

Table 2.3. Summary of asbestos cohort study design characteristics

Cohort Population	Type of Exposure	Number of Study Subjects	Temporal Definition	Follow-up	Reference
<i>1. Patients with Asbestos-Related Diseases</i>					
Italy -Women compensated for asbestosis	implied high exposure to asbestos	631 women	alive & on asbestosis compensation roles 12/31/1979	1/1/1980–10/30/1997	Germani et al. (1999)
	1. mainly chrysotile	1. 276 textile workers			
	2. mainly crocidolite	2. 278 asbestos cement workers			
Finland – Patients with 1. asbestosis 2. pleural disease	implied high exposure to asbestos	1. 1 376 asbestosis 2. 4 887 pleural disease	1964–1995	1967–1995	Karjalainen et al. (1999)
Finland -patients with benign asbestos-related disease	implied high exposure to asbestos	1. 23 285 men 2. 930 women	responded to screen 1990–1992	1998	Koskinen et al. (2003)
Poland – workers with asbestosis	implied high exposure to asbestos	1. 907 men 2. 490 women	diagnosed 1970–1997	1999	Szeszenia-Dabrowska et al. (2002)
US Clinical trial of asbestos exposed workers	asbestos workers from high exposure trades or with radiographic evidence of asbestosis or pleural disease	1839 asbestos workers (smoking eligible) vs 7 924 smokers (not asbestos exposed)	1989–1993	2002	Aliyu et al. (2005), Cullen et al. (2005)
<i>2. Mining & Milling</i>					
Wittenoom Gorge, Western Australia – asbestos miners & millers	crocidolite	6505 men, 411 women	1943–1966	1980	Armstrong et al. (1988)
	crocidolite	6506 men	1943–1966	1980	de Klerk et al. (1989)
	crocidolite	6493 men, 415 women	1943–1966	2000	Berry et al. (2004)
	crocidolite	6493 men, 415 women	1943–1966	2000	Reid et al. (2004)

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Quebec, Canada – Asbestos and Thetford Miners	chrysotile	6091 men	miners employed in 1950; ≥ 5 yrs expo	1955	Braun and Truan (1958)
		11 788 men & women	born 1 881–1920; > 1 mo working	11/1/1966	McDonald et al. (1971)
		544	employees with ≥ 20 yr in 1961	1977	Nicholson et al. (1979)
	chrysotile also exposed to crocidolite in factory	11 788 men & women	born 1 881–1920; > 1 month working	1975	McDonald and Liddell (1979)
		10 939 men & 440 women	born 1 881–1920; > 1 month working	1975	McDonald et al. (1980)
	chrysotile	10 939 men & 440 women	born 1 891–1920; > 1 month before 1967	1975	Liddell et al.(1997)
	chrysotile	5351 men surviving through 1976 of original 10 939 men	born 1 891–1920; > 1 month working	1976–1988	McDonald et al. (1993)
	chrysotile	10 918 men	born 1 891–1920; > 1 month working	1992	Liddell et al. (1997)
Finland – Paakkila and Maljasalmi asbestos miners	anthophyllite	1092	1/1/1936–6/30/1967, ≥ 3 months	5/201969	Meurman et al. (1974)
		1092	1/1/1936–6/30/1967, ≥ 3 months	9/1/1977	Meurman et al. (1979)
		736 men, 167 women	worked ≥ 3 months 1/1/1936–6/30/1967; alive 1/1/1953	1953–1991	Meurman et al. (1994)

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Balangero, Italy – asbestos miners	chrysotile & balangeroite	932	> 1 month 1930–1965; alive 1/1/1946	1946–1975	Rubino et al. (1979)
		1094	1946–1987, > 1 yr	1987	Piolatto et al. (1990)
			1946–1990	2006	Mirabelli et al. (2008)
Northern Transvaal, South Africa – North West Cape Blue and Penge asbestos miners	1. crocidolite	7317 white men	1945–1955	1980	Sluis-Cremer et al. (1992)
		1. 3 430			
		2. 3 212			
Libby, Montana, USA – vermiculite miners, millers and processors	2. amosite tremolite, richterite, winchite	3. 675 both	pre-1970; > 1 yr	1981	
		575 men			
		184 men			
		1. 569 men			
		2. 406 men			
		1672 white men			
			Hired between 1935 and 1981	2001	

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<i>3. Insulation Manufacture</i>					
Canada/USA – insulation workers		1. 632 men	1. members < 1943	1943–1962	Selikoff et al. (1964)
		1. 632 men 3. 17 800 men (including survivors of 1 & 2)	1. members < 1943 3. in union 1/1/1967	1. 1943–1971 3. 1967–1971	Selikoff, (1974)
		1. 632 men	1. members < 1943	1. 1943–1976	Selikoff, (1979)
		2. 833 men	2. joined 1943–1962	2. hire date –1976	
		3. 17 800 men (including survivors of 1 & 2)	3. in union 1/1/1967	3.1967–1976	
		17 800 men	in union 1/1/1967	1967–1976	Selikoff et al. (1980)
		17 800 men	in union 1/1/1967	1967–1979	Seidman et al. (1982)
		17 800 men	in union 1/1/1967	1967–1986	Seidman and Selikoff, (1990)
		17 800 men	in union 1/1/1967	1967–1986	Selikoff and Seidman (1991)
		820 men	1941–1945	1985	Seidman et al. (1986)
Patterson, New Jersey, USA – workers producing amosite insulation for shipbuilding	amosite	820 men	1941–1945	1988	Ribak et al. (1989)

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Uxbridge, United Kingdom – Cape [Insulation] Boards Plant, insulation board manufacturing workers	amosite	4820 male asbestos workers	1947–1979	1947–1980	Acheson et al. (1984)
	amosite	4825 men	1947–1979	1986	Gardner et al. (1988)
	1947–1973 amosite & small amt chrysotile; 1973 only amosite	autopsies on 48 workers			Gibbs et al. (1994)
East London, United Kingdom – Male asbestos insulation factory workers	crocidolite, amosite & chrysotile	1. ~3,000 male factory workers 2. ~700 female factory workers 3. ~1,400 ladders (insulators)	1&3. began 4/1/1933–3/31/1964, > 1 month 2. began 1936–1942	1980	Berry et al. (2000)
Tyler, Texas, USA – Asbestos pipe-insulation plant workers	amosite	753 white men	worked during plans operation (1954–1972) or during cleanup; alive in 1964	1964–1993	Levin et al. (1998)
<i>4. Asbestos Textile Workers</i>					
Italy – textile workers		889 men, 1 077 women	1946–1984, ≥ 1 month	1996	Pira et al. (2005)

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Rochdale, Northern England – asbestos textile workers	chrysotile 1°, crocidolite	113 men	> 20 yr completed 1922–1953	1953	Doll (1955)
	chrysotile 1°, crocidolite	878: 658 men & 220 women	1916–1966, > 10 yrs	1966	Knox et al. (1968)
	chrysotile, crocidolite	1106	1916–1972	1972	Peto et al. (1977)
	chrysotile, crocidolite	3222 men & 283 women	1916–1983	6/30/1983	Peto et al. (1985)
Charleston, SC, USA – asbestos textile workers	chrysotile, minor amounts of crocidolite				Dement et al. (1982)
	chrysotile, minor amounts of crocidolite		1930–1975		Dement et al. (1983)
	chrysotile, minor amounts of crocidolite	1261 white men	1940–1975, > 1 month	1975	Dement et al. (1983)
	chrysotile, minor amounts of crocidolite	1261 men	1940–1975	1975	Finkelstein, (1984)
	chrysotile, minor amounts of crocidolite	2543 men	> 1 month working before 1958	1977	McDonald et al. , (1983)
	chrysotile, minor amounts of crocidolite	3022 subjects; 1 247 white men 546 black men 1 229 white women	1940–1975	1990	Dement et al. (1994)
	chrysotile, minor amounts of crocidolite	3022 subjects; 1. 1 247 white men 2. 546 black men 3. 1 229 white women	1940–1975	1990	Brown, Dement & Okun (1994)

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	chrysotile, minor amounts of crocidolite	3022 subjects; 1. 1 247 white men ~2. 546 black men 3. 1 229 white women	1940–1975	2001	Hein et al. (2007)
North Carolina, USA –asbestos textile workers from 4 plants	chrysotile, minor amounts of amosite in of 4 plants	5770 subjects; 1. 3 975 men 2. 1 795 women	1950–1973	2003	Loomis et al. (2009)
<i>5. Asbestos Cement</i>					
Denmark – Danish Eternit Ltd asbestos cement factory workers	chrysotile, crocidolite & amosite	5686 men	1943–1976	1976	Clemmesen & Hjalgrim-Jensen (1981)
	chrysotile mostly (only < 1946), amosite, crocidolite	7979 men, 583 women	ever 1928–1984; alive 1943	1943–1984	Raffn et al. (1989)
	mainly chrysotile; amosite, crocidolite	7887 men, 576 women	1928–1984	1943–1989	Raffn et al. (1996)
		7887 men, 576 women	1928–1984	1943–1990	Raffn et al. (1998)
Emilia Romagna, Italy – workers from 10 asbestos cement factories	chrysotile, crocidolite	3341	1952–1987	1989	Giaroli et al. (1994)
Casale Monferrato, Italy – asbestos cement production workers	crocidolite & chrysotile	2608 men; 759 women	worked anytime 1950–1980	1964-4/15/1986	Botta et al. (1991)
	chrysotile, crocidolite	2605 men; 762 woman	worked anytime 1950–1980	1965–1993	Magnani et al.(1996)

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Lithuania – Daugeliai & Akmene Factories, asbestos cement workers	chrysotile – almost only	1285 men, 602 women	pre-1978	2000	Smailyte et al. (2004a)
Southern Sweden – asbestos cement plant workers	> 95% chrysotile; crocidolite & amosite	1929 men	1907-	1985	Albin et al. (1988)
	> 95% chrysotile; crocidolite & amosite	1929 men	1907–1977	1986	Albin et al. (1990)
	> 95% chrysotile; crocidolite & amosite	981 male asbestos cement workers	> 1yr employed; 15 yrs latency	1958–1989	Jakobsson et al. (1994)
Tamworth, England, United Kingdom – TAK Construction Materials Ltd, cement manufacturing workers	chrysotile – almost only	1510 men 657 women	1941–1983	1984	Gardner et al. (1986)
New Orleans, LA, US – workers at 2 asbestos cement plants	chrysotile 1°, 1. some crocidolite & amosite 2. crocidolite	1. 1 898 2. 3 594	employed before 1970; 20 yr latency	Oct-80	Hughes et al. (1987)
	chrysotile, amosite, crocidolite	839 men	1969	1983	Hughes, & Weill, (1991)
Israel – asbestos cement workers		3608	1952–1977	1977	Djerassi et al. (1979)

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6. Friction Products Manufacture					
Ontario, Canada – Workers from two automotive parts manufacturers		1314 men; 343 women	1/1/1950; > 1 yr	1985	Finkelstein (1989b)
Ferodo, United Kingdom – workers at a friction materials factory	crocidolite, chrysolite	9113 men, 4 347 women	1941–1979	1979	Newhouse et al. (1982)
	chrysotile; some crocidolite < 1945	13 460	1942–1979	1979	Berry & Newhouse, (1983)
	crocidolite, chrysolite	9104 men, 4 346 women	1941–1979	1986	Newhouse & Sullivan (1989)
	chrysotile	9104 men, 4 346 women	1941–1986	1986	Berry (1994)
USSR – friction products workers	chrysotile	1. 156 2. 2 834	1. working in FP shop 1/1/1966 2. Yoroslavl plant, > 3yr	1. 1984 2. 1949–1988	Kogan et al. (1993)
New York, USA – Friction products manufacturing workers	chrysotile	1. 2 057 men 2. 268 men & 54 women	1.? 2. current employees	1. 1937–1980	Parnes (1990)
7. “Generic” Asbestos Workers					
China – Workers from 8 asbestos factories	chrysotile	5893: men & women	worked > 15 yr	1986	Zhu & Wang (1993)
Qingdao, China	chrysotile	160 men, 370 women	pre-1972; > 1 yr	1994	Pang et al. (1997)

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Federal Republic of Germany - asbestos related workers from national registry		3735 men & women	> 3 yrs expo before 1977	1977–1982	Woitowitz et al. (1986)
		1. 665 exposure ended < 1972			
		2. 3 070 exposure ended > 1971			
		616 women	> 3 yrs expo before 1977	1977–1988	Rösler et al. (1994)
		3372 men, 616 women		1977–1988?	Rösler & Woitowitz (1995)
East London, United Kingdom – asbestos factory workers	crocidolite, small amount chrysotile, amosite after 1926	4835 men	worked 4/1/1933–3/31/1964, > 1 month	5/1/1965	Newhouse (1969)
	crocidolite, small amount chrysotile, amosite after 1926	922 women after limit cohort to enhance tracking	began 1936–1942	1968	Newhouse et al. (1972)
	crocidolite, amosite & chrysotile	> 4 000 workers 1 327 severe expo	worked 4/1/1933–3/31/1964, > 1 month		Newhouse & Berry (1973)
	crocidolite, amosite & chrysotile	1. 3 232 male factory workers	1&3. began 4/1/1933–3/31/1964	1975	Newhouse & Berry (1979)
		2. 922 female factory workers	2. began 1936–1942		
		3. 1 368 male ladders			
	crocidolite, amosite & chrysotile	1. ~3,000 male factory workers	1&3. began 4/1/1933–3/31/1964	1980	Newhouse et al. (1985)
		2. 932 female factory workers	2. began 1936–1942		
		3. ~1,400 ladders (insulators)			

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East London, United Kingdom – asbestos factory workers	crocidolite, amosite & chrysotile	1. ~3,000 male factory workers 2. ~700 female factory workers 3. ~1,400 ladders (insulators)	1&3. began 4/1/1933–3/31/1964, > 1 month 2. began 1936–1942	1980	Berry et al. (2000)
Lancashire, United Kingdom – gas mask manufacturing workers	chrysotile & crocidolite	1327 women	1939	1951–1980	Acheson et al. (1982)
England and Wales, United Kingdom – national survey of asbestos workers	various types of asbestos	31 150 men traced & examined of 33 079 total	asbestos work 1. first before 1969 2. only after 1969 (max 12 yr latency)	1981	Hodgson & Jones (1986)
USA – asbestos industry retirees	production or maintenance service employees for asbestos co	1464 men	retired 1941–1967	1969	Enterline et al. (1972)
		1348 men 65 yr old with complete expo & job history	1941–1967	1969	Enterline et al. (1973)
	amosite, chrysotile, crocidolite	1348 men	1941–1967	1969	Enterline & Henderson (1973)
	amosite, chrysotile, crocidolite	1075 men of above who worked in US	1941–1967	1973	Henderson & Enterline (1979)
	amosite, chrysotile, crocidolite	1074 men	1941–1967	1980	Enterline et al. (1987)
<i>8. Other Occupations with Substantial Asbestos Exposure</i>					
Ontario, Canada – plumbers & pipefitters union members		25 285 men	1950–1999	1999	Finkelstein & Verma (2004)

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Finland- shipyard workers	asbestos one of many toxic exposures	12 693 men	1945–1960, > 1 yr	1953–1981	Tola et al. (1988)
Tuscany, Italy – railway carriage construction and repair	chrysotile, crocidolite	734 men	1945–1969	1970–1997	Battista et al. (1999)
Genoa, Italy – shipyard work (ship repair, refitting, construction)	asbestos one of many toxic exposures	2348 men	worked any time before 1952; alive 1960	1960–1969	Puntoni et al. (1977)
	asbestos one of many toxic exposures	2190 men	worked any time 1960–1970	1960–1975	Puntoni et al. (1979)
	asbestos one of many toxic exposures	3984 men	worked any time 1960–1980	1960–1995	Puntoni et al. (2001)
Gothenburg, Sweden – shipyard workers	shipyards sprayed mostly amosite; crocidolite used on 4 naval ships in 1950s	272 men	active in union 1970	1970–1979	Sandén et al. (1984)
	shipyard insulation workers	248		1970–1994	Järvholm & Sandén (1988)
	asbestos & other potentially toxic agents (metal fumes & solvents)	383 men (18 not fully IDed)	insured worker dying 1960–1979 at 40–67 yrs of age		Sandén et al. (1985)
	handled chrysotile (around spraying of amosite, some crocidolite); asbestos use stopped in 1972	3902 participated in health programme 1977–1979 (self selected for belief ever exposed to asbestos)		1978–1983	Sandén & Järvholm, (1987)
	chrysotile, mainly	3893			Sandén et al. (1992)