

## ISEE-316

## CHLORINATION DISINFECTION BY-PRODUCTS AND ADVERSE BIRTH OUTCOMES IN GREAT BRITAIN: BIRTHWEIGHT AND STILL BIRTH

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Recent epidemiological studies of the relationship between disinfection by-products, from chlorination, in public drinking water supply and adverse birth outcomes, have reported inconsistent and inconclusive findings. We report here on the largest study to date to examine the relationship of total trihalomethanes (TTHMs) to birth weight and still birth prevalence between 1993 and 1998, for regions covered by three water companies in England. Modelled estimates of mean annual TTHM concentrations in water zones were linked to routine birth and stillbirth records based on location of maternal residence at the time of birth. Three exposure categories were used: low (<30 mg/l), medium (30-60 mg/l) and high (>60 mg/l). After exclusion of multiple births and stillbirths from water zones without valid TTHM data, we studied a total of 934,843 live and stillbirths. In one region (North West), where there was a social class gradient across exposure categories (greater deprivation in the higher exposure categories), we found a graded, inverse association between level of exposure and mean birth weight, and a direct association with prevalence of low and very low birth weight (and more weakly with risk of still birth). However, there was evidence of confounding by social deprivation, and findings were essentially negative in both of the other two regions. For low birth weight, there was an interaction between social deprivation and TTHM exposure, such that in the North West region, the risk in the high compared with the low exposure category was highest in the most deprived areas. We suggest that our findings in one region would appear to merit further investigation in other areas with differing water supply patterns and socio-economic profile.

## ISEE-317

## THE DEVELOPMENT OF THE AEROBIOLOGICAL NETWORK IN THE CEE COUNTRIES AND THE RELEVANCE OF THE DATA TO THE PARTICULATE DEBATE

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Aerobiology investigates aerial transport of biological materials important to human health. Allergen particles are monitored by volumetric trap, values are given daily in grains/m<sup>3</sup>. WHO/EURO have organized collaborative studies on the health effects on the respiratory system of SO<sub>2</sub> and dust in several countries since 1970s. The evaluation failed in inter-comparisons. Later a pollenologist was invited for a workshop in 1989 to elucidate the possible role of aeroallergens as a particle component. There were Aerobiological Networks in most of the Western countries but none in the CEECs. Due to the initiative the first "Eastern European Workshop on Airborne particles morphology by recording volumetric trap" was organized by the first author in Budapest in 1992 with the financial support of the Regional Environmental Center (Budapest). From that time on pollen stations were established, now several stations exist in the CEECs, pollen and spore count databases are available for several years. The first presentation of the light microscopic morphology of suspended particulates collected by a Burkard trap was at the Aerobiological Conference (Farkas et al. 1990). Evaluation of the association between pollen and respiratory symptoms was discussed at the "Health Effects of Particulate Matter in Ambient Air" Symposium (Farkas 1997). Recently the study of the effect of daily variation of pollen count was introduced into the Hungarian APHEA2 project. The increase of total daily pollen count had an impact on the daily cardiovascular mortality. (Paldy et al. ISEE 2000). When health effects of suspended particulates are evaluated, the role of the allergen particles should be considered.

## ISEE-318

## ON THE EXPOSURE-TIME-RESPONSE-RELATIONSHIP BETWEEN OCCUPATIONAL ASBESTOS EXPOSURE AND LUNG CANCER IN TWO GERMAN CASE-CONTROL STUDIES

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**Objectives:** Numerous studies have been carried out to evaluate the association between lung cancer and occupational asbestos exposure. However, the effects of timing of exposure have not been analyzed thoroughly.

**Methods:** Two German case-control studies with data on occupational asbestos exposure histories have been pooled. Duration of work in potentially asbestos exposed jobs and two derived weighted exposure measures are analysed together with time since last exposure. A spline function is used to model the effect of time since exposure.

**Results:** The odds ratios (OR) and corresponding 95% confidence intervals were 1.8 (1.2, 2.7) and 2.4 (1.7, 3.4) for subjects having worked for 3 to 7 years and 8 or more years, respectively, in a job with potential asbestos exposure compared to never-exposed. Based on an evaluation of time since last exposure, the OR decreased significantly to about one-half after more than 20 years exposure ceased. Using a spline function, applied to workers' complete exposure histories, the effect of an increment of exposure is greatest 10 to 15 years after that exposure was received, then declines. Whether this decline continues and risk returns to baseline after more than 25 years remains unclear. **Conclusions:** Risk of lung cancer decreased significantly with time since last exposure. The estimated latency curve suggested a maximum effect 10 to 15 years after the exposure was received. However, this pattern was not statistically significant. It is important to evaluate whether this pattern is consistent with other data sets.

## ISEE-319

## RISK FACTORS FOR LUNG CANCER IN LIFETIME NONSMOKING WOMEN

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**Introduction:** To evaluate risk factors for lung cancer in nonsmoking women we used data of a case-control study conducted between 1990 and 1996 in Germany.

**Methods:** A total of 234 female histologically confirmed lung cancer patients and 535 population controls who had never smoked more than 400 cigarettes in their lifetime were personally interviewed with respect to occupational history, exposure to environmental tobacco smoke (ETS), family history of cancer, previous non-malignant lung diseases (diagnosed by a physician at least 2 years before interview) and dietary habits (10 food items). Unconditional logistic regression was used to calculate odds ratios (OR) and 95% confidence intervals (CI).

**Results:** After controlling for age and region elevated effects of exposure to ETS by spouse (OR=1.7, CI:0.9-3.3) and at work (OR=2.7, CI:1.4-5.2) were observed among highly compared to not or low exposed women. Occupational exposure to lung carcinogens was rare (about 10%), but associated with an increased risk among women who had worked more than 10 years in such jobs (OR=2.0; CI:0.99-4.0). An increased risk due to previous lung diseases such as asthma, tuberculosis, emphysema, chronic bronchitis or pneumonia was present for pneumonia (OR=1.6; CI:1.1-2.4) only. A positive family history of cancer or lung cancer showed no elevation in risk. Protective effects were observed for high vs. low consumption of fresh vegetables (OR=0.5; CI:0.3-0.8) and cheese (OR=0.3, CI:0.2-0.6). Results are not confounded by socioeconomic status. **Conclusions:** We conclude that ETS particular at work, occupational exposure to lung carcinogens and previous pneumonia are risk factors for lung cancer in nonsmoking women, while a dietary rich in fresh vegetables and cheese seems to be protective.

## ISEE-320

## NUTRIENT INTAKE PATTERNS IN GASTRIC AND COLORECTAL CANCERS

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The purpose of the study was to present the dietary risk pattern in gastric and colorectal cancer using the same methodological approach in a parallel hospital-based case-control study. In total 180 cases of colorectal cancer and 80 cases of stomach cancer confirmed by histopathology were enrolled from the University Hospital in Krakow. The equal number of controls was chosen from amongst patients with no history of cancer from the same hospital matched to cases by age (+/-5 years) and gender. An interviewer-administered food questionnaire was used to assess the usual dietary pattern. The high carbohydrate intake was associated with increased risk of colorectal cancer (OR=2.45). For stomach cancer, the moderate consumption of carbohydrates increased relative risk markedly (OR=4.2), in the high intake of carbohydrate the risk increased by 8.73. Patterns of dietary risk factors related to intake of fats were definitively different in both cancer sites. Higher fat consumption was not associated with the high risk of stomach cancer. Medium intake of fats increased the risk of colorectal cancer by 1.96 and that above 83 g/day increased the risk by 2.20. In colorectal cancer the significant protective effect of retinol, carotene and vitamin C intakes has been evident, however, only carotene and vitamin E were inversely correlated with stomach cancer. The study has indicated that retinol intake is inversely correlated with colorectal cancer. Although the considerable changes in the dietary habits taken place over the last ten years, they are insufficient to expect a faster decline in stomach cancer or positive change in colorectal cancer rates.

## ISEE-321

## ANALYSIS OF NON MELANOMA SKIN, LUNG AND BLADDER CANCER INCIDENCE IN ARSENIC EXPOSED POPULATION

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Our analysis is based on a population of the Prievidza, Central Slovakia district. The subject of our analysis was a database of skin basalioma (800), spinocellular (224), lung cancer (845) and bladder cancer (162) cases collected within 15 years (3 five year intervals) in a region polluted by emissions from burning of coal with high arsenic content ranging between 900 to 1,500 g per metric ton of dry coal. Study base in non-occupational exposed settings are 998,283 man-year and 991,290 woman-year. Study base in occupational settings (power plant male workers) is 21,360 man-year during a period of 15 years. Exposure assessment was based on biological monitoring. Determination of arsenic was done in groups of 10 year old boys (in non-occupational settings) by analysing of hair and urine samples at different localities situated up to the distances of 30 km from the local power plant. The standardised incidence of lung and bladder cancer, skin basalioma and spinocellular cancer was done in a district with population ~125,000 in non-occupational exposed settings, while relevant data for occupational exposed settings were registered in male workers of power plant burning arsenic reach coal. Smoking habit was carefully registered in all cancer patients including lung cancer cases and potential contribution of the both factors is subject of a current analysis. The results of our database analysis confirmed expected increased incidence of non-melanoma skin cancer during the period of the high environmental pollution by arsenic emissions. As to lung cancer incidence at our exposure pattern smoking was more important than arsenic exposure itself. The results obtained seemed to suggest that arsenic is probably a promotor rather than a true carcinogen.