

Abstracts

(<20 cigarettes/day) showed OR 13.4, CI 11.9–15.1 not exposed to Cr(VI) and OR 17.4, CI 15.2–20.0 with exposure to Cr(VI), with RERI 3.79, CI 2.12–5.47. Heavy smokers (≥ 20 cigarettes/day) not exposed to Cr(VI) had OR 27.6, CI 24.2–31.6 and with Cr(VI) OR 33.6, CI 28.3–39.9; with RERI 5.72, CI 0.79–10.66. In recent quitters of smoking (1–15 years), the OR was 9.15, CI 8.09–10.4 when not exposed to Cr(VI) and with exposure to Cr(VI) OR 10.8, CI 9.35–12.50 with RERI 1.44, CI 0.20–2.67. After 15 years of smoking cessation, the joint effect was weakened, with a RERI of 0.35, CI -0.16–0.85.

Conclusion Occupational Cr(VI) exposure augments smoking-related lung-cancer risk beyond additivity. The RERI remains elevated for up to 15 years after tobacco cessation. These results support integrated control of workplace exposure to Cr(VI) and tobacco control.

8095005 MORTALITY AND CANCER INCIDENCE IN A LARGE COHORT OF LEAD-EXPOSED WORKERS

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10.1136/oemed-2025-EPICOHabstracts.97

Introduction Lead is a common occupational exposure, a suspected carcinogen (IARC group 2A), and associated with several other chronic diseases. Here we analyze mortality and cancer incidence in a large cohort of US workers with blood lead levels based on data from the National Institute for Occupational Safety and Health (NIOSH).

Material and Methods We updated mortality follow-up for a cohort of 58,000 male lead-exposed workers through 2021. We followed a subset of 37,000 of these workers for cancer incidence through 2021. Internal exposure-response analyses used highest recorded blood lead as the exposure.

Results In the cohort, the median birth year was 1959, and the average year of first blood test was 1997. Mean highest blood lead was 26 ug/dl, compared to current US general population levels of 3 ug/dl. There were 8,832 deaths. Mortality results showed positive significant trends of lung cancer, pancreatic cancer, heart disease, chronic obstructive pulmonary disease, and chronic renal disease, with increased blood lead levels. Among the subset of 37,000 workers, there were 5,832 incident cancers. Among them, only lung cancer showed a significant positive trend; brain and liver cancer showed borderline significant positive trends (p-values between 0.05 and 0.10). Thyroid and prostate cancer showed significant negative trends. While lung cancer trends might be related to smoking, there is no a priori reason why workers with higher blood lead would have smoked more, and in a subset of 200 workers with smoking data there was no such evidence. Lung cancer rate ratios on the order of 2.0–2.5 are also unlikely to be explained by smoking differences.

Conclusion In this large cohort with documented blood lead levels, higher lead was associated with several causes of mortality and cancer incidence.

8234966 OCCUPATIONAL EXPOSURE TO CHROMIUM(VI) AND FIVE SELECTED CANCER SITES: SYSTEMATIC REVIEW AND META-ANALYSES

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10.1136/oemed-2025-EPICOHabstracts.98

Objective Hexavalent chromium (Cr(VI)) is a human carcinogen. It is unclear whether Cr(VI) can cause cancer of the small intestine, oral cavity, pancreas, prostate and urinary bladder. We performed a systematic review and meta-analyses of epidemiological studies on occupational exposure to Cr(VI) and incidence and mortality of these cancer sites.

Material and Methods A comprehensive review of human studies on Cr(VI) and cancer was performed in Embase and Scopus. 131 potentially relevant epidemiological studies were identified. Study quality was assessed using Newcastle-Ottawa Scale. 29 publications including 81 observations for meta-analyses were based on cohort or case-control studies with exposure assessment of sufficient quality. Site-specific random-effects meta-analyses were done separately for incidence and mortality. Sensitivity analyses focused on the studies with the highest quality scores.

Results No indications for an association between Cr(VI) exposure and oral or small intestine cancer were found. Incidence of pancreatic cancer was not associated with Cr(VI) exposure (meta-RR 1.04; 95%CI 0.85–1.28) while for specific mortality RR was 1.41 (0.96–2.08) with moderate heterogeneity ($I^2=41\%$) and an asymmetric funnel plot (Egger's test; $p=0.002$). For incidence of prostate cancer meta RR was 1.16 (0.99–1.37) while the RR for mortality was 1.03 (0.84–1.25). For bladder cancer, RR was 1.04 (0.91–1.20) for incidence and 1.76 (1.20–2.60) for mortality.

Conclusion There are indications that pancreas, prostate and bladder cancer may be related to occupational exposure to Cr(VI) compounds, but in the meta-analyses sufficient evidence was not provided. For oral cavity and small intestine cancer, reported indications from animal models were not supported by human studies.

Tuesday 11:00-12:30 Exposure Assessment 2

8292044 ASSESSMENT OF EXPOSURE TO PARTICULATE AIRCRAFT AND DIESEL ENGINE EXHAUST FOR AIRPORT WORKERS IN THE NETHERLANDS FOR AN EPIDEMIOLOGICAL STUDY

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10.1136/oemed-2025-EPICOHabstracts.99

Objective Airport workers are exposed to aircraft engines exhaust and diesel engine exhaust from airport vehicles and machinery. However, health effect studies among airport

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October 2025 - Volume 82 - Suppl 2

30th Epidemiology in Occupational Health Conference
(EPICOH 2025), Hosted by Institute for Risk Assessment
Sciences, Utrecht University, 6–9 OCTOBER 2025, Utrecht,
the Netherlands

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