

Supplementary (online only) data for:

“CAREX Canada: An enhanced model for assessing occupational carcinogen exposure.”

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**Table S1: Proportion of men exposed by agent in CAREX Canada**

Agent	% men	n exposed at work
Antineoplastic Agents	27.0	58,000
Ethylene oxide	37.7	2,400
Chloroform	49.0	15,000
Shift work with potential for circadian disruption	55.6	1,900,000
1,4-Dioxane	56.8	3,700
Ionizing radiation	57.0	37,000 – 78,000
Tetrachloroethylene	60.4	15,000
Trichloroethylene	63.9	9,800
Formaldehyde	66.1	151,000
Acrylonitrile	67.8	5,900
Acetaldehyde	68.4	8,600
Epichlorohydrin	73.2	6,600
Toluene diisocyanates (TDIs)	75.1	24,000
Nitrobenzene	76.3	500
1,2-Dichloroethane	76.3	2,000
Polycyclic aromatic hydrocarbons (PAHs)	76.7	350,000
UV radiation (artificial sources)	78.3	141,000
Antimony trioxide	78.9	9,700
Pentachlorophenol	81.5	4,300
Solar radiation	82.4	1,476,000
Dichloromethane	82.7	20,000
Styrene	83.7	89,000
1,3-Butadiene	83.8	3,900
Cobalt	85.2	33,000
Beryllium	86.0	3,900
Refractory ceramic fibers (RCFs)	86.5	3,200
Benzene	87.4	374,000
Lead	89.6	277,000
Acrylamide	89.7	9,300
Cadmium	90.0	31,000
Arsenic	90.5	25,000
Naphthalene	90.6	7,700
Nickel	91.1	117,000
Chromium (hexavalent)	91.7	104,000
Diesel engine exhaust	91.7	781,000
Wood dust	92.7	338,000
Silica (crystalline)	92.8	382,000
Vanadium pentoxide	93.1	7,100
Creosotes	93.4	4,800
Coal tar and coal tar pitches	93.4	7,600
Ethylbenzene	93.5	208,000
Bitumens	95.0	44,000
Asbestos	96.3	151,000
Polychlorinated biphenyls (PCBs)	96.7	8,200

**Table S2: Exposure to CAREX agents by broad occupational category**

<b>Occupational groups: NOC-S 2006 codes</b>	<b>Total employed (n)</b>	<b>Number of exposures</b>	<b>Exposures per worker</b>	<b>Top exposures</b>
Transport and equipment operators: H611 - H737	678,000	1,176,000	1.74	DEE, SOL, BENZ
Other trades occupations: H211 - H535	908,000	1,125,000	1.24	PB, PAH, UV
Occupations unique to primary industry: I011 - I216	648,000	704,000	1.09	SOL, DEE, SHIFT
Machine operators and assemblers in manufacturing, including supervisors: J011 - J228	726,000	684,000	0.94	SHIFT, BENZ, FORM
Construction trades: H111 - H145	436,000	583,000	1.34	WOOD, SOL, SILI
Trades helpers, construction and transportation labourers: H811 - H832	402,000	481,000	1.20	SOL, SILI, SHIFT
Sales and service occupations: G013 - G016, G711 - G732, G911 - G983	1,474,000	316,000	0.21	SHIFT, PAH, SOL
Occupations in protective services: G611 - G631	277,000	304,000	1.10	SHIFT, PB, SOL
Chefs and cooks, and servers: G012, G411-G513	551,000	284,000	0.52	SHIFT, PAH, FORM
Retail salespersons, sales clerks, cashiers: G011, G211 - G311	1,123,000	269,000	0.24	SHIFT, PAH
Labourers in processing, manufacturing, and utilities: J311 - J319	267,000	211,000	0.79	SHIFT, WOOD, FORM
Technical, assisting, and related occupations in health: D211 - D313	478,000	193,000	0.40	SHIFT, UV, FORM
Natural and applied sciences and related occupations: C011 - C183	1,108,000	183,000	0.17	SOL, SHIFT, SILI
Clerical occupations, including supervisors: B411 - B576	1,733,000	181,000	0.10	SHIFT, SOL
Professional occupations in health, nurse supervisors, nurses: D011 - D112	472,000	176,000	0.37	SHIFT, ANTI, FORM
Contractors and supervisors in trades and transportation: H011 - H022	125,000	83,000	0.66	ASB, SILI, SOL
Other management occupations: A111 - A392	1,375,000	75,000	0.05	SHIFT, SOL, UV
Occupations in art, culture, recreation, sport: F011 - F154	502,000	72,000	0.14	SHIFT, SOL, CHLF
Occupations in social science, government service, religion: E011 - E039, E211 - E217	746,000	65,000	0.09	SHIFT, SOL
Teachers and professors: E111 - E133	668,000	37,000	0.05	FORM, SHIFT, WOOD
Financial, Secretarial, Admin occupations: B111 - B318	865,000	17,000	0.02	SHIFT, SOL
Childcare and home support workers: G811 - G814	260,000	16,000	0.06	SHIFT, SOL
Wholesale, technical, insurance, real estate sales specialists, and retail, wholesale and grain buyers: G111 - G134	353,000	8,600	0.02	SHIFT
Professional occupations in business/finance: B011 - B022	428,000	5,400	0.01	SHIFT
Senior management Occupations: A011 - A016	219,000	0	0.00	n/a

\*DEE: diesel engine exhaust, SOL: solar radiation, WOOD: wood dust, SHIFT: shift work, BENZ: benzene, PAH: polycyclic aromatic hydrocarbons, SILI: silica, FORM: formaldehyde, ANTI: antineoplastic agents, IRAD: ionizing radiation, CHLF: chloroform, ETHB: ethylbenzene, UV: artificial ultraviolet radiation, PB: lead compounds

**Table S3: Top 12 prevalent exposures in Canada by province [n (% of workforce by region)]**

	Canada	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	NU, NT, YT
Shift work	1,900,000 (11.3)	263,000 (12.0)	213,000 (11.1)	56,000 (10.8)	65,000 (10.8)	833,000 (12.9)	283,000 (7.2)	51,000 (13.6)	74,000 (15.8)	13,000 (17.7)	47,000 (19.4)	n/a*
Solar radiation	1,476,000 (8.8)	214,000 (9.7)	225,000 (11.7)	83,000 (16.1)	62,000 (10.3)	449,000 (6.9)	291,000 (7.4)	42,000 (11.2)	53,000 (11.2)	13,000 (17.3)	35,000 (14.5)	6,000 (11.0)
Diesel engine exhaust	781,000 (4.6)	106,000 (4.9)	106,000 (5.5)	32,000 (6.1)	30,000 (5.0)	263,000 (4.1)	177,000 (4.5)	23,000 (6.2)	22,000 (4.7)	3,500 (4.7)	14,000 (5.7)	3,800 (6.9)
Silica, crystalline	382,000 (2.3)	52,000 (2.3)	54,000 (2.8)	12,000 (2.3)	13,000 (2.1)	142,000 (2.2)	78,000 (2.0)	9,700 (2.6)	9,900 (2.1)	1,700 (2.3)	6,600 (2.7)	1,800 (3.3)
Benzene	374,000 (2.2)	40,000 (1.8)	45,000 (2.3)	11,000 (2.2)	14,000 (2.3)	147,000 (2.3)	93,000 (2.4)	7,100 (1.9)	10,000 (2.2)	1,100 (1.5)	4,200 (1.7)	1,000 (1.9)
Polycyclic aromatic hydrocarbons (PAH)	350,000 (2.1)	48,000 (2.2)	43,000 (2.2)	13,000 (2.5)	14,000 (2.4)	120,000 (1.8)	85,000 (2.2)	8,800 (2.3)	9,700 (2.1)	1,600 (2.2)	5,400 (2.2)	1,400 (2.6)
Wood dust	338,000 (2.0)	66,000 (3.0)	35,000 (1.8)	8,000 (1.5)	11,000 (1.8)	92,000 (1.4)	92,000 (2.3)	12,000 (3.2)	11,000 (2.4)	1,700 (2.3)	6,100 (2.5)	1,300 (2.4)
Lead and lead compounds	277,000 (1.6)	30,000 (1.4)	41,000 (2.1)	9,000 (1.7)	9,500 (1.6)	102,000 (1.6)	66,000 (1.7)	6,100 (1.6)	7,100 (1.5)	900 (1.2)	4,100 (1.7)	800 (1.5)
Ethylbenzene	208,000 (1.2)	23,000 (1.0)	32,000 (1.7)	8,300 (1.6)	7,800 (1.3)	77,000 (1.2)	46,000 (1.2)	5,000 (1.3)	5,700 (1.2)	800 (1.0)	3,000 (1.2)	900 (1.6)
Formaldehyde	151,000 (0.9)	19,000 (0.9)	12,000 (0.6)	2,900 (0.6)	5,800 (1.0)	63,000 (1.0)	40,000 (1.0)	3,200 (0.8)	3,400 (0.7)	400 (0.6)	1,300 (0.6)	200 (0.4)
Asbestos	151,000 (0.9)	26,000 (1.2)	22,000 (1.1)	4,200 (0.8)	4,800 (0.8)	52,000 (0.8)	48,000 (0.7)	3,700 (1.0)	5,400 (1.1)	800 (1.1)	3,200 (1.3)	600 (1.1)
Ultraviolet radiation, artificial	141,000 (0.8)	15,000 (0.7)	25,000 (1.3)	5,300 (1.0)	5,000 (0.8)	48,000 (0.7)	32,000 (0.8)	3,000 (0.8)	3,600 (0.8)	400 (0.6)	2,300 (0.9)	200 (0.4)

\*Data for the Territories was not collected in the Survey of Labour and Income Dynamics, therefore no estimate for shift work prevalence is available.