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## 93. Air pollution and other exposures

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**P1079** **LATE-BREAKING ABSTRACT**  
**Long-term exposure to particulate matter predicts subclinical emphysema: the multi-ethnic study of atherosclerosis (MESA) lung study**  
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**Background:** Particulate matter (PM) predicts decline in lung function in adults. PM may increase airway reactivity and/or contribute to emphysema. We tested if 20-year cumulative exposure to PM<sub>2.5</sub> and PM<sub>10</sub> was associated with greater percent emphysema and lower alpha, a measure of early emphysema, on CT scans in a population-based study.

**Methods:** The Multi-Ethnic Study of Atherosclerosis recruited participants age 45-84 years without clinical cardiovascular disease in six US cities. Residential history information from 1982 to 2002 was linked to EPA AIRS data to estimate cumulative observed PM<sub>10</sub> exposure. PM<sub>2.5</sub> exposure was imputed using a spatio-temporal model and PM<sub>2.5</sub>/PM<sub>10</sub> ratios from co-located measures. Percentage of emphysema-like lung and alpha, the log-log plot of hole size vs. number, were measured on cardiac CT scans in 2000-2002. Analyses were performed using multiple imputation.

**Results:** Among 3,196 participants, the median monthly PM<sub>2.5</sub> and PM<sub>10</sub> exposure from 1982 to 2002 were 22 ug/m<sup>3</sup> and 32 ug/m<sup>3</sup>, respectively. A 10 ug/m<sup>3</sup> increase in mean monthly PM<sub>2.5</sub> exposure was associated with greater percent emphysema (mean difference 0.9 percentage points [95% CI: 0.2, 1.5]; P=0.009) and lower alpha (mean difference -0.03 [95% CI: -0.04, -0.01]; P<0.001) after adjusting for age, sex, race/ethnicity, education, height, body mass index, smoking, cotinine, packyears, asthma, occupation and CT scanner. Results were similar for PM<sub>10</sub>.

**Conclusion:** Long-term exposure to PM was associated with greater quantitative measures of emphysema on CT scan. PM exposure might contribute to emphysema. *Funding:* NIH HL077612, N01-HC95159-169; US EPA R830543, R831697.

**P1080**  
**Close relations between exhaust levels outside home and the prevalence of annoyance**

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**Introduction:** Air pollution from traffic may cause airway irritation and annoy many persons. However, the exposure-response relations are not well described.

**Aims:** We study the association between levels of traffic pollution at home and the prevalence of perceived pollution-related problems.

**Methods:** A survey was conducted in 2008 in 4 areas of Sweden; Göteborg, Stockholm, Umeå and Uppsala, as part of the GA2LEN study. A random sample of 45,000 adults was invited and 26,527 participated. In addition to the core questions, we added questions on various exposures, annoyance and health problems. Addresses were geocoded. Traffic pollution at home was calculated as nitrogen oxides (NO<sub>2</sub>, NO<sub>x</sub>) using validated dispersion models and a resolution of 50 m. These models covered most parts of the study area. In logistic regression models we adjusted for city and potential determinants.

**Results:** Pollution levels were calculated for almost 21,000 participants from 3 cities. Results also for Umeå will soon be available. The annual mean concentration of NO<sub>2</sub> at home was 13 µg/m<sup>3</sup> and the range was 59 µg/m<sup>3</sup>. For the three cities studied, the odds ratio for perceiving outdoor air in the neighborhood as daily irritating was 1.039 (95% CI 1.030-1.049) per µg/m<sup>3</sup>. The OR for perceiving vehicle exhaust very annoying was 1.058 (95% CI 1.043-1.073).

**Conclusion:** In this large study with detailed exposure information we find precise and strong associations between perceiving air pollution as irritating and exhaust as annoying. A 10 µg/m<sup>3</sup> increase of NO<sub>2</sub> was associated with 47% increase in the odds for perceiving outdoor air in the neighborhood as daily irritating and 76% increase in the odds for being very annoyed by vehicle exhaust.

**P1081**  
**Alterations in bronchoalveolar lavage constituents following urban pm10 intratracheal instillation in mice**

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Research into respirable air pollution particles (PM) and epidemiological studies have repeatedly found a positive correlation between the level of PM and increased morbidity and mortality rates in both adults and children. Urban PM differ with place of occurrence, meteorological conditions, physicochemical compositions, and the response of the bronchopulmonary apparatus. In the toxicology studies of inhaled or instilled agents, both the degree of an induced inflammatory response and the time course of recovery from or intensification of the process can be followed by analysis of the bronchoalveolar lavage (BAL). We investigated the alterations in BAL constituents following intratracheal instillation (by means of MicroSprayer® Aerosolizer- High Pressure Syringe) in mice of PM10 (100 µg in 100 µl of saline) collected in an urban setting in Milano from June until September 2008. The alterations in the enzymatic activity and in the oxidant status in BAL as well as in lung membrane and cytosol enriched fractions were compared with those observed in mice instilled with 100 µl of saline (controls). Mice were euthanized at 3 and 24 h and at 7 and 30 days postexposure, the trachea was cannulated and BAL collected. At 3 h and 24 h postexposure we found statistically significant increases of the TNFα level and of the percentage of polymorphonuclear cells (PMNs) in comparison with controls. The acute alteration in biochemical mediators of pulmonary inflammation observed in treated-mice may be correlated to the physicochemical composition of the urban PM10 collected in Milano from June to September 2008. Supported by Fondazione Cariplo.

**P1082**  
**Dental technician's pneumoconiosis**  
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In this research, we aim to evaluate the pneumoconiosis prevalence in tooth-technicians, the results of the disease, risks playing role in the development of pneumoconiosis and what extent these risks are in private and official laboratories. The research was carried out with 120 tooth-technicians who are working in three Health ministry connected Mouth and Tooth health centers and dental prosthesis laboratories of private foundations. In tooth-technicians, "Toraks Corporation Environmental and Occupational Lungs Disease Evaluation Form" was filled out and graphics of lungs were applied and SFT-diffusion tests were done. The same procedure was applied for the control grub.

Pneumoconiosis prevalence was determined at %31.4 in all grubs. The prevalence found at %50.9 in private and at %11.9 in official laboratories was meaningfully higher in technicians working in private ones.

When the factors increasing the risks in pneumoconiosis development are consid-

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ered, the rise in the year of exposure, 20 years and above exposure, starting work at very early ages, lack of general and individual protective measures were statistically indicated that it doesn't increase the risk of pneumoconiosis development. It has been stated that pneumoconiosis development paves the way for the statistically meaningful decrease in FVC (%), FEV1 (%), FEF25-75 (%), whereas it does not meaningfully affect FEV1/FVC (%). Without the development of pneumoconiosis the sole exposure paves the way for the statistically meaningful decrease in FVC (%), and also, this result was explained under the light lungs fibrosis occurring at early stage. With the light of these results, it is obvious that tooth-technician is a risky job in terms of pneumoconiosis.

**P1083****Pulmonary symptoms and pulmonary function tests of the welders**

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Periodically performed physical examination of the workers who are exposed to different toxic fumes is important in early diagnosis of the occupational lung diseases. 60 welders who applied to the Ankara Occupational Disease Hospital for the periodical physical examination between June 2007- January 2009 were enrolled in the study. As a control group 60 workers who were not exposed to weld fume were included in the study.

Respiratory symptoms were asked according to a standard questionnaire. Occupational history of each worker was taken in a detailed manner. Pulmonary symptoms and respiratory function tests results were compared between two groups. Shortness of breath (56.1%), cough (62.3%) and sputum production (78.9%) were the prominent symptoms in welders' group and there was a statistically significant difference between two groups ( $p < 0.01$ ,  $p < 0.001$ ,  $p < 0.001$ ). Chronic bronchitis symptoms in welders who smoke actively were more prominent than the ex-smokers and nonsmokers. There was no statistically significant difference in smoking status between welders' and control group.

Pulmonary function test results were normal in all workers in two groups. FEV1 levels were higher in control group and it was statistically significant.

These results indicate that periodically performed physical examinations of the workers who are exposed to toxic fumes have an important role in early diagnosis of the occupational lung diseases.

**P1085****Impact of air pollution in chronic respiratory symptoms among traffic policemen in Tirana**

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**Background:** Tirana is a city that sustains a rapidly growing population and it has serious air pollution problems, which result from the dense population and the resultant traffic. The roadside areas of the city are heavily polluted from vehicle emissions.

The aim of this cross-sectional study was to assess the relationship between traffic-based air pollution and chronic nonspecific respiratory symptoms as well as the impairment of pulmonary function among traffic policemen in Tirana.

**Material and methods:** A total of 150 traffic policemen who lived and worked in urban and suburban areas of the city, that had different levels of airborne particulates were evaluated. We have used a modified standardized questionnaire of American Thoracic Society to identify non-specific respiratory disease (NSRD). Also, we have carried out and measurement of pulmonary function as well as the analysis of air pollution for particulate matter, total suspended matter, sulfur dioxide, ozone and nitrogen oxides.

**Results:** The prevalence of NSRD in urban, and suburban areas was 12%, and 6%, respectively. Among nonsmokers, the age-adjusted prevalence of NSRD in the urban areas was significantly higher than in the suburban control area, whereas the respiratory function measurement have shown a significant difference between two groups. The level of air pollutants, especially for PM10 and TSP exceeded WHO-recommended TLVs while other measured pollutants have resulted within recommended values.

**Conclusions:** We concluded that the increased prevalence of respiratory symptoms among traffic policemen in Tirana, and the decrease of pulmonary function in exposed group was associated with urban traffic air pollution.

**P1086****Environmental risk perception on the respiratory health of Arzew area population**

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**Introduction:** The region of Arzew is an industrial center near a large urban area concerned about pollution.

**Objective:** To assess the environmental risk perception on respiratory health of Arzew area population for improving the acceptability level to set up a monitoring system.

**Methods:** A descriptive and exploratory study, on people living in the Arzew area. The sampling survey cluster involved six municipalities and 40 districts and covered 1000 households. The Population survey was randomly approached at home by trained investigators using a questionnaire of five main items that meet the study objectives. The results analysis was done by Epi-info program.

**Results:** The socio-demographic data showed that the age bracket 35-50 years accounted for 44% of respondents from which 61.6% were females and 38.4% males; the respondents of middle education level was 30% and 36% without education. The noted knowledge on environment showed that 97% of respondents were considering that pollution is the source of health problems. The main pollution source, according to respondents, is air pollution in 57.94% of cases followed by waste landfills in 24.47% of cases. 52.4% assert that their health deteriorated since they inhabit the region, 44% are living in or around and 67% mentioned respiratory disease.

**Conclusion:** We can say from this analysis that populations from Arzew area are widely aware of pollution danger and its effects on health and mainly on respiratory health.

**P1087****Risk factors for adverse birth outcomes in females workers of central Italy**

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**Aim:** the aim of the study is to evaluate the association between risk factors and birth outcomes in female workers.

**Methods:** 3528 female workers who delivered babies between 2003-2005, living in Central Italy (Pisa and Pontedera), have been interviewed by phone. The questionnaire contained information on age, job, exposure to ergonomic/biological/chemical risk, smoking habit/exposure, educational qualifications, any drugs and any diseases during pregnancy and birth outcomes (low birth weight, pre-term birth, complications of childbirth and health status of the newborn).

**Results:** Table 1 summarizes results of multiple logistic regression analyses taking into account independent effects of possible confounders.

Tab.1

Effect variable	Exposure variable	p	OR	95%CI
Low birth weight	High school	.02	.65	.46-.93
	Diseases	.00	1.91	1.28-2.84
Pre-term birth	Passive smoke	.05	1.35	1.00-1.81
	≥36 yrs	.00	1.67	1.21-2.32
Childbirth complications	Biological-chemical risk	.02	1.28	1.04-1.58
	≥36 yrs	.00	1.65	1.36-2.01
	Diseases	.01	1.32	1.06-1.65
	Drugs	.00	1.34	1.11-1.63
Newborn health status	Ex-smoking	.05	1.60	1.00-2.56
	Primary/middle school	.00	2.22	1.33-3.70
	High school	.05	1.52	1.00-2.31
	Drugs	.01	1.64	1.15-2.33

**Conclusions:** high education is protective factor for low birth weight. However age, exposure to biological/chemical risk, smoking habit/exposure, education lower than university degree, drugs and diseases during pregnancy seem to be risk factors for the investigated adverse birth outcomes.

Further research are needed to improve preventive strategies for pregnancy.

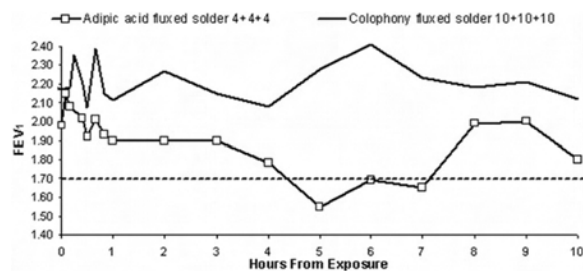
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**P1088****Effect of surface modification of 50nm and 100nm latex particles on uptake by, and viability of, immortal human alveolar type 1-like cells**P. Ruenaroengsak, A. Thorley, T. Tetley. *Lung Cell Biology, National Heart and Lung Institute, Imperial College, London, United Kingdom*

Inhalation of nano-sized materials may pose a health risk, particularly in an occupational setting. We hypothesized that size and surface chemistry of latex nanospheres would confer differential reactivity with human alveolar epithelial cells. Studies in our laboratory showed that human alveolar type 1-like (ATI) cells internalise significantly more nanoparticles than ATII cells. Thus, we examined the mechanisms of uptake of 50 and 100nm latex particles (LP), with three different surface functional groups (neutral, amine-modified and carboxyl-modified), and their effect on immortal AT1 cell viability. Confluent monolayers of ATI cells were incubated with 0.05-125µg/cm<sup>2</sup> LP for up to 24h. Staining for proteins associated with endocytosis showed that particles of all types and both sizes co-localised with clathrin whereas all particles except 50nm carboxyl-modified associated with actin and golgi. Cell viability was determined using propidium iodide and annexin V staining, as well as caspase 3 and mitochondrial activity (MTT). At 24h, 50nm neutral and carboxyl-modified LPs and all 100nm LPs had very little effect on MTT, even at doses above 50µg/cm<sup>2</sup>. However, the 50nm, amine-modified LPs caused cell detachment and death, the toxic dose inducing 50% reduction in MTT activity was 41µg/cm<sup>2</sup>. Propidium iodide uptake and annexin staining suggested both necrosis and apoptosis were responsible. Caspase 3 activity increased by 70% following 24h exposure to 50nm amine-modified LPs. These studies show that the surface chemistry and size of nanoparticles crucially affects their cellular fate and toxic effects and may therefore have repercussions for applications such as drug delivery.

**P1089****Occupational asthma to solder containing an adipic acid flux**Vicky Moore, Sherwood Burge. *Occupational Lung Disease Unit, Birmingham Heartlands Hospital, Birmingham, United Kingdom*

We present a case of occupational asthma to colophony-free solder wire containing an adipic acid flux, previously only reported in a pharmaceutical factory worker<sup>1</sup>. The patient soldered and de-soldered parts of alternators from June 1989. The process used a colophony-free solder wire containing an adipic acid flux from 1996, but when de-soldering, colophony fluxes may still have been present. In 1992 she developed rhinitic symptoms. From 1998 she had a gradual onset of breathlessness and chest tightness which she noticed was affecting her keep fit. She started to have nocturnal waking and shortness of breath on waking, feeling better on days away from work. Serial PEF records showed occupational asthma (Oasys score 3.1). She was admitted for specific inhalation challenge testing to colophony and adipic acid fluxed solder wires. She melted approximately 1 metre of solder wire (using an iron heated to 170°C) over 3 challenges, totalling 30 minutes for the colophony containing wire and 12 minutes for the adipic acid wire. The results are shown in Figure 1. Her methacholine reactivity was 3450µg methacholine (Yan method) pre challenge, halving post challenge to 1729µg.



She now works for a different company as a toilet cistern assembler. On follow up, she had significant asthma with occasional nocturnal waking and an SGRQ score of 50.8. Her methacholine reactivity was normal (>4800µg).  
1. Moscato G et al, *Clinical Allergy* 1984;14:355-61.

**P1090****A new environmental asbestos exposure area in Turkey: Çal and its effects on the respiratory system**Fatma Eyyapan<sup>1</sup>, Erhan Ugurlu<sup>1</sup>, Ali Ekinici<sup>1</sup>, Mustafa Egrı<sup>2</sup>, Yahya Ozpınar<sup>2</sup>.  
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**Aim:** To investigate respiratory effects of environmental asbestos exposure in people living in Çal situated at the inner egean region of Turkey.

**Material and methods:** After the radiological findings of an index case coming from this area in we investigated the presence of environmental asbestos in the soil, in the houses and on the rooftops and we demonstrated the presence of tremolite asbestos. After those findings respiratory questionnaire, pulmonary function test and chest X ray had been performed to the exposed population.

**Results:** Total 160 villagers with mean age: 56,85±15,5 year;s with female ratio 56% have participated to the study. Approximately 82% had an history of asbestos exposure for 33,22±22,4 years. The most frequent respiratory symptoms were: wheezing (43%); dyspnea (43%); sputum (24%) and cough (24%). Chronic bronchitis was present in 24% of the subjects.

Pulmonary function test showed: restrictive ventilatory dysfunction in 30% of the subjects; and small airway obstruction was present in 51% of the subjects. COPD prevalence was:6%.

Chest X ray examination could be done in 118 subjects. In 28% of the subjects with mean age 56, 43±16,51 there were pleural abnormalities which may be concomitant with asbestos exposure. The most common findings: pleural plaques (78%) - predominantly diaphragmatic (74%) but also en face (50%) and profile (30%)-, diffuse pleura thickening (18%) and pleural effusion (4%).

**Conclusion:** Our results indicate that there are still unexplored environmental asbestos exposure area in Turkey and possibly in the worldwide which may have impact on respiratory system.

**P1091****Incidence of respiratory disorders by socio-economic status (SES) in middle aged and elderly**Ulf Hedlund<sup>1,2</sup>, Bo Lundbäck<sup>2,3</sup>, Eva Rönnmark<sup>1,2</sup>. <sup>1</sup>*Department of Public Health and Clinical Medicine, Umeå University, Occupational Medicine, Umeå, Sweden;* <sup>2</sup>*Department of Medicine, Sunderby Central Hospital of Norrbotten, The OLIN Studies, Luleå, Sweden;* <sup>3</sup>*Department of Internal Medicine, Sahlgrenska Academy, University of Gothenburg, Respiratory Medicine & Allergy, Gothenburg, Sweden*

**Background:** In previous OLIN (Obstructive Lung Disease in Northern Sweden) studies we found increased risks for respiratory symptoms in low SES defined as manual workers in industry (MWI) or service (MWS).

**Objectives:** To estimate prevalence and incidence of respiratory conditions in a 10y follow-up.

**Methods:** In 2006 a questionnaire follow-up of a randomly selected cohort (1996), subjects were asked about respiratory symptoms, asthma, use of asthma medicines, smoking habits, occupation and occupational exposure to dust, gases or fumes. SES was based on occupational title. The study comprised 2749 men and 2785 women, age range in 1996 was 20-74 y, mean and median 45 y. Multiple logistic regression with adjustment for possible confounders was used to estimate odds ratios for incidence by SES. In analyses, professionals and middle level civil servants (PCS) was the reference.

**Results:** Prevalence of symptoms in 1996 was generally lowest in PCS, while in 2006 this pattern was less obvious. There was no major change in prevalence from 1996 to 2006. The lowest 10y cumulative incidence for attacks of shortness of breath (SOB), 6.1%, and recurrent wheeze, 4.9%, was found in PCS, while the highest cum. inc. for attacks of SOB, 8.4% was found in MWS and for recurrent wheeze, 6.8% in MWI. Corresponding figures for physician-diagnosed asthma was 3.7% (lowest in MWI) and 5.1% (highest in MWS). However, in the multivariate setting, odds ratios for MWI and MWS were generally lower than for PCS particularly for bronchitic symptoms.

**Conclusions:** Respiratory symptoms appear generally higher in low socio-economic groups in younger age, however, these differences decrease with increasing age.

**P1092****Severe lung injury following acute accidental exposure to nitric acid fumes**Ali Fidan, Sevdâ Sener Comert, Muharem Tokmak, Nesrin Kiral, Gulsen Sarac, Benan Caglayan. *Department of Chest Diseases, Dr.Lütfi Kırdar Kartal Training and Resarch Hospital, Istanbul, Turkey*

Nitric acid (HNO<sub>3</sub>) is a solution commonly used as an industrial chemical and cleaner. Oxides of nitrogen liberated as nitric acid interact with the environment to cause inhalation injuries. Symptoms related to HNO<sub>3</sub> exposure may vary regarding the time of onset: acute, subacute, and delayed. Dyspnea and evidence of acute lung injury may not occur for several hours after exposure and can lead to rapidly progressive acute respiratory distress syndrome (ARDS). We present a rare case of survival following inhalation of nitric acid fumes. A 39 year-old man has inhaled HNO<sub>3</sub> fumes while trying to clean the environment where HNO<sub>3</sub> was poured out accidentally. He had no symptom at that time followed by severe dyspnea 4 hours later. On admission to ER, the chest x-ray was convenient with ARDS and alveolar edema with patchy densities. Arterial blood gases (ABGs) showed PO<sub>2</sub>: 41mmHg with FiO<sub>2</sub>=0.28. He was treated with mechanical ventilation and steroids for 8 days in ICU. He was discharged on 15th day of treatment with normal x-ray and ABGs. But after 5 days he has again suffered dyspnea and had reticulonodular densities on chest x-ray. He was treated with high dose steroid and discharged with normalized x-ray and ABGs. He was advised to take long term steroid therapy. This case is presented to increase awareness among emergency physicians, chest specialists as well as occupational health personnel, that patients exposed to HNO<sub>3</sub> may initially be asymptomatic. They should be evaluated and observed regardless of the severity of symptoms, which occur immediately after exposure or many hours later as in our case. It should be kept on mind that the most severe symptoms are often delayed in onset and rapidly progressive.

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**P1093****The peculiarities of pulmonary hemodynamics in pneumoconiosis and occupational COPD**

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**Purpose:** to study the pulmonary hemodynamics in dust induced pulmonary fibrosis and occupational COPD (ocCOPD).

**Methods:** We examined 66 pneumoconiosis (PC) patients, and 46 ocCOPD patients. In PC the mean duration of the exposure to fibrogenic dust was  $21,3 \pm 0,9$  yr, in ocCOPD –  $22,1 \pm 1,2$  yr. Echodoppler cardiography, perfusion lung scintigraphy with Tc 99m, spirometry, body plethysmography, lung diffusion capacity (DLCOb), DLCO for CO (DLCOSb) were performed. 37 healthy volunteers were investigated as a control group.

**Results:** Cor pulmonale (CP) and dilatation of right ventricle were diagnosed more often in ocCOPD (0,67 and 0,53) comparatively to PC (0,47 and 0,37 correspondingly,  $p < 0,05$  for two parameters). Systolic pulmonary artery pressure (SPAP) was increased in both diseases ( $p < 0,05$ ). In PC there was correlation between SPAP and the extension of nodules on X-ray ( $r = 0,56$ ,  $p < 0,01$ ) and the degree of functional disorders ( $r = -0,33$ ,  $p < 0,05$ ). In ocCOPD the degree of the expression of CP correlated with the degree of functional signs of emphysema (TLC, ITGV, RV,  $p < 0,05$  for all parameters). The asymmetry reduction of pulmonary perfusion was detected more frequent in PC (0,64, vs 0,45 in ocCOPD). Only in PC the decrease of pulmonary perfusion was correlated with the activity ( $r = 0,3$ ,  $p < 0,03$ ), duration ( $r = 0,36$ ,  $p < 0,01$ ) of the disease, with DLCOSb ( $r = -0,43$ ,  $p < 0,05$ ), DLCOSs ( $r = -0,35$ ,  $p < 0,05$ ) and the degree of the expression of CP ( $r = 0,43$ ,  $p < 0,04$ ).

**Conclusion:** The pulmonary hemodynamics disorders are more significant in ocCOPD. It may be explained by the development of the more significant emphysema in ocCOPD, than in PC, which characterized mainly by pneumofibrosis.

**P1094****Quality of life estimates in the Sheffield COPD study**

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**Introduction:** COPD is a disease of widespread morbidity and mortality and can adversely affect quality of life. As part of an epidemiological study into the workplace influence on COPD in a northern English city, we evaluated a proportion of respondents with the EQ-5D quality of life questionnaire.

**Method:** A random sample ( $n = 4000$ ) of North Sheffield residents aged  $> 55$  was surveyed by a postal questionnaire. The recipients were invited to receive a follow up home visit that included spirometry and the EQ-5D. This asks 5 questions on mobility, self-care, usual activities, pain/discomfort and anxiety/depression with a score of 1 - 3 for each category. There is also a visual analogue scale from 0 - 100 for current health state. We evaluated those who self-reported a chronic obstructive respiratory disease or chronic respiratory symptoms (case), and also a control group.

**Results:** In total 282 controls and 254 cases fully completed the EQ-5D. Of the cases, 188 (74%) self reported exposure to vapours, gases, dust or fumes (VGDF).

Percentage response in each group

		Controls (%)	Case No VGDF (%)	Case Yes VGDF (%)
Mobility	1	71.6	31.8	23.9
	2	28.4	68.2	76.1
	3	0	0	0
Self Care	1	94.3	78.8	72.3
	2	5.7	21.2	26.1
	3	0	0	1.6
Usual Activities	1	75.2	43.9	33.0
	2	22.3	50.0	55.9
	3	2.5	6.1	11.2
Pain/Discomfort	1	52.5	39.4	18.6
	2	42.2	48.5	60.6
	3	5.3	12.1	20.7
Anxiety/Depression	1	82.3	69.7	55.3
	2	16.7	27.3	38.3
	3	1.1	3.0	6.4
Visual Analogue Scale	Mean	80.8	66.3	61.1
	SD	15.0	16.4	17.9

1 = None, 2 = moderate, 3 = severe.

**Conclusion:** On this simple scale, there is a decrease in quality of life in people with respiratory disease, and this appears to be worse in those who had occupational exposure to VGDF.

**P1095****Bronchial asthma prevalence in the pediatric population in an industrial area of the centre-south of Italy: preliminary results**

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Bronchial asthma (BA) prevalence has increased in industrialized countries. The aim of study was to investigate the BA prevalence in a pediatric population of a Italy centre-south region (Molise) and the interactions between environmental pollution and BA. The survey was conducted in 8 towns towards in an area characterized by the presence of several industries. Occurrence of at least 1 symptom including wheezing, drycough and dyspnea was suggestive of BA; case distribution was assessed by clustering cases according to residence area. The study was carried out as follow: 1) sample population 2) administration of a structured questionnaire 3) data analysis 4) correlation with BA and other respiratory diseases and risk factors. A randomized sample of households, composed of 171 families, of which 63 had children aged from 0 to 18 years, represented the "core" of the study. 89 questionnaires administered to parents of children between 0-14 years were collected through interviews. Mean age was 7 years (52%F/48%M). 29/89 (32.6%) responded positively to at least 1 of the questions in the core questionnaire, placing them amongst the "confirmed" or "suspected" cases. 7/89 (7.9%), previously received a medical diagnosis of BA and pharmacological therapy (confirmed case), with 3 (3.4%) and 4 (4.5%) no longer affected. No significant geographical clustering in cases distribution has been shown. The prevalence of confirmed cases of BA was 7.9%. Preliminary data showed a percentage of "suspected" of 24.7% (22/89). A clinical evaluation of these subjects could be helpful to correctly estimate the real prevalence of BA in the pediatric population resident in this industrial area of Molise.

**P1096****Preliminary registration of respiratory symptoms in professional firefighters in Thessaloniki, Greece**

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**Introduction:** Previous studies on respiratory function in firefighters indicated that exposure to irritants may result in high prevalence of symptoms.

**Objective:** The aim of the present study was to investigate the respiratory symptoms in firefighters of Thessaloniki, Greece.

**Methods:** 35 male firefighters (mean age  $31.14 \pm 1.058$ ) who had 5-10 years on duty participated in the study. The control group consisted of 33 male firefighters (mean age  $28.82 \pm 0.56$ ) who had been recently recruited to the Fire Department. All subjects filled-in a self-administered, standardized, questionnaire under the supervision of a doctor. They all underwent clinical examination and chest radiography.

**Results:** Among the firefighters 54.1% reported symptoms of the upper or lower respiratory tract while only 15.2% of controls ( $p = 0.001$ ). Concerning nasal symptoms, congestion was reported by 40.5% of firefighters and 12% of controls ( $p = 0.008$ ) and catarrh by 16.2% and 1% respectively ( $p = 0.016$ ). Regarding the lower respiratory tract 19% of firefighters and 9% of controls complained of cough ( $p = 0.241$ ) and 13.5% and 1% respectively of dyspnea ( $p = 0.028$ ). In logistic regression analysis the main factors influencing the presence of chronic symptoms of upper and lower respiratory tract were smoking (OR: 7.233,  $p = 0.036$ ) and years on duty (OR: 6.594,  $p = 0.036$ ). Furthermore smoking was independent to years on duty ( $p = 0.155$ ).

**Conclusions:** Firefighters seem to develop respiratory symptoms over the years on duty.

**P1097****Evaluation of lung function in arsenicosis patients with skin lesions**

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High arsenic level in drinking water causes increased mortality from COPD in adults. Arsenic related health hazards include respiratory symptoms with decreased lung function added to skin lesion. Currently 70 million people of Bangladesh are at potential risk of consuming arsenic contaminated drinking water.

The present study was conducted on chronic arsenicosis patients in selected areas of Bangladesh to assess lung function status by measuring FVC, FEV<sub>1</sub>, FEV<sub>1</sub>/FVC% & PEF. 40 apparently healthy subjects were selected from non arsenic residency as well as not exposed to arsenic in their tube well water and were grouped as healthy control. Of 80 subjects from area exposed to arsenic contaminated tube well water, 40 were patients of chronic arsenicosis with skin lesions and were considered as experimental group, whereas 40 subjects residing

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in the same arsenic contaminated area but without skin lesions were regarded as exposed control.

The mean measured values of the lung function parameters of non-arsenic exposed healthy control and exposed control were within normal ranges. But these values were significantly lower in chronic arsenicosis patients with skin lesions. The parameters showed negative correlation with age, arsenic concentration in tube well water but positive correlation with duration of consumption. All the patients of arsenicosis complained about respiratory symptoms in the morning.

The present study reveals that arsenicosis patients are suffering from respiratory insufficiency and symptomatic respiratory illnesses. Populations consuming higher arsenic concentration in drinking water are at the risk of lung function impairment and ultimately may lead to respiratory disorders.

**P1098****Prevalence of water pipe smoking among population in the city of Mashhad (north east of Iran) and their pulmonary function tests and respiratory symptoms compared to cigarette smokers and non smoker subjects**

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One major type of smoking (the major cause of COPD) in the Middle East countries is using water pipe (WP). The prevalence of this type of smoking in the city of Mashhad and their pulmonary function tests (PFT) compared to cigarette smokers and non-smokers was studied. The prevalence of water pipe smoking was studied using standard questionnaire. Pulmonary function tests and respiratory symptoms were compared between water pipe smokers, cigarette smokers and non-smokers. Totally 673 individuals including 372 male and 301 female were interviewed. The number of water pipe smokers was 57 (8.5%) including 27 male (7.2%) and 30 female (10%). The prevalence of cigarette smoking with normal inspiration (NIS) was 51 (7.6%) including 42 male (11.2%) and 9 female (3%) and the prevalence of cigarette smoking with deep inspiration (DIS) was 30 subjects (4.6%), all of them were male (8.1%). All PFT values in WP and DIS smokers were lower than NIS and non-smokers ( $p < 0.05$  to  $p < 0.001$ ). Prevalence and severity of respiratory symptoms (RS) in all three groups of smokers were greater than non-smokers ( $p < 0.05$  to  $p < 0.001$ ). There were negative correlations between PFT values and positive correlation between RS with duration amount and total smoking with ( $p < 0.05$  to  $p < 0.001$ ). In this study the prevalence of WP smoking in population of Mashhad city was shown for the first time. The results showed the profound effect of WP smoke on PFT values and RS similar to DIS smoking.