

Table 2.2. Case–control studies of benzene and acute non-lymphocytic leukemia/acute myelogenous leukemia

Reference, study location and period	Characteristics of cases	Characteristics of controls	Exposure assessment	Organ site (ICD code)	Exposure categories	No. of exposed cases	Odds ratio (95% CI)*	Adjustment for potential confounders	Comments
Shu <i>et al</i> , (1988), PR China	331 cases of leukemia (101 ANLL) in children younger than 15 years, diagnosed July 1974-June 1986 in the registry of the Shanghai Tumor Institute, 310 interviewed.	Selected by neighbourhood committees in a 2:1 ratio to cases, matched on sex and birth year, 98% response.	Personal interviews of parents including maternal occupations and exposures during pregnancy	ANLL 205.0, 208.0	Maternal occupational exposure to benzene during pregnancy	11	4.0 (1.8-9.3)	Age, sex birth weight, birth order, born in rural area, prenatal and paternal preconception X-ray exposures, chloramphenicol and syntamycin usage and mother's age at menarche.	Referent group mothers who were office workers

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Blair <i>et al.</i> , (2001), USA	All cases of leukemia in the cancer registry of Iowa between March 1981 and October 1983, and from a surveillance network of hospitals in Minnesota from October 1980 to September 1992. 578 of 669 men cases age 30 or more participated.	Population-based controls frequency-matched to cases by 5-year age group, vital status at the time of the interview, and state of residence. 474 controls for cases less than 65 years of age were selected by random digit dialing 519 controls for cases 65 years or older were selected from listings provided by the Health Care Financing Administration, and 550 controls for deceased cases were selected from state death certificate files. Response rates 77-79%	Personal interviews of 340 cases and 278 surrogates of cases and 1245 controls. Detailed occupational history, with job exposure matrix for specific exposures.	AML 205.1	Benzene Low High	30 3	0.8 (0.5-1.3) 1.1 (0.3-3.9)		Referent for OR not specified.

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Adegoke <i>et al</i> , (2003) PR China	532 residents of Shanghai age 15 years or older reported with leukemia to the Shanghai cancer registry June 1987-August 1989. 486 (91%) interviewed	502 controls randomly selected from the General Population registry with the expected age and sex distribution of the cases. Response rate 94%.	Standardized personal interviews including occupational history and self-reported exposure to benzene.	AML 205.1 (236 cases)	Benzene exposure Never Ever <15 years ≥15 years Trend	212 24 12 12	1.0 1.4 (0.8-2.3) 0.8 (0.4-1.7) 2.9 (1.2-7.0) p=0.001	Age, sex and income	

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Costantini <i>et al.</i> , (2008) Italy (11 areas)	All cases of hematolymphopoeitic malignancies, incident in men and women aged 20–74 years in the period 1991–1993 were identified. A total of 2,737 cases of hematolymphopoeitic malignancies were interviewed.	1,779 subjects randomly selected through the demographic files of the municipalities in each of the areas under study, stratified by sex and 5-year age groups.	Job or industry-specific questionnaires and subsequent expert ratings utilized to assign a level of exposure to a definitive list of agents. Industrial hygiene experts from each geographic area examined questionnaires and assessed a level of probability and intensity of exposure to substances at the individual level for each case and control.	AML 205.1	Benzene Unexposed Very low/low Medium/high	133 3 6	1.0 0.3 (0.1-1.0) 0.9 (0.4-2.3)	Sex, age, education, area	The unexposed referent group never used any chemicals.