Table 2.1. Cohort studies of isopropyl alcohol manufacture and cancer

Reference, location, name of study	Cohort description	Exposure assessment	Organ site (ICD code)	Exposure categories	No. of cases/ deaths	Relative risk (95% CI)*	Adjustment for potential confounders	Comments
(Eckardt 1974; Hueper 1966) Baton Rouge, LA, USA	779 workers in isopropyl alcohol plant 1927-1950	Department	Nasal sinus (160) Larynx (161)	*Entire cohort* *Entire cohort*	2 2	("21 times normal" for both sites combined		Risk calculation from Hueper
(Lynch *et al.;* 1979) Baton Rouge, LA, USA	process workers (333 male, 2 female) employed ≥1 month 1950-76 + cohort of chemical mechanics, supervisors, & refinery workers (408 male) who worked on isopropyl or ethyl alcohol process units 1950-77; follow-up through 1977	Department & job title + « personal recall by retirees & company supervisors & personnel employees	Larynx (161)	*Entire cohort* *Process workers*	7 4	SIR 3.2 5.04	US white males comparison rates	

Table 2.1. Cohort studies of isopropyl alcohol manufacture and cancer

Reference, location, name of study	Cohort description	Exposure assessment	Organ site (ICD code)	Exposure categories	No. of cases/ deaths	Relative risk (95% CI)*	Adjustment for potential confounders	Comments
(Soskolne et al., 1984) Baton Rouge, LA, USA, 1944-80	Nested case-control: 50 men among those (n unspecified) who worked ≥12 months at plant, 1944-80. Ascertained: 14 while case employed, 12 as deceased annuitants, 3 ethanol unit follow-up, 8 living annuitant follow-up, 2 living annuitants who notified medical department, 11 non-company tumor registry, all histologically confirmed. Controls were 225 men from same cohort, matched (3+:1) by duration of employment ± 4 years, year of first employment ± 3 years, age ± 3 years, race)	Plant industrial hygienist assigned ordinal grade (0-5) of likely sulfuric acid, ethyl alcohol, isopropyl alcohol, asbestos, nickel, and wood dust exposures to department- job-era categories, analyzed by mean grade over work history. Analysis presented for sulfuric acid only. Moderate= 1.10-2.09 mean grade, high=2.10-4.88 mean grade	6 oro-pharynx (146), 2 naso-pharynx (147), 2 hypo-pharynx (148), one pharynx unspeci-fied (149.0), 5 nose, nasal cavities, middle ear, accessory sinuses (160), 34 larynx (161)	Sulfuric acid "moderate" Sulfuric acid "high"	29* 15*	OR 2.9 (0.74-11.3) 5.2 (1.23-22.1)	Alcoholism, smoking (from plant medical records for those who did not leave employment <1955)	*Seven excluded cases for some analyses may include cases reported by Eckardt and Lynch (see cohort studies) Study population includes isopropyl alcohol and ethyl alcohol manufacturing workers + other workers Referents are those with no or low sulfuric acid exposure
(Enterline, 1982) Deer Park, TX, USA	433 workers employed ≥3 months 1941-1965 in an isopropyl alcohol unit; 125 subsequently worked in epichlorohydrin (ECH); follow-up through 1978	Department	Buccal cavity and pharynx (140-149)	*Entire cohort* *Workers not subsequently employed in ECH unit*	2 2	SMR 4.0 5.4	Texas comparison rates	

Table 2.1. Cohort studies of isopropyl alcohol manufacture and cancer

Reference, location, name of study	Cohort description	Exposure assessment	Organ site (ICD code)	Exposure categories	No. of cases/ deaths	Relative risk (95% CI)*	Adjustment for potential confounders	Comments
(Hueper, 1966; Weil *et al*., 1952) South Charleston, WV, USA	182 workers employed 1928-1950 in an isopropyl alcohol unit	Department	Larynx (161) Nasal sinus (160)	*Entire cohort* *Entire cohort* *71 workers employed >5 years*	1 4 4	134.5/6.3 = 21.3 RR P<0.0000001		Hueper: risk for sinus and larnyx combined (n=5) Weil: p value for 4 cases among 71 workers
(Ott *et al*., 1989) Charleston and Institute, WV, USA, 1940-78	Nested case-control study: 129 lympho-hematopoi-etic malignancies (excluding Hodgkin disease) on 5785 death certificates from cohort mortality study. Controls randomly selected from cohort of 29,139 men, matched to cases (5:1) by decade of 1st hire, survival at least to start of same 5-year period of employment as cases.	Job histories evaluated to start of final case 5-year period of employment. 21 "suspect" substances and 1020 substances in 52 groups rated as ever/never in each work area.	Non-Hodgkin lymphoma (200) Multiple myeloma	Alkyl sulfates Alkyl sulfates	8 1	OR 5.1 p<0.05 1.7		Ethyl alcohol unit but not isopropyl alcohol unit was evaluated among selected work areas. "Suspect" substances did not include sulfuric acid, diisopropyl sulfate, or isopropyl oils. Chemical group "alkyl sulfates" includes workers exposed to diisopropyl sulfate in isopropyl aocohol unit.

Table 2.1. Cohort studies of isopropyl alcohol manufacture and cancer

Reference, location, name of study	Cohort description	Exposure assessment	Organ site (ICD code)	Exposure categories	No. of cases/ deaths	Relative risk (95% CI)*	Adjustment for potential confounders	Comments
(Teta *et al*., 1992) South Charleston, WV, USA	Isopropyl alcohol and ethyl alcohol manufacturing workers 538 workers employed 1928-49 in isopropyl strong acid unit and/or 1930-68 in ethyl strong acid unit	Department and era	Buccal cavity and pharynx (140-149)	*Entire cohort*	2	SMR 1.5 expected (CI, 0.2-4.8)	U.S. national comparison rates	SMRs not presented but confidence intervals were. The authors did not calculated SMRS when the observed and expected deaths were less than 5.
			Larynx (161)					
			Lympho-sarcoma, reticulo-sarcoma (200)	*Entire cohort*	1	0.7 expected (CI, 0.0-8.0)		
				Entire cohort	5	5.6 (1.8-13.0)		
(Teta *et al*., 1992) Texas City, TX, USA	Isopropyl alcohol and ethyl alcohol manufacturing workers 493 workers (92 isopropyl, 316 ethyl) employed 1941-50 in isopropyl strong acid unit, 1949-92 in isopropyl weak acid unit, 1941-68 in ethyl strong acid unit, and/or 1969-85 in ethyl weak acid unit	Department and era	Buccal cavity and pharynx (140-149)	*Entire cohort*	1	SMR 0.7 expected (CI, 0.0-8.4)	U.S. national comparison rates	SMRs not presented but confidence intervals were. The authors did not calculated SMRS when the observed and expected deaths were less than 5.
			Larynx (161)					
			Leukemia, aleukemia (204-ICD7)	*Entire cohort*	1	0.3 expected (CI, 0.1-18.6)		
				Entire cohort	2	0.7 expected (CI, 0.3-10.3)		
(Alderson and Rattan, 1980) Stanlow, Ellesmere Port, Cheshire, England, UK	262 men employed 1949-80 in isopropyl alcohol unit for ≥1 continuous year	Department	Buccal cavity and pharynx (140-149)	*Entire cohort*	0	SMR (p= 0.942)	England and Wales national comparison rates	Average followup 15.5 years—possibly insufficient latency for some workers
			Nasal sinus (160)	*Entire cohort*	1	50.0 (p =0.017)		