OBJECTIVES To investigate whether brain tumour or leukaemia risks are related to occupational exposure to low-frequency magnetic fields.

METHOD Brain tumour and leukaemia risks experienced by 73 051 UK electricity supply industry workers were investigated for the period 1973–2010. All employees were hired in the period 1952–1982 and were employed for at least six months with some employment in the period 1973–1982. Detailed calculations had been performed to assess exposures to magnetic fields. Poisson regression was used to calculate relative risks (rate ratios) taking pre- and post-shift day 1, suggesting a dose-effect relationship.

CONCLUSIONS These results are consistent with the hypotheses that both distant and recent magnetic field exposures are not related to gliomas or to the main leukaemia sub-types. The limited positive findings for meningioma and ALL may be chance findings; national comparisons argue against a causal interpretation.

0090 MAGNETIC FIELD EXPOSURES AND BRAIN TUMOUR AND LEUKAEMIA RISKS IN UK ELECTRICITY GENERATION AND TRANSMISSION WORKERS, 1973–2010

Tom Sorahan. University of Birmingham, Birmingham, UK

10.1136/oemed-2014-102362.27

0091 INFLAMMATORY MARKERS AND EXPOSURE TO AIR POLLUTANTS AMONG WORKERS IN A SWEDISH PULP AND PAPER MILL

Hakan Westberg, Karine Elhag, Eva Andersson, Bodil Persson, Ing-Liss Bryngelsson, Bengt Åkergren. Department of Occupational and Environmental Medicine, Örebro University, Örebro, Sweden; 2Department of Applied Environmental Science, Stockholm University, Stockholm, Sweden; 3Department of Occupational and Environmental Medicine, Sahlgrenska University, Gothenburg, Sweden; 4Department of Occupational and Environmental Medicine Lund University, Lund, Sweden; 5Department of Occupational and Environmental Medicine, Örebro University Hospital, Örebro, Sweden; 6Work Environment Toxicology, Institute of Environmental Medicine, Karolinska Institute, Stockholm, Sweden

10.1136/oemed-2014-102362.28

OBJECTIVES To investigate whether inhalation of airborne particles in a pulp and paper mill and markers of inflammation and coagulation in blood.

METHOD Personal sampling of inhalable dust was performed for 72 subjects working in a Swedish pulp and paper mill. Stationary measurements were used to study different particle size fractions including respirable dust, PM10, PM2.5, the particle surface area and particle number concentrations of ultrafine particles. Markers of inflammation such as interleukins (IL-1b, IL-6, IL-8, and IL-10), C-reactive protein (CRP), serum amyloid A (SAA), and fibrinogen and markers of coagulation such as factor VIII, von Willebrand factor vWF, plasminogen activator inhibitor (PAI-1), and D-dimer were determined before the first shift after a work free period of normally five days and after the first, second and third shift.

RESULTS The average 8hr-TWA level of inhalable dust in was 0.30 mg/m3, range 0.005–3.3 mg/m3. The proxies for 8hr-TWAs of respirable dust was 0.045 mg/m3, PM10 0.17 mg/m3 and PM2.5 0.08 mg/m3. No significant increase of markers of inflammation or coagulation in blood during the working week was noted after a non-exposure period of five days. In a multiple regression analysis adjustments were made for age, smoking, BMI, and blood group. Significant positive correlations were found between several particle exposure metrics and CRP, SAA and fibrinogen taken pre- and post-shift day 1, suggesting a dose-effect relationship.

CONCLUSIONS These results are consistent with the hypotheses that both distant and recent magnetic field exposures are not related to gliomas or to the main leukaemia sub-types. The limited positive findings for meningioma and ALL may be chance findings; national comparisons argue against a causal interpretation.

0094 BLADDER CANCER INCIDENCE AMONG WORKERS EXPOSED TO O-TOLUIDINE, ANILINE AND NITROBENZENE AT A RUBBER CHEMICAL MANUFACTURING PLANT

Tania Carreón, Misty Hein, Kevin Hanley, Susan Vet, Avima Ruder. 1National Institute for Occupational Safety and Health, Cincinnati, Ohio, USA; 2Westat, Rockville, Maryland, USA

10.1136/oemed-2014-102362.29

OBJECTIVES An earlier investigation found increased bladder cancer incidence among workers at a rubber chemical manufacturing plant that used o-toluidine, aniline and nitrobenzene. The cohort was expanded to include additional workers (n = 1875) and updated through 2007 to assess bladder cancer with improved exposure characterisation.

METHOD Work histories were updated and exposure categories and ranks were developed for o-toluidine, aniline and nitrobenzene combined. Incident cancers were identified by linkage to state cancer registries. Residency in time-dependent cancer

Oral presentation
 registry catchment areas was determined. Standardised incidence ratios (SIR) and standardised rate ratios for bladder cancer were calculated by exposure category and cumulative rank quartiles for different lag periods. Cox regression was used to model bladder cancer incidence with estimated cumulative rank, adjusting for confounders. Indirect methods were used to control for smoking.

**Results** Excess bladder cancer was observed compared to the New York State population (SIR=2.87, 95% confidence interval [CI] 2.02–3.96), with higher elevations among workers definitely exposed (moderate/high) (SIR=3.90, 95% CI 2.57–5.68) and in the highest cumulative rank quartile (SIR=6.13, 95% CI 2.80–11.6, 10-year lag). Bladder cancer rates increased significantly with estimated cumulative rank (10-year lag). Smoking only accounted for an estimated 8% elevation in bladder cancer incidence.

**Conclusions** Bladder cancer incidence remains elevated in this cohort and significantly associated with estimated cumulative exposure. Results are consistent with earlier findings in this and other cohorts. Despite other concurrent chemical exposures, we consider o-toluidine most likely responsible for the bladder cancer incidence elevation and recommend a reexamination of occupational exposure limits.