

ENVIRONMENTAL EXPOSURE TO CADMIUM IS ASSOCIATED WITH INCREASED RISK OF CANCER

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Background and Aims: Association between environmental exposure to Cadmium and cancer incidence was reported by few studies with conflicting results. The aim of the current study was to evaluate the association between Cadmium exposure and cancer incidence in a cohort of people living in an industrial subdistrict of Israel, followed for 13 years.

Methods: A historical prospective study, with cohort inception and baseline measurement of people participating in the Central Bureau of Statistics 1995 census, was designed. To assess Cadmium soil concentration possible contribution to cancer incidence, a geochemical survey was analyzed. Cadmium concentration in soil was analyzed in 1823 samples in Haifa and the West Galilee (total 162 km²), which houses major industrial facilities. An Arithmetic mean of Cadmium measurements in a census block (aCd) was calculated. Cancer incidence was ascertained through the Israel Cancer Registry and was calculated after adjusting for age, sex, origin and years of education.

Results: 37,690 people were followed and 1759 developed cancer throughout the study's follow-up period. Of these 18,408 people live in areas with aCd above the limit of detection. Living in areas where aCd is detected was associated with increased cancer incidence (Hazard ratio (HR) 1.11 95% CI: 1.01-1.23, $P=0.038$). People age 41-65 living in areas where aCd is detected were found to have an increased cancer incidence (HR 1.21, 95% CI: 1.09-1.40, $P=0.014$). In this age group, people living in areas where aCd is 0.1-1.5 ppm show no difference in cancer incidence (HR 1.15, 95% CI: 0.96-1.36, $P=0.118$), whereas in people living in areas where aCd is above 1.5 ppm an increase in cancer incidence is found (HR 1.27, 95% CI: 1.07-1.51, $P=0.007$).

Conclusion: We report an increase of cancer incidence in Cadmium rich areas in a dose dependent manner among people age 41-65.