

## Carbon Black and Lung Cancer Mortality—A Meta-regression Analysis Based on Three Occupational Cohort Studies

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**Background:** Evaluation of an exposure–response relationship is crucial for regulatory risk assessments for the purposes of judging causality and quantifying the excess risk estimate per unit increase of exposure.

**Objectives:** To review three large cohort studies of occupational exposure to carbon black and association with lung cancer mortality, and conduct a meta-regression to derive an exposure–response relationship.

**Methods:** Meta-regression analysis of cumulative exposure to carbon black and lung cancer mortality was conducted based on the relative risk estimates reported by three cohort studies of production workers from US, UK, and Germany.

**Results:** A 10 mg/m<sup>3</sup>-yr increase in cumulative exposure to carbon black was associated with a relative risk decrease of 1% (relative risk [RR] = 0.99; 95% confidence interval [CI]: 0.87 – 1.13) for lung cancer mortality. No exposure–response relationship was observed.

**Conclusions:** This meta-regression analysis of three large occupational mortality studies reports that historic workplace exposures to carbon black were not associated with a significant risk of lung cancer.