types of swine houses. The finishing house presented the highest exposure risk to NH3, CO2 and H2S. Employees working in the finishing stalls were also exposed to the highest airborne levels of respirable endotoxin and dust. On the other hand, the air of the breeding units was the least contaminated in terms of airborne endotoxin, dust, NH3, CO2 and H2S. The airborne concentrations of substances measured in the present study were all lower than most of published studies conducted in mainly enclosed swine buildings. Distinct characteristics, including maintaining swine houses in an open status and frequent spraying water inside the stalls, significantly reduce accumulation of gases and airborne particulates.

Exposure to crystalline silica, silicosis, and lung disease other than cancer in diatomaceous earth industry workers : a quantitative risk assessment / R. Park ...[et.al.], Occupational and environmental medicine, 2002, 59(1), σ. 36-43

Objectives : To estimate excess lifetime risk of (a) mortality from lung disease other than cancer (LDOC), and, (b) onset of radiographic silicosis, arising from occupational exposure to respirable crystalline silica dust. Methods : Data from a cohort of California diatomaceous earth mining and processing workers exposed to crystalline silica dust (mainly as cristobalite) were reanalyzed with Poisson regression methods with internal and external adjustments for potential confounding by calendar time, age, smoking, Hispanic ethnicity, and time since first observation. Model fit was evaluated by comparing deviances and fitting cubic spline models. Lifetime risks of death from LDOC and radiographic silicosis were estimated up to age 85 with an actuarial approach accounting for competing causes of death. Results : For deaths due to LDOC, a linear relative rate model gave the best fit in Poisson regression analyses. At the mean cumulative exposure of LDOC cases to silica, after adjustment for smoking, the estimated rate ratio was 4.2 ($p<0.0001$); at the maximum cumulative exposure of cases, the rate ratio was 18.4. The excess lifetime risk for white men exposed to respirable cristobalite dust for 45 years at the current permissible exposure limit (PEL; about 0.05 mg/m(3)) of the Occupational Safety and Health Administration was 54/1000 (95% confidence interval (95% CI) 17 to 150). For 70 incident cases of radiographic silicosis largely manifest before the end of employment, the best fit was also the linear relative rate model, predicting a rate ratio of 25.6 for silicosis at the mean cumulative exposure of the cases ($p<0.0001$). The excess lifetime risk for silicosis at the current PEL was 75/1000. Conclusion : Current occupational health standards for crystalline silica permit risks of lung disease other than cancer far in excess of what is usually considered acceptable by the Occupational Safety and Health Administration (a lifetime risk of less than one in a thousand deaths).

Exposure to rubber fume and rubber process dust in the general rubber goods, tyre manufacturing and retread industries / G. Cox, A. A. Dost, D. Redman, The annals of occupational hygiene, 2000, 44(5), σ. 329-342

This study assesses the current patterns and levels of exposure to rubber fume and rubber process dust in the British rubber industry and compares and contrasts the data obtained from the general rubber goods (GRG), retread tire (RT) and new tire (NT) sectors. A total of 179 rubber companies were visited and data were obtained from 52 general rubber goods, 29 retread tire and 7 new tire manufacturers. The survey was conducted using a questionnaire and included a walk-through inspection of the workplace to assess the extent of use of control measures and the nature of work practices being employed. The most recent (predominantly 1995-97) exposure monitoring data for rubber fume and rubber process dust were obtained from these companies; no

additional sampling was conducted for the purpose of this study. In addition to the assessment of exposure data, evaluation of occupational hygiene reports for the quality of information and advice was also carried out.A comparison of the median exposures for processes showed that the order of exposure to rubber fume (E, in mg m(-3)) is: E(moulding) (0.40) approximately E(extrusion) (0.33)>E(milling) (0.18) for GRG; E(press) (0. 32)>E(extrusion) (0.19)>E(autoclave) (0.10) for RT; and E(press) (0. 22) approximately E(all other) (0.22) for NT. The order of exposure to rubber fume between sectors was E(GRG) (0.40)>E(RT) (0.32)>E(NT) (0.22). Median exposures to rubber process dust in the GRG was E(weighing) (4.2)>>E(mixing) (1.2) approximately E(milling) (0.8) approximately E(extrusion) (0.8) and no significant difference (P=0. 31) between GRG and NT sectors. The findings compare well with the study carried out in the Netherlands [Kromhout et al. (1994), Annals of Occupational Hygiene 38(1), 3-22], and it is suggested that the factors governing the significant differences noted between the three sectors relate principally to the production and task functions and also to the extent of controls employed. Evaluation of occupational hygiene reports indicated a number of shortcomings including lack of suitable and sufficient information with regard to sampling and analytical methods in use, poor sampling strategy, lack of appreciation regarding true rubber process dust, and a poor understanding of the principles of control for substances assigned maximum exposure limits.

Exposure to tremolite asbestos and respiratory health in Swedish dolomite workers / A. I. Selden, ...[et.al.], Occupational and environmental medicine, 2001, 58(10), σ. 670-677

Objectives : Deposits of carbonate rock like limestone and dolomite may contain tremolite asbestos. This study assessed the exposure to tremolite asbestos and the respiratory health of Swedish dolomite workers. Methods : 95% of 137 eligible workers at two dolomite producing companies completed a self administered questionnaire that included questions on respiratory symptoms and were examined with spirometry as well as chest radiography. Total exposure to dust was gravimetrically measured and the tremolite asbestos content of the dust was assessed with polarisation and phase contrast microscopy. Results : Dolomite dust concentrations were moderate (median 2.8 mg/m3) and tremolite asbestos concentrations were generally below the limit of detection (<0.03 fibres/ml). Somewhat higher values, around 0.1 fibres/ml, were obtained in manual stone sorting and bagging. Respiratory symptoms suggestive of chronic bronchitis were more related to smoking than to estimates of individual exposure to dust. The mean vital capacity was 0.2 l lower than expected after adjustment for sex, age, height, and smoking but the decline in lung function was not associated with current or cumulative exposure to dust in a clear cut way. Two definite cases of pleural plaques and one possible case of simple pneumoconiosis were noted, but the plaques could not be attributed exclusively to exposure to tremolite asbestos.

Conclusion : Dolomite mining and milling may indeed entail low levels of exposure to tremolite asbestos, but this exposure was not a strong determinant of respiratory symptoms, lung function, or pneumoconiosis in exposed Swedish workers. This was true also for dolomite dust. The hazards of exposure to tremolite asbestos may vary across deposits, however, and additional studies at other sites of carbonate rock exploitation are warranted.

Exposures to quartz, diesel, dust, and welding fumes during heavy and highway construction /Susan R. Woskie ...[et.al.], American industrial hygiene association journal, 2002, 63(4), σ. 447-457

Personal samples for exposure to dust, diesel exhaust, quartz, and welding fume were collected on heavy and highway construction workers. The respirable, thoracic, and inhalable fractions of dust and quartz exposures were estimated from 260 personal impactor samples. Respirable quartz exposures exceeded the National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit (REL) in 7-31% of cases for the trades sampled. More than 50% of the samples in the installation of drop ceilings and wall tiles and concrete finish operations exceeded the NIOSH REL for quartz. Thoracic exposures to quartz and dust exceeded respirable exposures by a factor of 4.5 and 2.8, respectively. Inhalable exposures to quartz and dust exceeded respirable exposures by a factor of 25.6 and 9.3, respectively. These findings are important due to the identification of quartz as a carcinogen by the National Toxicology Program and the International Agency for Research on Cancer. Fourteen percent of the personal samples for EC (n = 261), collected as a marker for diesel exhaust, exceeded the American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value (TLV) for diesel exhaust. Seventeen of the 22 (77%) samples taken during a partially enclosed welding operation reached or exceeded the ACGIH TLV of 5 mg/m3 for welding fume.

Flour dust : risk assessment document / Health and Safety Executive. -- Sudbury ; Suffolk : HSE, 1999. - iv, 76 σ. ISBN 0-7176-2479-X (3715)

The Health and Safety Executive (HSE) has published a risk assessment document on occupational exposure to flour dust. Workers potentially exposed to flour dust during the course of their work include those in the food and catering industry. Some of the health problems which can result from occupational exposure include asthma, rhinitis (sneezing, runny nose) and conjunctivitis (itchy, inflamed red eyes). This is the eleventh document in the EH72 series, which gives information on risk assessments carried out for substances that can affect workers' health. Flour Dust critically reviews the available information on the hazards to human health, workplace exposure and workplace air measurement. It is aimed especially at occupational health professionals, scientific and technical experts.The document has been assessed and endorsed by the Working Group on the Assessment of Toxic Chemicals

(WATCH), which makes recommendations to the Advisory Committee on Toxic Substances (ACTS), on Occupational Exposure Limits (OELs) and other aspects of occupational health risk management.The document also contains the WATCH view on an OEL for flour dust, which is based on the risk assessment data in the document. Risk assessment documents are published after their endorsement by WATCH, and public consultation on any proposed OEL takes place through a Consultative Document. ACTS will be making recommendations to the Health and Safety Commission (HSC) that HSC should undertake formal consultation on a Maximum Exposure Limit (MEL) for flour dust. Although there is currently no OEL, employers have a responsibility under the Control of Substances Hazardous to Health (COSHH) Regulations 1999 to ensure that they have adequate control measures in place so that workplace exposure does not cause ill-health.

Increase in interleukin-6 and fibrinogen after exposure to dust in tunnel construction workers / B. Hilt ...[et.al.], Occupational and environmental medicine, 2002, 59(1), σ. 9-12

Objectives: To see if there is any change in blood concentrations of interleukin-6 (IL-6) and fibrinogen during a working shift in tunnel construction workers. Methods : 12 Tunnel construction workers were followed up during a 24 hours period after returning from a 9 day work free period. The first blood sample was taken on Monday afternoon before starting the shift. Another was taken around midnight after 8 hours of work, and another the next afternoon after about 12 hours of rest. Exposure to respirable dust was measured by personal samplers. Results : The exposure of the workers to respirable dust, in terms of an 8 hour time weighted average, varied between 0.3 and 1.9 mg/m^3. For IL-6, there was an increase in the median serum concentration from 1.14 ng/l before starting the shift to 4.86 ng/l after 8 hours of work (p=0.002). For fibrinogen, there was an increase in the median concentration from 3.40 g/l before entering the shift to 3.70 g/l 24 hours later (p=0.044). There was a positive correlation between values of IL-6 at the end of the working shift and the fibrinogen concentrations the next afternoon (Pearson's *R*=0.73, p=0.007). The observed increase in IL-6 was significant for both smokers and non-smokers. Conclusion : The study shows an increase in both IL-6 and fibrinogen concentrations during a working shift for both smoking and non-smoking tunnel construction workers.

Industrial dust explosions (1986 June 10-13 : Pittsburgh, Pennsylvania : symposium on industrial dust explosions sponsored by ASTM , Committee E-27 on hazard potential of chemicals / Kenneth L. Cashdollar, Martin Hertzberg. - Baltimore : American Society for Testing and Materials, 1987.– 362 σ. ISBN 0-8031-0957-1 (2127)

Inflammatory potential of dust from waste handling facilities measured as

IL-8 secretion from lung epithelial cells in vitro / Leila Allermann, Otto Melchior Poulsen, The annals of occupational hygiene, 2000, 44(4), σ. 259-269

Objectives : Organic dust contains several different components which may cause pulmonary effects, and many health problems have been associated with the collection and recycling of organic waste. It is often difficult to obtain a precise measurement of the exposure to each component in dust, and organic dust samples obtained from different workplaces may vary profoundly in composition. The aim of this study was to evaluate the inflammatory potential of dust from different waste handling plants. Furthermore, we set out to investigate the role of endotoxin in the inflammatory potential of dust. Methods: Dust samples were obtained from four incineration plants, three samples from a plant sorting household waste, five paper-sorting plants, two mail centres, four bottle-sorting plants, and two combined paper-sorting and composting plants. The samples were tested in a bioassay with the lungepithelial cell line A549. Cells were stimulated for 24 h with dust samples at six concentrations, and subsequently the interleukin 8 (IL-8) secretion into the growth medium was measured. The initial slope of the dose response curves was used to calculate the potency factor (PF) of the dust samples, and correction against positive control samples was used to reduce day-to-day variation. The concentration of endotoxin in the dust samples was measured by the limulus amebocyte lysate (LAL) assay. Results : The inflammatory potential of the dust samples for dust from the paper- and mail-sorting plants showed a significantly lower PF as compared with dust from the plants handling mixed household waste. A significantly lower PF for the dust samples from the bottle-sorting plants (excluding one outlier plant) compared with dust from the plants handling mixed household waste was also found. No correlation was observed between the PF and the concentration of endotoxin in the samples. Conclusion : The PFs obtained seem to reflect the material handled, with mixed household waste generating organic dust with the highest inflammatory potentials.

International report on the prevention and suppression of dust in mining, tunneling and quarrying : 5th / ILO. - Geneva : ILO, 1980. - 106 σ. - (Occupational safety and health series ; 40) ISBN 92-2-101899-7 (149)

Lead toxicity update. A brief review / N. C. Papanikolaou, …[et.al.], Medical science monitor, 2005, 11(10), σ. 329-336

Lead is a metal which has been associated with human activities for the last 6000 years. In ancient civilizations, uses of lead included the manufacture of kitchen utensils, trays, and other decorative articles. However, lead is also toxic to humans, with the most deleterious effects on the hemopoietic, nervous, reproductive systems and the urinary tract. The main sources of lead exposure are paints, water, food, dust, soil, kitchen utensils, and leaded gasoline. The majority of cases of lead poisoning are due to oral ingestion and

absorption through the gut. Lead poisoning in adults occurs more frequently during exposure in the workplace and primarily involves the central nervous system. Symptoms of hemopoietic system involvement include microcytic, hypochromic anemia with basophilic stippling of the erythrocytes. Hyperactivity, anorexia, decreased play activity, low intelligence quotient, and poor school performance have been observed in children with high lead levels. Lead crosses the placenta during pregnancy and has been associated with intrauterine death, prematurity, and low birth weight. In 1991, the Centers for Disease Control and Prevention in the USA redefined elevated blood lead levels as those > or = 10 microg/dl and recommended a new set of guidelines for the treatment of lead levels > or =15 microg/dl.

Lung function measurements in traditional bakers / D. Patouchas, …[et.al.], Acta Bio-medica, 2008, 79(3), σ. 197-203

Background : Respiratory disease is common and amenable to early detection and management in the primary care setting. Spirometric and phlethysmographic evaluation of ventilatory function plays a critical role in the diagnosis, differentiation and management of respiratory illness such as asthma, chronic obstructive pulmonary disease and restrictive disorders. Methods : Study subjects consisted of 58 workers in the production of bread and 45 salesclerks of bread from the same bakeries. The lung function of employees was checked using a spirometry and body phlethysmography, calculating the indexes Forced expiratory volume 1 sec (FEV1), forced vital capacity (FVC), FEV1/FVC ratio, residual volume (RV), total lung capacity (TLC), and RV/TLC ratio. The percentage of the obstructive and the restrictive impairment both in the bread producers and sellers was also searched as well as the percentage of response in the bronchodilation. Results : Bread producers recorded significantly lower mean lung functions compared with salesclerks, for FEV1, FVC and FEV1/FVC ratio, when observed values were expressed as percentages of predicted normal values. Furthermore the percentage of obstructive impairment among the bread producers was 12.6%, while a percentage of 20.68% of them presented a response in bronchodilation (while the percentage in salesclerks was 6.6% respectively). The percentage of restrictive impairment was similar in both groups (12.6% for bread producers and 11.1% for salesclerks). Conclusions : The study concluded that bread producers in traditional bakeries in Greece are at increased risk of developing airway obstruction compared with salesclerks of bread from the same bakeries. A different degree of smoking status and of wheat flour dust exposure may explain this difference. Technical preventive measures such as well ventilated work areas and appropriate respiratory protective devices should be adopted.

Measurements of the effectiveness of dust control on cut-off saws used in the construction industry, The annals of occupational hygiene, 1999, 43(7), σ. 443-456

Materials used in the construction industry frequently contain large quantities of silica. When they are cut or shaped with power tools considerable respirable dust can be produced. Three dust control systems for use with cut-off saws have been evaluated on site: wet dust suppression using mains water, the same system using water from a portable water tank, and local exhaust ventilation. The efficiency of water suppression on cut-off saws has been precisely quantified in controlled laboratory conditions by means of measurements with and without dust control. When dust control was used on-site, the mean concentrations of airborne silica were reduced by a factor of between three and seven, the accuracy being limited by the relatively high limit of detection for silica. All controls systems generally reduced respirable dust levels by at least 90%. Although the effectiveness of dust suppression did not depend on blade type, a diamond blade was more effective than a resin-bonded blade with the pressurised water system; cutting a slab with this type of blade could be completed before the water tank required repressurisation. In laboratory tests, the application of water reduced the dust concentration to <4% of its value without control. The method for monitoring the dust concentration was sufficiently sensitive to measure a difference in concentration produced during cutting in different directions. It is important, however, that the pressure in supply reservoirs is properly maintained, that the water is correctly applied and that it is used at the correct rate. If this is done effective dust control can be achieved.

Nasal patency is related to dust exposure in woodworkers / V. Schlunssen ...[et.al.], Occupational and environmental medicine, 2002, 59(1), σ. 23-29

Objectives : A cross sectional study of 54 furniture factories and three control factories was conducted to investigate the relation between subjective and objective nasal obstruction and exposure to wood dust. Methods : Acoustic rhinometry was performed on 161 woodworkers and 19 controls. For each person, four measuring rounds were performed: before work, after 4 hours of work, and after 7 hours of work before and after decongestion. Before the first and third measuring round, each person rated the current feeling of nasal obstruction in the left and right nostril separately, using a visual analogue scale. Personal passive dust measurements were performed on 140 woodworkers. Results : The mean (SD) of equivalent inhalable dust was relatively low, 1.17 (0.62) mg/m^3, range 0.17–3.44 mg/m^3. The exposure was divided into four levels: controls, low exposure, medium exposure, and high exposure. For the two highest concentrations of exposure, a significant increase in congestion—decreased nasal cavity volume and cross sectional areas—was found after 4 and 7 hours of work, compared with before work. Multivariate linear regression analysis showed positive correlations between concentration of dust and change in mucosal swelling. A significant increase in self rated nasal obstruction was found after work compared with before work for the two highest exposure groups. No correlation between objective

nasal variables and self rated nasal obstruction was found. Conclusion : Exposure to wood dust was related in a dose dependent manner to acute nasal obstruction measured by acoustic rhinometry and self reported obstruction, but no correlation was found between measured and self reported obstruction.

Nested case-control study of lung cancer in four Chinese tin mines / W. Chen and J. Chen, Occupational and environmental medicine, 2002, 59(2), σ. 113-118

Objectives : To evaluate the relation between occupational dust exposure and lung cancer in tin mines. This is an update of a previous study of miners with high exposure to dust at four tin mines in southern China. Methods : A nested case-control study of 130 male lung cancer cases and 627 controls was initiated from a cohort study of 7855 subjects employed at least 1 year between 1972 and 1974 in four tin mines in China. Three of the tin mines were in Dachang and one was in Limu. Cumulative total exposure to dust and cumulative exposure to arsenic were calculated for each person based on industrial hygiene records. Measurements of arsenic, polycyclic aromatic hydrocarbons (PAHs), and radon in the work sites were also evaluated. Odds ratios (ORs), standard statistic analysis and logistic regression were used for analyses. Results : Increased risk of lung cancer was related to cumulative exposure to dust, duration of exposure, cumulative exposure to arsenic, and tobacco smoking. The risk ratios for low, medium, and high cumulative exposure to dust were 2.1 (95% confidence interval (95% CI) 1.1 to 3.8), 1.7 (95% CI 0.9 to 3.1), and 2.8 (95% CI 1.6 to 5.0) respectively after adjustment for smoking. The risk for lung cancer among workers with short, medium, and long exposure to dust were 1.9 (95% CI 1.0 to 3.5), 2.3 (95% CI 1.3 to 4.1), and 2.3 (95% CI 1.2 to 4.2) respectively after adjusting for smoking. Several sets of risk factors for lung cancer were compared, and the best predictive model included tobacco smoking (OR=1.6, 95% CI 1.1 to 2.4) and cumulative exposure to arsenic (ORs for different groups from low to high exposure were 2.1 (95% CI 1.1 to 3.9); 2.1 (95% CI 1.1 to 3.9); 1.8 (95% CI 1.0 to 3.6); and 3.6 (95% CI 1.8 5 to 7.3)). No excess of lung cancer was found among silicotic subjects in the Limu tin mine although there was a high prevelance of silicosis. Exposures to radon were low in the four tin mines and no carcinogenic PAHs were detected. Conclusions : These findings provide little support for the hypothesis that respirable crystalline silica induces lung cancer. Ore dust in work sites acts as a carrier, the exposure to arsenic and tobacco smoking play a more important part in carcinogenesis of lung cancer in tin miners. Silicosis seems not to be related to the increased risk of lung cancer.

Non-malignant mortality among Norwegian silicon carbide smelter workers / P. Romundstad, A. Andersen, and T. Haldorsen, Occupational and

environmental medicine, 2002, 59(5), σ. 345-347

Objectives : To investigate associations between exposures in the silicon carbide (SiC) industry and mortality from non-malignant diseases. Methods : Mortality among 2562 men, working in one of three silicon carbide smelters was investigated, giving 52 618 person-years of follow up from 1962 to 1996. Dose-response relations were investigated by internal comparisons using Poisson regression and by stratified standardised mortality ratio (SMR) analyses. Results : Mortality from all causes was significantly raised compared with the Norwegian mortalities among men, SMR=1.12, (95% confidence interval (95% CI) 1.05 to1.20). An excess mortality from asthma, emphysema, and chronic bronchitis combined was found, SMR=2.21 (95% CI 1.61 to 2.95), increasing from 1.05 in the unexposed category to 2.64 (95% CI 1.44 to 4.43) in the upper category of exposure to total dust. The Poisson regression analysis confirmed the results from the stratified SMR analyses, and suggested that smoking did not act as a confounder. No association was found for circulatory mortality. Conclusions : There was an increased mortality from asthma, emphysema, and chronic bronchitis combined among SiC workers exposed to dust .

Occupational dust exposure and the risk of laryngeal cancer in Turkey / Omur Cinar Elci ...[et.al.], Scandinavian journal of work, environment and health, 2002, 28(4), σ. 278-284

Objectives : A hospital-based case-referent study was conducted to identify occupational risk factors for laryngeal cancer. In a previous report an association was found between laryngeal cancer and occupations with potential dust exposure; a job-exposure matrix was developed to aid further evaluation of laryngeal cancer risks from five occupational dust exposures. Methods : Among 7631 cancer cases from the Okmeydani Hospital, Istanbul, between 1979 and 1984, 958 larynx cancer cases were identified among men. After exclusions, 940 laryngeal cancer cases and 1519 referents were available. A standardized questionnaire was used to obtain basic information on the patients. Seven-digit standard occupational and industrial codes were created to classify the job and industrial titles. A job-exposure matrix was developed for occupational dusts, including silica, asbestos, wood, cotton, and grain, and age-, smoking-, and alcohol-adjusted odds ratios (OR) and 95% confidence intervals (95% CI) were calculated to evaluate risks of laryngeal cancer. Results : An excess of laryngeal cancer occurred for workers potentially exposed to silica and cotton dust, particularly for supraglottic cancer (OR 1.8, 95% CI 1.3-2.3, for silica and OR 1.6, 95% CI 1.1-2.5, for cotton dust), and there was a significant dose-response relationship with silica exposure. No relationship was found between laryngeal cancer and asbestos, grain, or wood dust exposures. Conclusion : Laryngeal cancer, especially supraglottic tumors, is associated with silica and cotton dust exposures in Turkey.

Occupational exposure to lignite and impact on respiratory system among heavy industry personnel / S. Drivas, …[et.al.], Industrial health, 2007, 45(3), σ. 409-414

Objective is to evaluate the impact of occupational exposure to lignite dust on respiratory system. 103 blue-collar workers exposed to lignite dust and 62 controls completed a questionnaire on respiratory symptoms and underwent spirometry. Levels of lignite dust in workplace were measured. Univariate and multivariate analysis of the data were performed. The concentration of lignite dust varied from 0.6 to 1.4 mg/m3. Current smokers and workers exposed to lignite dust presented higher prevalence of chronic bronchitis symptoms and of FEV<80% and FEV1/FVC<70%. Multivariate analysis has shown that smoking and occupational exposure to lignite dust were independent predictors of chronic bronchitis symptoms, as well as of an obstructive ventilation pattern. Further analysis showed that exposed workers who were current smokers presented a five fold rate for developing an obstructive ventilation pattern in comparison to exposed workers non currently smokers. Occupational exposure to lignite dust and smoking were independent determinants of chronic bronchitis symptoms and obstructive ventilation pattern. There is some evidence for a combined effect of smoking and lignite dust exposure on respiratory system.

Occupational risk factors for nasopharyngeal cancer among female textile workers in Shanghai, China / W. Li, ...[et.al.], Occupational and environmental medicine, 2006, 63(1), σ. 39-44

Aims : To investigate whether occupational exposure to dusts and chemicals in the Chinese textile industry are associated with risk of nasopharyngeal cancer. Methods : Sixty seven nasopharyngeal carcinoma (NPC) cases identified during 1989-98 and a random sample (n = 3188) of women were included in a case cohort study nested in a cohort of 267,400 women textile workers in Shanghai, China. A complete occupational history of work in the textile industry was obtained for each woman. A job exposure matrix developed by experienced industrial hygienists was used to assess exposures to specific dusts and chemicals. Results : Risk of NPC is associated with cumulative exposure to cotton dust. The hazard ratio for women cumulatively exposed to >143.4 mg/m3 x years of cotton dust was 3.6 (95% CI 1.8 to 7.2) compared with unexposed women. Trends of increasing risk were also found with increasing duration of exposure to acids and caustics (p = 0.05), and with years worked in dyeing processes (p = 0.06). Women who worked at least 10 years in dyeing processes had a 3.6-fold excess risk of NPC (95% CI 1.0 to 12.1). Conclusions : Occupational exposure to cotton dust, acids, and caustics, and work in dyeing and printing jobs in the textile industry may have increased risk of NPC in this cohort.

Particulate polycyclic aromatic hydrocarbons and n-alkanes in recycled paper / Marie-Cecile Chalbot, …[et.al.], Journal of hazardous materials, 2006, 137(2), σ. 742-751

The aliphatic and polycyclicaromatic fractions of dust collected in the vicinity of recycledpaper processing operations were analyzed using gas chromatography/mass spectrometry. Total measured dust concentration (up to 8.73 ± 2.02 mg/m^3) fluctuated substantially in the different steps of paper manufacture. This was attributed to the type of the operation such as, the release of fibers and particles during paper cutting and the use of reactive chemicals and excessive water under high temperature and pressure during the bleaching and the water rinsing/drying step.
Particulatepolycyclicaromatichydrocarbons (PAHs) (from fluorene to benzo[*ghi*]perylene with mean concentrations from 3.8 ± 0.5 to 41.4 ± 0.4 ng/m^3) and the unresolved mixture of branched, cyclic and unsaturated hydrocarbons (UCM) were measured in all samples while, *n*-alkanes from *n*-C_{20} to *n*-C_{27}, were only observed in cutting and packaging areas (from 180.6 ± 18.9 to 4297.9 ± 794.9 ng/m^3). The profile of occupational PAHs in bleaching and treatment of contaminated recycled raw paper was comparable to that observed for anthropogenic activities. The values of molecular diagnostic ratios indicated the contribution of oil residues and emissions from worklifts and other equipment used for pulp and paper handling. Total benzo[*a*]pyrene-equivalent (BaP) concentrations of particulate PAHs (varied from 323 up to 1104 pg/m^3), provided evidence that workers were exposed to high quantities of PAHs as compared with exposures to urban air and other indoor settings, posing long-term threat to their health.

Polychlorinated dibenzo-p-dioxin and dibenzofuran concentrations in serum samples of workers at intermittently burning municipal, waste incinerators in Japan / S. Kumagai ...[et.al.], Occupational and environmental medicine, 2002, 59(6), σ. 362-368

Objectives : To find whether or not incinerator workers employed at intermittently burning municipal incineration plants are exposed to high concentrations of polychlorinated dibenzo-*p*-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs). Methods : 20 Workers employed at three municipal waste incineration plants (incinerator workers) and 20 controls were studied. The previous job, dietary, smoking, and body weight and height were obtained from a questionnaire survey. Concentrations of PCDDs and PCDFs were measured in serum samples of the workers and the deposited dust of the plants. The influence of occupational exposure on concentrations of PCDDs and PCDFs in serum samples was examined by multiple regression analysis. Results : Dust analysis showed that dominant constituents were octachlorodibenzo-*p*-dioxin (OCDD) and 1,2,3,4,6,7,8-heptachlorodibenzo-*p*-dioxin (HpCDD) among the PCDDs, and 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) and octachlorodibenzofuran (OCDF)

among the PCDFs. The toxicity equivalents (TEQs) of summed PCDDs and PCDFs in the deposited dust were 0.91, 33, and 11 ng TEQ/g, respectively, for plants I, II, and III. The means of TEQ in serum samples of summed PCDDs and PCDFs in the incinerator workers and controls were 22.8 and 16.4 pg TEQ/g lipid for area I, 29.4 and 19.3 pg TEQ/g lipid for area II, and 22.8 and 24.9 pg TEQ/g lipid for area III, which were almost the same as for the general population of Japan. No significant differences in the TEQ of PCDDs and TEQ of PCDDs and PCDDs were found between the incinerator workers and the controls. However, the TEQ of PCDFs was significantly higher among the incinerator workers in areas I and II, and the 1,2,3,4,6,7,8-HpCDF concentration was also significantly higher for all three areas. When the occupational exposure index for each constituent of PCDDs and PCDFs was defined as the product of the duration of employment at the incineration plant and the concentration of the constituent in the deposited dust, multiple regression analysis showed that the concentrations of HxCDF, HpCDF, and TEQ of PCDFs in serum samples increased with the occupational exposure index. The multiple regression analysis also suggested that significant factors affecting the concentrations in serum samples were area for HxCDD, age for TCDD, PeCDD, PeCDF, TEQ of PCDDs, TEQ of PCDFs, and TEQ of summed PCDDs and PCDFs, and BMI for HxCDD, HpCDD, and OCDD. Conclusion : This study showed that incinerator workers employed at intermittently burning incineration plants were not necessarily exposed to high concentrations of PCDDs and PCDFs. However, the increases in the concentrations in serum of HxCDF, HpCDF and TEQ of PCDFs with the occupational exposure index suggest that the incinerator workers had inhaled dust containing PCDDs and PCDFs during their work.

Prevalence of byssinosis in a textile mill in northern Greece / L. Sichletidis, …[et.al.], Archives of environmental health, 2004, 59(11), σ. 617

Principles of dust control in powder handling and packaging operations / L. A. Morris, Special inspector reports, 1993, 38, σ. 1-30

Respiratory effects in workers processing dried tobacco leaves / D. Chloros, …[et.al.], Allergologia et immunopathologia, 2004, 32(6), σ. 344-351

Objectives : The aim of this study was to examine the pollution level of the occupational environment and to investigate the effects of occupational exposure to tobacco dust on the respiratory system of tobacco workers. No such study has previously been conducted in Greece, which is one of the main tobacco-producing countries. Methods : A total of 1,020 seasonal and permanent tobacco workers (188 men and 832 women) were studied in a factory in Thessaloniki. The study included: 1) completion of a questionnaire (British Medical Research Council 1986), 2) spirometry and 3) rhinomanometry. At the same time, tobacco dust levels in the working environment were measured. As controls, 469 workers (87 men and 382 women) at a Thessaloniki hospital were used. Seventy six workers with nasal

symptoms underwent: 1) special nasal provocation test with tobacco dust antigen, 2) skin prick tests, and 3) measurement of total IgE, specific IgE and specific IgG against tobacco protein. Results : Very high levels of total suspended dust were found in work site air (45.3-54.4 mg/m3). The prevalence of chronic bronchitis was 8.7 % versus 20.6 % in controls. Chronic obstructive pulmonary disease was found in 13 workers (1.3 %) and in 16 controls (3.4 %). FEV1 %pred, FVC %pred and the FEV1/FVC ratio were lower in controls, whereas FEF25-75 % %pred was lower in workers. There were no workers with bronchial asthma or extrinsic allergic alveolitis. Rhinitis was reported by 27.3 % of the workers versus 17.9 % of controls, whereas nasal flows were 563+/-211 versus 645 +/- 321 ml/sec, respectively. According to the results of skin prick tests, six workers were sensitized to dried tobacco leaf dust. Conclusion : The results of our study do not support an association between the development of chronic diseases of the lower respiratory system and pollutants associated with the processing of dried tobacco leaves. In contrast, an association between disorders of the upper airways and tobacco dust in work sites is postulated.

Pulmonary epithelial response in the rat lung to instilled Montserrat respirable dusts and their major mineral components / D. G. Housley, ...[et.al.], Occupational and environmental medicine, 2002, 59(7), σ. 466-472

Background : The Soufriere Hills, a stratovolcano on Montserrat, started erupting in July 1995, producing volcanic ash, both from dome collapse pyroclastic flows and phreatic explosions. The eruptions/ash resuspension result in high concentrations of suspended particulate matter in the atmosphere, which includes cristobalite, a mineral implicated in respiratory disorders. Aims : To conduct toxicological studies on characterised samples of ash, together with major components of the dust mixture (anorthite, cristobalite), and a bioreactive mineral control (DQ12 quartz). Methods : Rats were challenged with a single mass (1 mg) dose of particles via intratracheal instillation and groups sacrificed at one, three, and nine weeks. Acute bioreactivity of the particles was assessed by increases in lung permeability and inflammation, changes in epithelial cell markers, and increase in the size of bronchothoracic lymph nodes. RESULTS: Data indicated that respirable ash derived from pyroclastic flows (20.1% cristobalite) or phreatic explosion (8.6% cristobalite) had minimal bioreactivity in the lung. Anorthite showed low bioreactivity, in contrast to pure cristobalite, which showed progressive increases in lung damage. Conclusion : Results suggests that either the percentage mass of cristobalite particles present in Montserrat ash was not sufficient as a catalyst in the lung environment, or its surface reactivity was masked by the non-reactive volcanic glass components during the process of ash formation

Reactions of healthy persons and persons suffering from allergic rhinitis when exposed to office dust / Pernille Hauschildt, Lars Molhave, S. K.

Kjaergaard, Scandinavian journal of work, environment and health, 1999, 25(5), σ. 442-449

Objectives : Reactions to airborne office dust among healthy subjects and subjects suffering from allergic rhinitis were investigated. Methods : Twelve healthy and 11 subjects suffering from allergic rhinitis were exposed to clean air [17 (SD 2) microg/m3] and office dust [439 (SD 68) microg/m3] for 245 minutes. The effect measurements included subjective sensations (questionnaire and potentiometer ratings), mood scale, peak flow, bronchial provocation with histamine using forced expiratory volume in 1 second as the effect measure, nasal mucosal swelling, tear film stability, epithelial damage, foam formation in the eye canthus, threshold for eye irritation with carbon dioxide, eye redness, cellular content of conjunctival fluid, and an addition test for distraction. As many investigations were made and as many statistical analyses (including subgroup analyses) were carried out, the risk of mass significance appeared. This problem was dealt with using the Bonferroni correction for multiple significance tests. Results : The mean ratings of the potentiometer were higher (the subjects showed more irritation) during the dust exposure. The objective investigations showed only indications of effects of dust exposure, and some of the indications were in biologically unexplainable directions. No difference in the reactions to dust was observed between the healthy subjects and the subjects suffering from allergic hinitis. Conclusions : Dust does not seem to have objective or subjective effects on humans, as only indications of dust effects were found. Subjects suffering from allergic rhinitis do not appear to be a risk group in relation to dust exposure.

Reduction in cotton dust concentration does not totally eliminate respiratory health hazards: the Greek study / N. J. Boubopoulos, …[et.al.], Toxicology and industrial health, 2010, 26(10), σ. 701-707

A number of epidemiological studies have shown that byssinosis is associated with exposure to high levels of cotton dust. In this first survey, the prevalence of respiratory symptoms in cotton workers under low concentration of cotton dust was investigated. A respiratory questionnaire consisting of 47 questions was given to 443 cotton workers. Their lung function was measured with spirometry. Breathing zone cotton dust concentration was measured by personal samplers and static sampling was used to define the level of the work area concentration. Workers with abnormalities in the pulmonary function parameters, including forced expiratory volume in 1 second (FEV_1), forced vital capacity (FVC) and peak expiratory flow rate (PEFR), were 5.9%. In this group of operatives 7.7% had symptoms compatible with byssinosis, 65.4% of them were smokers, 69.2% of them had symptoms of allergic rhinitis, while 72.2% of them were smokers. Asthma, which appeared after the age of 30, was reported by 57.7%, while 60% of them were smokers. Mean breathing zone cotton dust concentration was 0.16 mg/m^3 and the mean work area cotton dust concentration 0.14 mg/m^3. Despite the reduction in cotton dust

concentration, byssinosis symptoms, allergic rhinitis, asthma and impaired pulmonary function are the most common findings in our cotton workers depending on the duration of exposure, whether they are smokers or not and the nature of the cotton dust.

Relative toxicological potency of dusts (part 1,2) / R. T. Cullen ...[κ.ά.]. - Sudbury ; Suffolk : HSE, 1999. - 135 σ.- (Contract research report ; 216) ISBN 0-7176-2437-4 (3724)

Respiratory symptoms and diseases among workers in the soft tissue producing industry / T. Kraus ...[et.al.], Occupational and environmental medicine, 2002, 59(12), σ. 830-835

Aims : To correlate the prevalence of respiratory tract symptoms and diseases with dust and fibre exposure in the soft tissue industry in Germany. Methods : Ambient monitoring was performed for inhalable, respirable dust and fibres in seven soft tissue producing factories. In 441 workers (72 controls, 90 moderate, 279 high exposure) a standardised questionnaire on respiratory symptoms, diseases, occupational history, and smoking habits was used. Crude differences in the prevalence of respiratory symptoms and diseases were assessed. Logistic regression analysis was used to determine the relation between the respiratory symptoms/diseases and the cumulative dust and fibre exposure, respectively, while adjusting for age, gender, smoking habits, and factory. The effects of exposure intensity and duration were differentiated by categorising dust/fibre concentrations and years of exposure separately and setting up logistic regression models. Results : The mean concentrations for inhalable, respirable, and fibrous dusts were 10.3 mg/m(3), 0.22 mg/m(3), and 415,000 fibres/m(3). Adjusted odds ratios (OR) with relation to cumulative dust exposure intensity were significantly raised for blocked nose (18.2), mucosal irritation (6.5), dry nose (8.9), cough (3.5), phlegm (7.5), exercise induced dyspnoea (2.6), hoarseness (11.3), and sneezing attacks (7.9) (ORs for highest exposure categories). Cumulative dust or fibre exposure had no significant effects on the prevalence of respiratory diseases. For all symptoms with significantly raised ORs, combined effects of intensity and duration of exposure were found. Conclusions : Because of the high prevalence of respiratory symptoms a reduction of dust exposures is recommended. Chronic exposure effects could not be found in this study, however, a healthy worker effect has to be considered.

Respiratory symptoms and functional status in workers exposed to silica, asbestos and coal mine dusts/Xiao-Rong Wang, David C. Christiani, Journal of occupational and environmental medicine, 2000, 42(11), σ. 1076-1084

This study aims to provide further understanding of physiologic and symptomatic changes and radiographic abnormalities due to exposure to silica, asbestos, and coal dusts. Questionnaires and pulmonary function tests

were given to 220 silica, 277 asbestos, and 511 coal workers from three different industries in China. Posteroanterior chest radiographs were classified as stages 0, I, II, and III according to degree of parenchymal fibrosis. Significantly poorer pulmonary function and a higher prevalence of dyspnea and chronic cough were observed in workers with pneumoconiosis than those without, irrespective of dust type. Workers with stages II and III silicosis had worse pulmonary function and more common symptoms relative to workers with equivalent coal workers' pneumoconiosis or asbestosis. After adjusting for relevant confounders, reductions in the spirometric parameters and single breath diffusing capacity for carbon monoxide (DLCO) and the occurrence of respiratory symptoms were associated with increasing stage of silicosis, whereas lower DLCO and the occurrence of symptoms were associated with increasing stage of asbestosis and coal workers' pneumoconiosis. The study suggests that despite the differences in degree and pattern due to exposure to different fibrogenic dusts, respiratory impairments of all of the workers are associated with the presence and progression of parenchymal fibrosis and smoking.

Respiratory symptoms, lung function, and nasal cellularity in Indonesian wood workers : a dose-response analysis / P. J. A. Borm ...[et.al.], Occupational and environmental medicine, 2002, 59(5), σ. 338-344

Objectives : It was hypothesised that inflammation plays a dominant part in the respiratory effects of exposure to wood dust. The purpose of this study was to relate the nasal inflammatory responses of workers exposed to meranti wood dust to (*a*) levels of exposure, (*b*) respiratory symptoms and (*c*) respiratory function. Methods : A cross sectional study was carried out in 1997 in a woodworking plant that used mainly meranti, among 982 workers exposed to different concentrations of wood dust. Personal sampling (n=243) of inhalable dust measurements indicated mean exposure in specific jobs, and enabled classification of 930 workers in three exposure classes (<2, 2–5, and >5 mg/m^3) based on job title. Questionnaires were used to screen respiratory symptoms in the entire population. Lung function was measured with two different techniques, conventional flow-volume curves and the forced oscillation technique. Nasal lavage was done to assess inflammation in the upper respiratory tract. Results : A negative trend between years of employment and most flow-volume variables was found in men, but not in women workers. Current exposure, however, was not related to spirometric outcomes, respiratory symptoms, or nasal cellularity. Some impedance variables were related to current exposure but also with better function at higher exposure. Conclusions : Exposure to meranti wood dust did not cause an inflammation in the upper respiratory tract nor an increase of respiratory symptoms or decrease of lung function. These data do not corroborate the hypothesis that inflammation plays a part in airway obstruction induced by wood dust.

A review of human carcinogens. Part C : arsenic, metals, fibres and dusts / IARC Working Group on the Evaluation of Carcinogenic Risks to Humans (2009 : Lyon, France).- (IARC monographs on the evaluation of carcinogenic risks to humans ; v. 100C).- Lyon, Cedex : IARC, 2012.- 524 σ. ISBN 978-92-832-1320-8

In March, 2009, 27 scientists from eight countries met at the International Agency for Research on Cancer (IARC) to reassess the carcinogenicity of metals, arsenic, dusts, and fibres previously classified as "carcinogenic to humans" (Group 1) and to identify additional tumour sites and mechanisms of carcinogenesis

Screening and surveillance of workers exposed to mineral dust / Gregory R. Wagner. - Geneva : WHO, 1996. - ix, 68 σ. ISBN 92-4-154498-8 (2586)

This book presents a step-by-step approach to the development of screening and surveillance programmes for workers exposed to mineral dusts. Occupational health professionals using this approach will be better able to monitor exposure-related health problems, deliver treatment to affected individuals and, most importantly, devise appropriate preventive interventions. Focusing on exposure to asbestos, crystalline silica and coal mine dust, the book reviews the diseases associated with these three common dusts and examines the tests used to detect such disease with respect to their relevance to screening and surveillance programmes. Technical annexes provide examples of existing programmes in a variety of settings and discuss the use and interpretation of questionnaires, lung spirometry and chest radiography.

Separation efficiency of a wood dust collector-field measurement using a fluorescent aerosol / D. Bemer, S. Calle, R. Regnier, The annals of occupational hygiene, 2000, 44(3), σ. 173-183

Given the dangerous nature of the dust emitted in the wood industry, the quality of the recycled air in the work premises after cleaning must be strictly controlled. A method of measuring the efficiency of a wood dust collector as a function of the particle diameter has been developed using a fluorescein tracer aerosol generated upstream of the equipment. The separation efficiency is determined from the particle size mass distribution of the tracer, both upstream and downstream, measured by means of two cascade impactors. The mass efficiency measured by tracer technique was compared on a test rig to the number efficiency measured using a reference method based on optical counting. The agreement between the two efficiencies is quite good; nevertheless, the tracer method leads to results that are slightly below those obtained using the reference method. The method was applied to measure the efficiency of a 11 500 m^3 h^{-1}wooddustcollector. The results are presented

along with those obtained from a sample of plane filter media making up the bags of the dust collector.

Silica, some silicates, coal dust and para-aramid fibrils (1996: Lyon, France) / WHO, IARC. - Lyon : IARC, 1997. - iii, 506 σ. (IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; 68) ISBN 92-832-1268-1
(3444)

Small bakeries : a cross-sectional study of respiratory symptoms, sensitization and dust exposure /A. D. Curran, ...[et.al.], Occupational medicine, 1999, 49(4), σ. 237-241

This cross-sectional study investigated the prevalence of respiratory symptoms and sensitization to dust components in 224 individuals in 18 small bakeries in Scotland. Each work practice in the bakeries was characterized by an assessment of dust exposure and assigned to a category with either a direct exposure to flour dust of an indirect exposure to flour dust. We found that work-related respiratory symptoms were significantly associated with specific IgE to wheat flour and amylase but not to exposure category (except for nasal/eye symptoms). However, specific IgE to wheat flour was significantly associated with exposure category. There was a higher prevalence of immunological sensitization, reporting of work-related respiratory symptoms and exposure to dust than in other studies and of the 144 personal dust sample results taken, 21 (14.6%) of the total exceeded 10 mg/m3, the substantial dust concentration as outlined by the COSHH Regulations. Follow-up of those with work-related asthma symptoms (questionnaire response) was inconclusive of the work-relatedness of their symptoms, although it did confirm respiratory morbidity.

Specific sensitization in whet flour and contributing factors in traditional bakers/K. Karkoulias, …[et.al.], European review for medical pharmacological sciences, 2007, 11(3), σ. 141-148

Skin prick tests (SPTs) play an important role in the diagnosis of bakers asthma and epidemiological field studies on frequencies of sensitization to wheat or rye flour. In many epidemiological studies the investigators have tried to reveal the determinants of specific sensitization, and atopy appears to be a very strong determinant for sensitization to flour allergens. Age and gender have not reported to be determinants of sensitization. Only one study found that sensitization in wheat flour with skin prick test was significantly associated with cigarette smoking. Few data are available on sensitization to wheat flour in populations without occupational exposure to bakery allergens. The aim of this study was to investigate the sensitization of wheat flour and other baking allergens (oat, barley, and rye flour) in traditional bakers and in cleaners in a big hospital in the same area. In addition the correlation of atopy with specific sensitization and the correlation of specific

sensitization with age, sex, working hours, working years, smoking status and pack/years with use of skin prick tests

Statement of evidence : respiratory hazards of pultry dust.- Sudbury, Suffolk : HSE, 2009.- 14 σ. (http://www.hse.gov.uk/pubns/web40.pdf)

Poultry dust can harm the respiratory system (nose, throat, airways and lungs) and workers may experience a range of symptoms including sore throat, cough, wheezing, shortness of breath, bronchitis and even occupational asthma. Workers may also experience flu-like symptoms. A statement of evidence has been prepared which describes the composition of poultry dust and its health effects more fully.

Symptoms, airway responsiveness and exposure to dust in beech and oak wood workers /A. Bohadana, …[et.al.], Occupational and environmental medicine, 2000, 57(4), σ. 268-273

Objectives : To investigate the relation between levels of cumulative exposure to wood dust and respiratory symptoms and the occurrence of bronchial hyperresponsiveness among beech and oak workers. Methods : 114 Male woodworkers from five furniture factories and 13 male unexposed controls were examined. The unexposed control group was supplemented by 200 male historical controls. Statistical analyses were performed excluding and including the historical controls. Dust concentration was measured by personal sampling methods. Cumulative exposure to dust was calculated for each woodworker by multiplying the duration of the work by the intensity of exposure (years.mg/m^3). Bronchial hyperresponsiveness was assessed by the methacholine bronchial challenge test. Subjects were labelled methacholine bronchial challenge positive if forced expiratory volume in 1 second (FEV_1) fell by 20%. The linear dose-response slope was calculated as the last dose divided by the total dose given. Results : 443 Dust samples were collected. The median cumulative exposure to dust was 110 years.mg/m^3 with lower and upper quartiles at 70 and 160 years.mg/m^3 Overall, no declines in FEV_1 and forced vital capacity (FVC) were found with increasing exposures. A dose-response relation was found between intensity of exposure on the one hand, and sore throat, increased prevalence of positive methacholine bronchial challenge tests, and steeper dose-response slope, on the other. Conclusion : Exposure to oak and beech dust may lead to the development of sore throat and bronchial hyperresponsiveness.

The effect of cleaning on dust and the health of office workers : an intervention study / K. Skulberg, ...[et al.], Epidemiology, 2004, 15(1), σ. 71-78

Background : Office employees often experience symptoms that could be related to indoor air exposures. Methods : In an office building, 114 nonsmokers who had reported mucosal irritation complaints in a survey were selected to participate in a double-blind intervention study. The intervention

was carried out in Oslo, Norway, during 1998. The offices of the intervention group were given a comprehensive cleaning, whereas the offices of the control group got a superficial cleaning as a placebo treatment. Dust concentration, health complaints, and nasal congestion were recorded before and after intervention or placebo. In the intervention group, the mean dust concentration was 67 microg/m3 before intervention and 50 microg/m3 after cleaning. Results : The intervention group reported a reduction in mucosal irritation complaints (a median reduction of 1.0 irritation index points on a scale 0-8) compared with no change in the control group. The odds ratio for reporting a 2-point reduction of the mucosal irritation symptom index was 3.5 (95% confidence interval [CI] = 1.2-9.1) in the intervention group compared with the control group. Nasal congestion, measured by acoustic rhinometry, was also reduced in the intervention group. The odds ratio for reduction in nasal congestion above the 70th percentile was 4.2 (CI = 1.3-11) in the intervention group versus the control group. Conclusions : This experimental field trial shows that comprehensive cleaning reduces the airborne dust in offices, and also can reduce mucosal symptoms and nasal congestion.

The quintessence of dust / Corbett McDonald, The annals of occupational hygiene, 2001, 45(3), σ. 171-173

Toxicity evaluation for the broad area of the asbestos mine of northern Greece / K. Anastasiadou, E. Gidarakos, Journal of hazardous materials, 2007, 139(1), σ. 9-18

The existing data regarding the quality of the environment in the asbestos mine of northern Greece (MABE) region related to the presence of asbestos are insufficient to determine the current pollution problem. In the present work, a first approach to this problem has been taken through a toxicity risk assessment. The environmental quality of an open air asbestos mine was evaluated over a long period of time by measuring and monitoring the concentration of asbestos fibres in air, soil and water. Air measurements were made to determine the concentration of asbestos fibres in the atmospheric air of the mine, the depositions and the nearby villages. The asbestos fibre concentration was also specified inside the building facilities of MABE. Analyses of soil, dust and water samples were carried out showing the presence of enormous quantities of chrysotile asbestos. The concentration of asbestos fibres in the atmospheric air was compared to older measurements that were taken at the same sampling points during the operation of the mine. The results of this work, in conjunction with individual researches that have been carried out in the past and with the evaluation of international standards of scientific and experience-based findings, provide a reliable framework with which to estimate the threat of MABE to its surrounding environment, and help to determine a basic criterion for the remediation and rehabilitation of the region. In addition, mathematical models based on human and animal studies were used to estimate the probability of a person developing cancer

from breathing air containing asbestos fibres in the wider vicinity of the mine in order to define appropriate procedures for evaluating asbestos-related risk.

Trends in levels of inhalable dust exposure, exceedance and overexposure in the european carbon manufacturing industry/ K. Gardiner, H. Kromhout, M. J. A. Van Tongeren, The annals of occupational hygiene, 2000, 44(4), σ. 271-280

In an attempt to investigate the relationship between exposure to carbon black and respiratory morbidity, a study of the complete carbon black manufacturing industry in Western Europe was commissioned. As part of this study, a large number of personal inhalable (n=8015) dust exposure measurements was taken during three phases of data collection between 1987 and 1995. Repeated measurements on the same worker were taken in the last two phases, which enabled the estimation of the within- and between-worker components of variance. Simultaneously, the fixed effects of phase and factory were estimated using mixed-effects analysis of variance. The results show that the personal inhalable dust exposure has reduced significantly since the first phase of the study. In addition, the interaction term between phase and factory was significant in most job categories, confirming that the reduction of exposure was not equal across all factories. When all factories were considered together, the probability that the mean exposure of a randomly selected worker (overexposure) or the probability that the exposure on a randomly selected day for a randomly selected worker (exceedance) was higher than 3.5mg m?3, was 10% or less for all job categories in the last phase. However, when the factories were considered separately, it appeared that the probability of overexposure or exceedance was in excess of 10% for the job categories 'Fitter/Welder', 'Warehouseman' and 'Site crew' for a number of factories. Therefore, even though exposure levels of inhalable dust have dropped considerably across the whole carbon black manufacturing industry in Western Europe, further reductions in exposure levels are required in these areas to make sure that the probability of overexposure and exceedance falls below a level of 10%.

Two patients with occupational asthma who returned to work with dust respirators / Yasushi Obase, …[et.al.], Occupational and environmental medicine, 2000, 57(1), σ. 62-64

Objectives : To assess the efficacy of dust respirators in preventing asthma attacks in patients with occupational asthma (asthma induced by buckwheat flour or wheat flour). Methods : The effect of the work environment was examined in two patients with occupational asthma with and without the use of a commercially available mask or a dust respirator. Pulmonary function tests were performed immediately before and after work and at 1 hourly intervals for 14 hours after returning to the hospital. Results : In patient 1, environmental exposure resulted in no symptoms during and immediately

after work, but coughing, wheezing, and dyspnoea developed after 6 hours. Peak expiratory flow rate (PEFR) decreased by 44% 7 hours after leaving the work environment, showing only a positive late asthmatic reaction (LAR). In patient 2, environmental exposure resulted in coughing and wheezing 10 minutes after initiation during bread making, and PEFR decreased by 39%. After 7 hours, PEFR decreased by 34%. The environmental provocation tests in both patients were repeated after wearing a commercial respirator. This resulted in a complete suppression of LAR in patient 1 and of immediate asthmatic reaction (IAR) and LAR in patient 2. Conclusions : Two patients with asthma induced by buckwheat flour or wheat flour in whom asthmatic attacks could be prevented with a dust respirator are reported. Dust respirators are effective in preventing asthma attacks induced by buckwheat flour and wheat flour.

Upper airway inflammation and respiratory symptoms in domestic waste collectors / I. M. Wouters ...[et.al.], Occupational and environmental medicine, 2002, 59(2), σ. 106-112

Objectives : To compare respiratory symptoms and upper airway inflammation in domestic waste collectors and controls, and to find the association between measures of upper airway inflammation on the one hand and exposure concentrations of organic dust or respiratory symptoms on the other hand. Methods : In a cross sectional study among 47 waste collectors and 15 controls, questionnaire data on respiratory symptoms were collected. Nasal lavage (NAL), to assess upper airway inflammation, was performed before and after a work shift at the beginning and at the end of the working week. In NAL fluid, cells were counted and differentiated and concentrations of interleukin 6 (IL6), IL8, tumour necrosis factor-α (TNFα), and IL1β were measured. In collectors, inhalable dust samples were collected in which bacterial endotoxin and mould β(1→3)-glucan were assessed. Results : Prevalence of respiratory symptoms was higher in waste collectors than in controls. Geometric mean exposure concentrations were 0.58 mg/m^3 for dust, 39 EU/m^3 for endotoxin, and 1.3 μg/m^3 for β(1→3)-glucan. At the end of the week collectors had higher concentrations of total cells and IL8 in NAL before and after a shift than controls (cells, before 1.9-fold $p<0.10$, after 3.3-fold $p<0.01$; IL8, before and after 1.8-fold $p<0.05$), and after/before work shift ratios of total cells were also higher (2.3-fold $p=0.06$) in collectors than in controls. Cells in NAL fluid consisted predominantly of neutrophils and epithelial cells, whereas eosinophils and mononuclear cells were rarely found. Exposure to dust and endotoxin was associated with concentrations of IL8 after the shift ($p<0.05$). Increased concentrations of IL8 ($p<0.05$) and total cells ($p<0.10$) after the shift were associated with respiratory symptoms. Concentrations of IL6, TNFα, and IL1β were not associated with waste collecting, symptoms, or exposure. Conclusions : Waste collectors show signs of increased upper airway inflammation and respiratory symptoms compared

with controls. Exposure to organic dust probably underlies the inflammation mediated by neutrophils that result in respiratory symptoms.

Weighing imprecision and handleability of the sampling cassettes of the IOM sampler for inhalable dust / Goran Liden, Gunnel Bergman, The annals of occupational hygiene, 2001, 45(3), σ. 241-252

The weight stability of the sampling cassette of the IOM sampler for inhalable dust was tested in several weighing experiments. The results show that the reliability of repeated weighings was good, but the absorption of water vapour was slow and varied considerably among cassette specimen. The exponential time constant for water absorption was approximately 4 days, and 15–20 days were needed to obtain weight stability. With the help of cassette blanks the imprecision in dust weight could be held below 0.05 mg, if the cassettes were allowed one weeks storage in the weighing room before weighing, both before and after sampling. The IOM sampling cassettes seem to consist of a few subsets, each with identical relative weight increase in a weighing room. To keep the variability low it is important that both the blanks and the cassettes used for sampling come from the same subset. Experiments indicate that the conducting plastic of the IOM sampling cassette may be replaced with another kind of plastic with similar electrical conductivity, but whose humidity absorption is 30 times lower. A lid, which is weighed with the cassette, was designed so that the potential dust loss from the cassette proper to the commercial transport clip was eliminated. A flow adapter, which simplifies the measurement of the air flow during personal sampling, was designed.

Wood dust and formaldehyde (1994 : Lyon, France) / IARC, WHO. - Lyon : IARC, 1995. - 405 σ.- (IARC Monographs on the evaluation of carcinogenic risks to humans ; 62) ISBN 92-832-1262-2 (3855)

This publication represents the views and expert opinions of an IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, which met in Lyon, 11-18 October 1994.

Εισπνεύσιμη και μη εισπνεύσιμη σκόνη : φυσιοπαθολογικοί μηχανισμοί των επαγγελματικών πνευμονοπαθειών / Βλάσης Πολυχρονόπουλος, Ιατρική της εργασίας, 1989, 1(3), σ. 115-123

Η χρησιμότητα του σπιρομετρικού ελέγχου στη πρόληψη και διάγνωση των επαγγελματικών παθήσεων των πνευμόνων / Κων/νος Μπάρλας, Ιατρική της εργασίας, 1989, 1(3), σ. 124-128

Δειγματοληψία αιωρούμενης σκόνης σε φίλτρα (ατομικοί δειγματολήπτες – δειγματολήπτες χώρου) / Γρηγ. Πελωριάδης, Ιατρική της εργασίας, 1989, 1(3), σ. 129-136