

SERUM DIOXIN CONCENTRATIONS AND BREAST CANCER RISK IN THE SEVESIO WOMEN'S HEALTH STUDY

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2,3,7,8-Tetrachlorodibenzo-*para*-dioxin (TCDD or dioxin) is a widespread environmental contaminant that has been shown to disrupt multiple endocrine pathways. The International Agency for Research on Cancer classified TCDD as a known human carcinogen, primarily based upon occupational studies of increased mortality from all cancers combined. Using data from the Seveso Women's Health Study (SWHS), we examined the association between individual serum TCDD levels and breast cancer risk in women residing around Seveso, Italy in 1976, at the time of an industrial explosion which resulted in the highest known population exposure to TCDD. The SWHS cohort comprises 981 women who were 40 years or less in 1976, resided in the most contaminated areas at the time of the explosion, and had archived sera that was collected soon after the explosion. Serum TCDD exposure was measured for each woman by high-resolution mass spectrometry. Breast cancer cases were identified during interview and confirmed by medical record. At interview, a total of 15 women (1.5 %) had been diagnosed with breast cancer. Serum TCDD levels for cases ranged from 13 to 1,960 ppt, lipid-adjusted. Using Cox proportional hazards modeling, the hazard ratio for breast cancer associated with a ten-fold increase in serum TCDD levels was increased to 2.1 (95 % C.I. 1.0-4.6). In the SWHS cohort, individual serum TCDD is significantly positively related with breast cancer incidence. Continued follow-up of the cohort will help shed light on the possible role of TCDD in the pathogenesis of breast cancer.

