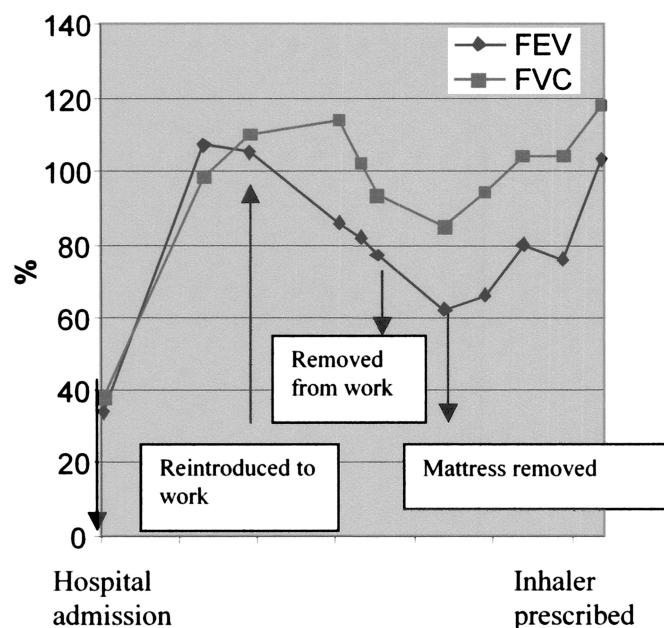


manufacture of foam. The main market for this 'environmentally friendly foam' is for cot mattresses. We describe a case of occupational asthma with eosinophilic constrictive bronchiolitis caused by cutting foam manufactured using Soya bean. This is the first case in world literature to the authors' knowledge where Soya bean induced respiratory allergy has been described in this way.

**Case description** 26-year male smoker presents with a 3-month history of fatigue, 10 kg weight loss, cough and work related breathlessness. Soya-based foam had been introduced into the work place 6 months prior to presentation, which the subject cut with a band knife. No respiratory protection or ventilation was used. No previous allergies or asthma were known. Throat itch preceded symptom onset. Other workers complained of conjunctivitis. At presentation the subject was afebrile, oxygen sats 88% air, CRP 0.7, peripheral eosinophils 1.6 (14%), WBC normal and FEV1 34% predicted. Vasculitis and HIV screening negative. HRCT confirmed constrictive bronchiolitis, which resolved after a course of oral steroids. Lung function returned to normal. The subject was re-introduced to work where a marked drop in FEV1 was documented (Abstract P7 Figure 1). Bronchoscopy showed mucus plugging with eosinophilic casts. Peripheral eosinophilia increased with general fatigue. Total IgE remained normal, IgE for *Aspergillus fumigatus* <0.4. IgE for soya was 0.4, but slightly elevated for other cross reactants. Skin tests for Soya bean and husk were positive. The worker was redeployed away from the foam cutting area but still had occasional exposure and peak flow variability compatible with occupational asthma, with increased non-specific bronchial hyper-reactivity on histamine challenge. Lung function, eosinophil count and bronchial reactivity stabilised following removal of the foam from the factory and home.



Abstract P7 Figure 1

**Conclusion** Eosinophilic airway plugging, with severe air trapping, reversible airflow obstruction and peripheral eosinophilia resolved after removing Soya bean based foam products from the work area and home. Skin prick tests confirm Soya bean allergy. The syndrome described has not been reported previously and may have implications for the foam manufacturing industry.

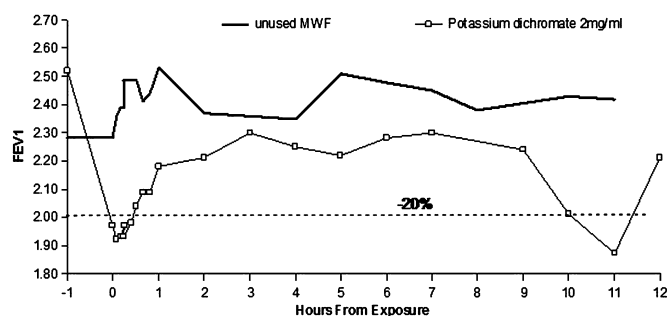
## P8 UNIQUE OUTBREAK OF OCCUPATIONAL ASTHMA IN TOOLMAKERS CAUSED BY CHROME

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**Introduction** We describe a unique outbreak of occupational asthma in toolmakers due to chrome. We investigated four employees of a medium-sized manufacturer of precision jet-engine parts for work-related asthma at our city hospital Occupational Lung Disease Unit.

**Case Series** The four patients were aged between 35 and 56 and three of them had never smoked. They presented with new onset asthma and rhinitis symptoms that were subsequently diagnosed as occupational based on 2-h peak expiratory flow measurements (OASYS-2 scores range: 3.25–4.00). Two of the patients had impaired lung function at diagnosis. One case showed a dual asthmatic response and two cases showed early asthmatic reactions to potassium dichromate 2 mg/ml on specific inhalation challenges. The fourth case had a small late reaction only to cobalt chloride 10 mg/ml. (Abstract P8 Figure 1).



Abstract P8 Figure 1 Specific inhaled challenge test from case 1, showing dual asthmatic responses to inhaled potassium dichromate (2 mg/ml). There was no response to either used MWF or cobalt chloride (not shown on the plot).

**Discussion** All workers were sensitised within the preceding 5 years, before which the metalworking fluid brand and composition was changed. The latency onset of symptoms ranged from 6 to 24 months. This suggests leaching of the chrome and cobalt into this particular oil. Skin prick responsiveness and exhaled nitric oxide were not good predictors of airways response. Occupational asthma caused by chrome sensitisation is rare but has been described in electroplaters (1), steel welders (2) and construction workers (3); this is the first outbreak in toolmakers.

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## P9 THE EVALUATION OF AN IMPROVED METHOD OF OCCUPATIONAL ASTHMA DIAGNOSIS FROM TIMEPOINT ANALYSIS OF SERIAL PEF RECORDS

doi:10.1136/thx.2010.150961.9

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**Background** The diagnosis of occupational asthma requires objective confirmation. Analysis of serial measurements of Peak Expiratory

Flow (PEF) is usually the most convenient first step in the confirmatory process. We previously described a statistical method of analysis comparing mean 2-h values on work and rest days which required the worker to wake at similar times on rest and work days. This was achieved in only 43% of records. We describe a new method of timepoint analysis without this restriction and overcoming a theoretical problem with the original analysis (the assumption that the variance of the waking reading was the same as the variance at other times of the day).

**Methods** Workers were asked to measure PEF approximately 2-h from waking to sleeping for 3–4 weeks. 236 PEF records from workers with independently diagnosed occupational asthma, and 320 from asthmatic controls were available. Readings were grouped by the time since waking, in an attempt to correct for changes in diurnal variation induced by changes in shift and waking time. Daily PEF measurements were meaned into matching 2-h time segments. The pooled SD for rest day measurements (excluding waking readings) was obtained from a one-way ANOVA. Timepoints with mean workday PEF statistically lower (at the Bonferroni adjusted 5% level) than the restdays were counted, after adjusting for the number of contributing measurements at each point.

**Results** A minimum of four analysable timepoint comparisons per day was needed. 78% of records were suitable for analysis. Records with one or more timepoints statistically worse on workdays gave a sensitivity of 71% against independently diagnosed occupational asthma and a specificity of 93% in non-occupational asthmatics.

**Conclusion** The removal the requirement to wake at similar times on work and rest days increased the utility of timepoint analysis for the diagnosis of occupational asthma from 43–78% without compromising sensitivity or specificity. Statistical validity was also improved.

#### P10 ASBESTOS-INDUCED DIFFUSE PLEURAL THICKENING—A CONTINUING PROBLEM

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**Introduction** Asbestos-induced diffuse pleural thickening (DPT) remains a relatively common but poorly understood disease.

**Methods** We reviewed the clinical, physiological and radiological features of patients referred to our department for assessment. Diagnosis was based on a history of asbestos exposure, chest radiographic pleural thickening with blunting of costophrenic angle, and exclusion of other likely causes of pleural disease.

**Results** 75 patients were identified. All were male. Mean age was 65±9 years. Asbestos exposures occurred in shipyards (n=35), construction work (n=19), power stations (n=4) and other/multiple sites (n=17). Median duration of asbestos exposure was 13 years. Presentation occurred at a median of 36 years (range: 12–55 years) after onset of exposure. Pleural disease was an incidental radiological finding in 18% (n=14). 72% presented with breathlessness, 27% with chest pain, and 11% had flu-like symptoms. 40% (n=30) presented with a pleural effusion, which was suspected to be asbestos-related. Mean latency for development of pleural effusions was 31 years (range: 12–55 years). 24 of these were unilateral only, and 6 were bilateral. Right-sided effusions were five times more prevalent than left-sided effusions. After the diagnosis of a pleural effusion, DPT was noted radiologically after a median of 7 months (range: 1 month to 2 years). In 10% (n=3), the effusion persisted over a median follow-up period of 2 years. Overall, 73% (n=55) had unilateral disease at presentation and 24% (n=13) were observed to progress from unilateral to bilateral disease after a mean time of 3.1±3.6 years (range: 1 month to 13 years) after onset of disease or diagnosis. Once established, the degree of thickening remained stable in 91%

(n=68). There were no significant differences in either duration of asbestos exposures or latency in patients with stable versus progressive disease. No difference in duration of asbestos exposures was also found between those with unilateral versus bilateral disease. Most patients had restrictive abnormalities on lung function testing with mean TLC 74% and mean RV 73% of predicted. Radiographic appearances correlated poorly with lung function impairment or symptom progression.

**Conclusion** Understanding its natural history should help clinicians diagnose and manage asbestos-induced benign pleural thickening.

#### P11 CARDIO-RESPIRATORY FITNESS AT WORK: THE EFFECTS OF PUBLIC HEALTH GUIDANCE?

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Physical activity is important to improve and maintain cardiorespiratory fitness. More recently, additional wider health benefits of physical exercise have been highlighted, including reduction in obesity and promoting mental wellbeing. Increased recognition of these benefits has led NICE to issue recent public health guidance in this area (PH13; promoting physical activity in the workplace). These recommendations aim to help employers and workplace health professionals prevent diseases associated with a lack of physical activity. We have audited the approach taken to physical activity at work taken by two large organisations, using PH13 to develop 23 appropriate gold standards (GS). For example, GS1 states that 'There is an organisational policy to encourage and support employees to be more physically active', GS5 that 'There are organisational goals for physical activity in the workforce' and GS10 that 'There are policies to encourage employees to be physically active while travelling to work (eg, walking and cycling)'. 44 employees from a health provider (Health) and 63 employees from a public sector organisation (PSO) underwent a self-completed questionnaire enquiring about a broad range of workplace-based exercise issues, each question mapping to an a priori defined gold standard. Various clear differences emerged between organisations in attaining the GS, although compliance by both with certain of these was good. For example, GS7 stated 'A multi-component programme is in place to encourage and support employees to exercise'. Overall, employees from Health and PSO were positive about the facilities to encourage exercise, the majority of employees being aware of various facilities in place including safe bike storage (PSO; 73.0%, Health 52.3%) and showers (PSO; 87.3%, Health; 40.9%). Compliance with other GS was poor. For example, GS9 required that there was employee knowledge of an 'incentive schemes to encourage exercise'. Despite the presence of incentives to exercise at each site, only 14.3% of PSO employees (Health; 13.6%) were aware of financial incentives and 9.5% (Health; 9.1%) aware of non-financial incentives to exercise. Whilst exercise is an important contributor to health, further work is required to ensure that recent PH guidance aimed at improving exercise at work has maximal worker benefit.

#### P12 ALARMING IGNORANCE ABOUT THE DANGERS OF ASBESTOS AMONG UK HOMEOWNERS

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**Introduction** Nearly 14 million homes were built possibly using asbestos-containing construction materials between 1950 and the mid-1980s. Certain types of asbestos were not banned until 1999.