considerably and efforts have been made to remove confirmed carcinogens from the production process. We updated a cohort of 40,867 men who were employed in the British rubber industry on 1 February 1967. Follow-up was last updated until 1976 and an excess risk of bladder cancer in men likely exposure to beta-naphthylamine based antioxidants (before these were withdrawn from the process in 1949), excess death from lung cancer across the industry and excess mortality from stomach cancer in the tyre sector were observed. We have extended the mortality follow-up to 45-years and are linking it to a population-specific quantitative job-exposure matrix based on available data previously collected in the EU EXASRUB project.

We are currently waiting for tracing outcomes for mortality by the Health & Social Care Information Centre (HSCIC), and so we will present the first results of industry- and job-specific cancer mortality risks as well as quantitative exposure-response associations for rubber dust and fumes and specific n-Nitrosamines.

There are only few occupational cohorts of this size with such long follow-up, so the presented analyses will provide an important overview of lifetime exposure-specific cancer mortality risks of specific exposures historically and currently encountered in the industry.

P030 ANIMAL PRODUCTION AND RISK OF LYMPHOHEMATOPOIETIC CANCERS IN THREE COHORT STUDIES OF FARMERS WITHIN THE AGRICOH CONSORTIUM-PRELIMINARY RESULTS

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Abstracts

We updated a cohort of 40,867 men who were employed in the British rubber industry on 1 February 1967. Follow-up was last updated until 1976 and an excess risk of bladder cancer in men likely exposure to beta-naphthylamine based antioxidants (before these were withdrawn from the process in 1949), excess death from lung cancer across the industry and excess mortality from stomach cancer in the tyre sector were observed. We have extended the mortality follow-up to 45-years and are linking it to a population-specific quantitative job-exposure matrix based on available data previously collected in the EU EXASRUB project.

We are currently waiting for tracing outcomes for mortality by the Health & Social Care Information Centre (HSCIC), and so we will present the first results of industry- and job-specific cancer mortality risks as well as quantitative exposure-response associations for rubber dust and fumes and specific n-Nitrosamines.

There are only few occupational cohorts of this size with such long follow-up, so the presented analyses will provide an important overview of lifetime exposure-specific cancer mortality risks of specific exposures historically and currently encountered in the industry.

P031 ARE WORLD TRADE CENTRE RESPONDERS AT INCREASED RISK OF HEAD AND NECK CANCER?

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Background Exposure to toxic airborne pollutants incurred in the aftermath of the 9/11 World Trade Centre (WTC) attacks in New York City is associated with adverse health outcomes including increased risk for some cancer sites. A possible excess of head and neck cancer (H&N-Ca) among WTC responders was observed by a physician at Clinic A that monitors WTC responders. We launched an investigation into whether the excess exists, or is the result of surveillance bias.

Methods We conducted a chart review of WTC responders attending Clinic A from 2004 through 2014 and identified thirteen patients diagnosed with H&N-Ca (ICD-9 codes 140–149.9; 160–161.9). Two reviewers abstracted demographic, cancer (e.g. site, histology, and stage), WTC exposure, and risk factor information (e.g. smoking, alcohol use). Age-specific standardised incidence rates (SIRs) were calculated using reference rates from the NJ State Cancer Registry (NJSCR). The distributions of cancer stage, laterality, site, and histology of cases were compared to those in the NJSCR.

Results All 14 cases were male; the average age was 54.7 years. Most (75%) tumours were identified subsequent to patient complaints. SIRs were elevated among all age groups but were higher and significant in the younger age groups (34–54 years: SIR = 3.98, 95% CI: 1.74, 7.88; 55–74 years: SIR = 1.14, 95% CI: 0.64, 2.37). Compared with the NJSCR H&N-Ca tumour characteristics, those of the cases did not differ by histology distribution (p=0.79) but a higher proportion originated from the tonsils and larynx (p = 0.07).

Discussion We observed a significant excess of H&N-Ca among young WTC responders. WTC responders are a highly monitored group of workers so these preliminary findings require
cautious interpretation. However, our SIR is likely an underestimate because while our cases came from Clinic A, the denominator included all monitored WTC responders, who may attend other clinical sites. The investigation is ongoing.

**PO32 OCCUPATIONAL SOLVENT EXPOSURE AND RISK OF BLADDER CANCER IN THE NORDIC COUNTRIES**

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**Introduction** Bladder cancer risk is suggested to vary between occupational categories. We assessed the occupational variation in incidence of bladder cancer and relationship with chemical solvent exposures in the Nordic countries.

**Methods** The study is based on Nordic Occupational Cancer Study (NOCCA). Data consist of 14.9 million individuals of age 30 to 64 years from the Nordic countries who participated in one or more population censuses since 1960 and were followed up for 45 years. During the follow-up 148,669 cases of bladder cancer were detected. Standardised incidence ratio (SIR) was used to describe the variation in bladder cancer risk in comparison to the national average. Quantitative estimates of solvents exposure for 113,343 bladder cancer cases and 566,715 population controls were assigned using Nordic job exposure matrix. Hazard ratios (HR) and 95% CI for each solvent was estimated using conditional logistic regression.

**Results** Highest statistically significant risks were observed among tobacco workers (SIR 1.57, 95% CI: 1.24–1.96), chimney sweeps (1.48, 1.21–1.80), waiters (1.43, 1.33–1.53), hairdressers, seamens, printers, plumbers. Significant decreased risks were observed among farmers (0.70, 0.68–0.71) and forestry workers (0.74, 0.70–0.78). Significantly increasing trends in SIR over the years were observed among drivers and launderers. The occupational risk associated with the chemical solvent at highest exposure levels (>90th percentile of the exposed persons) were aliphatic and alicyclic hydrocarbon solvent (HR 1.08, 95% CI: 1.00–1.23), benzene (1.16, 1.04–1.31), toluene (1.20, 1.00–1.38) and trichloroethylene (1.23, 1.12–1.40).

**Conclusion** Occupation is evidently associated with bladder cancer risk. Part of that variation appears to be attributable to solvent exposures.

**PO33 LONG WORKING HOURS AND CANCER RISK: A MULTI-COHORT STUDY**

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Overtime work and long working hours are associated with an increased risk of many adverse health outcomes, such as coronary heart disease and stroke. However, the relationship of excess working hours with incident cancer is unclear.

To address this gap in the knowledge, we examined the association between weekly working hours and cancer risk using individual-participant data from 12 prospective studies from Denmark, Finland, Germany, Sweden, the Netherlands and the UK. Our analyses were based on data from 116,462 working men and women, who were free of cancer at study baseline. Incident cancers were ascertained from national cancer, hospitalisation and death registers. Weekly working hours were self-reported.

During a follow-up ranging from 4 to 22 years, 4,371 participants were diagnosed with cancer (n colorectal cancer: 393, n lung cancer: 247, n breast cancer: 833, n prostate cancer: 534). Compared to standard working time (35–40 hours/week), working >55 hours/week was not associated with the overall cancer incidence (multivariable-adjusted HR (95% CI): 1.00 (0.85, 1.16). Similarly, working hours were unrelated to incident colorectal, lung and prostate cancers. Compared to standard hours, working >55 hours/week was associated with 1.60-fold (95% CI: 1.12–2.29) risk of female breast cancer. This association was independent of age, socioeconomic position, shift- and night-time work and lifestyle factors, but it may have been influenced by residual confounding from parity.

To our knowledge, ours is the largest investigation of this topic to-date and the first to examine the association of working hours with the overall cancer risk and the risk of specific cancers. Our findings suggest that working long hours is not a risk factor for cancer in general, or lung, colorectal or prostate cancers in particular. The observed association with breast cancer would warrant further research.

**PO34 SMOKING STATUS, PRIMARY ADULT OCCUPATION AND RISK OF RECURRENT UROTHELIAL BLADDER CARCINOMA: DATA FROM THE CANCER GENOME ATLAS (TCGA) PROJECT**

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Tobacco smoking and occupational exposures are the leading risk factors for urothelial bladder carcinoma (UBC) incidence, yet little is known about the contribution of these two major risk factors for UBC recurrence. We evaluated whether smoking status and primary adult occupation are associated with time to UBC recurrence for patients with muscle-invasive bladder cancer submitted to The Cancer Genome Atlas (TCGA) project. Of 406 cases, 358 patients had data on recurrence and time to recurrence, of which 133 (37.2%) experienced a recurrence. Kaplan-Meier and Cox proportional hazard methods were used to assess the association between smoking status, employment in a high-risk occupation for bladder cancer, occupational diesel exhaust exposure, and 2010 Standard Occupational Classification (SOC) group and time to UBC recurrence. Current smokers who smoked for more than 40 pack-years had an increased risk of recurrence compared to never smokers (HR 2.1, 95% CI: 1.1,