Exposure to aromatic amines (AA) has been strongly associated with bladder cancer. Also polycyclic aromatic hydrocarbons (PAH) have been associated with bladder cancer. Here we investigate the bladder cancer risk of occupational exposure to AA and PAH using a large prospective cohort in European populations.

**Methods**

We analysed the bladder cancer risk of occupational exposure to AA and PAH in 754 cases and 833 controls nested in the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort. A semi-quantitative expert rating of the probability and intensity of exposure to AA and PAH was performed for 52 occupations known to entail a cancer risk. For each occupation, we multiplied probability (0 = none, 1 = low, 2 = medium, 3 = high) and intensity (0 = none, 1 = low, 2 = medium, 3 = high) of exposure according to an approach for the association with lung cancer. We categorised the subject’s sum of scores over all at-risk occupations as low, medium, or high using the tertiles of the distribution in exposed controls. Odds ratios (ORs) with 95% confidence intervals (CI) were estimated with unconditional logistic regression adjusted for the matching factors and smoking.

**Results**

High occupational exposure to AA and PAH were associated with an estimate of the relative bladder cancer risk of 1.37 (95% CI 1.02 to 1.84) and 1.50 (95% CI 1.09 to 2.05), respectively. We further observed an OR of 1.53 (95% CI 1.03 to 2.28) for ever being exposed to dyes due to working in transportation and welding was associated with an increased bladder cancer risk in men that became non-significant after controlling for multiple testing. Smoking and PAH exposure yielded a joint effect of 3.48 (95% CI 2.51 to 4.84).

**Conclusions**

We were able to confirm the bladder cancer risk associated with aromatic amines and dyes due to exposure in this large population-based cohort among Europeans. These results provide further evidence that occupational exposure to PAH could entail a bladder cancer risk.