

# The Economic Burden of Lung Cancer and Mesothelioma Due to Occupational and Para-Occupational Asbestos Exposure

## Appendix

### Formula for paid labour force productivity losses (indirect costs) and health-related quality of life losses (intangible costs)

Consequence	Productivity loss in monetary terms	Health-related quality of life loss in monetary terms
Morbidity	$\sum_{n=0}^{\alpha} [f(n) \times N_{ij} \times \frac{[PS_{p,t+n} \times WEL_{t+n} \times PS_{t+n} \times PLFP_{g,t+n} \times TE_{t+n}]_{ij}}{(1 + \text{discount rate})^n}] + \sum_{n=0}^{\alpha} [f(n) \times N_{ij} \times \frac{[PS_{p,t+n} \times (1 - WEL_{t+n}) \times (PG_{g,t+n})_n \times PLFP_{g,t+n} \times TE_{t+n} \times (\text{Surveillance})_{t+n}]_{ij}}{(1 + \text{discount rate})^n}]$	$\sum_{n=0}^{\mu} f(n) \times N_{ij} \times MVQ \times \frac{[(PS_{g,t+n} \times HRQL_{g,t+n} - PS_{g,t+n} \times HRQL_{g,t+n})]_{ij}}{(1 + \text{discount rate})^n}$
Mortality	$\left[ \sum_{n=0}^{\mu} f(n) \times N_{ij} \times \frac{(PD_{p,t+n} \times PS_{g,t+n} \times PLFP_{g,t+n} \times TE_{t+n})_{ij}}{(1 + \text{discount rate})^n} + \sum_{n=0}^{\mu} f(n) \times N_{ij} \times \frac{(PD_{p,t+n} \times PS_{g,t+n} \times PLFP_{g,t+n} \times TE_{t+n} \times \text{Supportive care}_{t+n})_{ij}}{(1 + \text{discount rate})^n} \right]$	$\sum_{n=0}^{\mu} f(n) \times N_{ij} \times \frac{[(PS_{g,t+n} \times HRQL_{g,t+n} - PS_{g,t+n} \times HRQL_{g,t+n})]_{ij}}{(1 + \text{discount rate})^n}$

**Note:**

- Paid labour force productivity losses formula is based on the human capital approach (HCA)
- n= time
- t = time of diagnosis
- i = age, j = sex
- N<sub>ij</sub> = Number of cancer patients by age and gender
- PS<sub>G</sub> = Probability of survival of general population
- PD<sub>G</sub> = Probability of death of general population
- PS<sub>P</sub> = Probability of survival of case (person experience work injury or illness)
- PD<sub>P</sub> = Probability of death of case (person experience work injury or illness)
- HRQL<sub>G</sub> = Health-related quality of life for general people
- HRQL<sub>P</sub> = Health-related quality of life for case
- Surveillance = Percentage of a year which is spent participating in health monitoring activities associated with serious work injury or illness
- Supportive care = Percentage of a year which is spent in supportive care before death for terminal case (e.g., 0.5 of the year)

- WEL = Percentage of the case who withdrawal from their work or lose (part of) their earning due to work injury or illness
- PLFP<sub>G</sub>= Probability of labor force participation for the general population
- TE = Total yearly earnings including fringe benefits for full-year employment when not work injured or ill
- PS<sub>G</sub> × PLFP<sub>G</sub> × TE = Total yearly earning of the general population considering the probability of survival and the probability of labor force participation
- MVQ = Monetary value for a QALY
- $\alpha$  refers to the number of years during which health and function will be compromised for a case with work injury or illness
- $\mu$  refers to an upper limit of years over which the computation is to be estimated—this should be some value larger than the maximum years of life remaining
- $f(n) = \begin{cases} 0.5, & n = 0 \\ 1.0, & n \neq 0 \end{cases}$  (Use of 0.5 in equations is based on the assumption that, on average, cases are identified in mid-year and die in mid-year)

### Data Sources and Assumptions:

- Lung cancer health utility index (HUI) values and survival rates by stage for 10 years from the Canadian Cancer Risk Management Model (CRMM)
- Mesothelioma HUI and survival rates by stage from Surveillance, Epidemiology, and End Results Registry (SEERS) and Arnold et al. (2630)
- For counterfactual, survival data from Statistics Canada Life Tables 2009-2011; males: <http://www.statcan.gc.ca/pub/84-537-x/2013005/tbl/tbl1a-eng.htm>; and females: <http://www.statcan.gc.ca/pub/84-537-x/2013005/tbl/tbl1b-eng.htm>
- Used endpoints in 5 year age bands, i.e., for 20-24, use survival from life tables at age 24
- Counterfactual HUI from 2010 Canadian Community Health Survey (CCHS), matched by age and sex
- Assume same HUI at 80-84 & 85+ because CCHS only has HUI data for 80+
- All monetary values translated in 2011 Canadian dollars
- Discount rate of 3% used for health and earnings
- Productivity growth assumed to be 1% for earnings
- Healthcare administration costs 17%, Workers' Compensation administration costs 27.12%
- Wage supplements/fringe benefits estimated at 14% for earnings
- Counterfactual employment rates and annual earnings from 2011 Canadian Labour Force Survey (LFS), matched by age and sex, in 5 year age groups
- Counterfactual employment rates for those aged 70-85+ adjusted by rates from 2007 Canadian Survey of Labour and Income Dynamics (SLID)
- Reduced employment rate for lung cancer survivors based on Earle (2010)
- Assume newly diagnosed cases do not work in the year of diagnosis, which on average is six months
- Productivity losses after year of diagnosis incurred by surveillance schedule in years 1-10
- Health and productivity losses calculated annually for 10 years after diagnosis and assumed cured if survival to 10 years
- Assume cases surviving beyond 10 years are cured and do not accrue any additional direct, indirect or quality of life costs
- Assume no health or productivity losses with diagnosis after 74, since the Canadian Consumer Health Survey suggests counterfactual health level for this age group is lower than those with lung cancer
- Home production costs estimated only for mortality not morbidity, i.e., home production values foregone only after death
- Counterfactual home production estimated by sex and 10 year age bracket from Statistics Canada, 2005 General Social Survey (GSS)

- Home production wage rate from Statistics Canada Table 281-0030 2011 Survey of Employment, Payrolls and Hours (SEPH) for home support workers, housekeepers and related occupations (4412)
- For home production used 2011 hourly rates values and assumed no productivity increase

**Table: Mesothelioma, Females (per case costs, 2011 Canadian dollars)**

sex	TY age group	Attrib cancers	Total Healthcare Costs (per case)	healthcare sector treatment costs (per case)	out-of-pocket costs (per case)	Total Productivity and Output Costs (per case)	wage and salary costs (per case)	fringe benefit costs (per case)	home production costs (per case)	Friction Costs (per case)	Informal Caregiver Costs (per case)	Total Insurance Administration Costs (per case)	healthcare administration costs (per case)	workers' compensation administration costs (per case)	Lost QALYs (per case)
Female	25 to 29	0	\$ 54,393	\$ 40,143	\$ 14,251	\$ 1,585,002	\$ 714,100	\$ 99,974	\$ 770,928	\$ 17,768	\$ 46,176	\$ 86,437	\$ 6,033	\$ 80,404	21.455
Female	30 to 34	0	\$ 54,393	\$ 40,143	\$ 14,251	\$ 1,559,584	\$ 652,681	\$ 91,375	\$ 724,153	\$ 17,768	\$ 46,176	\$ 86,437	\$ 6,033	\$ 80,404	20.417
Female	35 to 39	3	\$ 54,393	\$ 40,143	\$ 14,251	\$ 1,400,195	\$ 572,241	\$ 80,114	\$ 667,727	\$ 17,768	\$ 46,176	\$ 86,437	\$ 6,033	\$ 80,404	19.205
Female	40 to 44	0	\$ 54,393	\$ 40,143	\$ 14,251	\$ 1,212,170	\$ 472,839	\$ 66,198	\$ 606,936	\$ 18,843	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	17.871
Female	45 to 49	3	\$ 54,393	\$ 40,143	\$ 14,251	\$ 1,016,154	\$ 360,370	\$ 50,452	\$ 554,880	\$ 18,745	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	16.497
Female	50 to 54	0	\$ 54,393	\$ 40,143	\$ 14,251	\$ 812,992	\$ 242,489	\$ 33,949	\$ 502,606	\$ 17,853	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	14.985
Female	55 to 59	6	\$ 54,393	\$ 40,143	\$ 14,251	\$ 610,870	\$ 132,578	\$ 18,561	\$ 441,170	\$ 14,399	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	13.340
Female	60 to 64	9	\$ 54,393	\$ 40,143	\$ 14,251	\$ 447,464	\$ 56,398	\$ 7,896	\$ 375,274	\$ 8,292	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	11.585
Female	65 to 69	9	\$ 54,393	\$ 40,143	\$ 14,251	\$ 339,685	\$ 19,721	\$ 2,761	\$ 314,441	\$ 2,701	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	9.658
Female	70 to 74	9	\$ 54,393	\$ 40,143	\$ 14,251	\$ 266,529	\$ 8,732	\$ 1,223	\$ 255,351	\$ 755	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	7.739
Female	75 to 79	6	\$ 54,393	\$ 40,143	\$ 14,251	\$ 204,762	\$ 5,473	\$ 766	\$ 197,757	\$ 418	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	5.922
Female	80 to 84	6	\$ 54,393	\$ 40,143	\$ 14,251	\$ 148,896	\$ 3,855	\$ 540	\$ 143,961	\$ 305	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	4.090
Female	85+	6	\$ 54,393	\$ 40,143	\$ 14,251	\$ 100,017	\$ 2,744	\$ 384	\$ 96,504	\$ 305	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	2.874

**Table: Mesothelioma, Males (per case costs, 2011 Canadian dollars)**

sex	TY age group	Attrib cancers	Total Healthcare Costs (per case)	healthcare sector treatment costs (per case)	out-of-pocket costs (per case)	Total Productivity and Output Costs (per case)	wage and salary costs (per case)	fringe benefit costs (per case)	home production costs (per case)	Friction Costs (per case)	Informal Caregiver Costs (per case)	Total Insurance Administration Costs (per case)	healthcare administration costs (per case)	workers' compensation administration costs (per case)	Lost QALYs (per case)
Male	25 to 29	0	\$ 54,393	\$ 40,143	\$ 14,251	\$ 1,765,595	\$ 1,078,821	\$ 151,035	\$ 535,739	\$ 20,714	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	21.048
Male	30 to 34	0	\$ 54,393	\$ 40,143	\$ 14,251	\$ 1,649,726	\$ 993,353	\$ 139,069	\$ 517,304	\$ 24,512	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	19.955
Male	35 to 39	0	\$ 54,393	\$ 40,143	\$ 14,251	\$ 1,482,457	\$ 874,035	\$ 122,365	\$ 486,056	\$ 26,906	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	18.682
Male	40 to 44	0	\$ 54,393	\$ 40,143	\$ 14,251	\$ 1,283,837	\$ 731,646	\$ 102,430	\$ 449,760	\$ 27,461	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	17.285
Male	45 to 49	4	\$ 54,393	\$ 40,143	\$ 14,251	\$ 1,066,100	\$ 571,326	\$ 79,986	\$ 414,789	\$ 27,960	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	15.767
Male	50 to 54	9	\$ 54,393	\$ 40,143	\$ 14,251	\$ 836,030	\$ 400,981	\$ 56,137	\$ 378,911	\$ 26,798	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	14.120
Male	55 to 59	21	\$ 54,393	\$ 40,143	\$ 14,251	\$ 611,306	\$ 239,462	\$ 33,525	\$ 338,320	\$ 22,253	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	12.419
Male	60 to 64	34	\$ 54,393	\$ 40,143	\$ 14,251	\$ 432,265	\$ 119,707	\$ 16,759	\$ 295,799	\$ 14,640	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	10.594
Male	65 to 69	55	\$ 54,393	\$ 40,143	\$ 14,251	\$ 307,806	\$ 53,640	\$ 7,510	\$ 246,657	\$ 5,960	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	8.676
Male	70 to 74	64	\$ 54,393	\$ 40,143	\$ 14,251	\$ 228,859	\$ 28,025	\$ 3,923	\$ 196,911	\$ 2,537	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	6.807
Male	75 to 79	85	\$ 54,393	\$ 40,143	\$ 14,251	\$ 169,312	\$ 16,626	\$ 2,328	\$ 150,358	\$ 1,727	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	5.033
Male	80 to 84	51	\$ 54,393	\$ 40,143	\$ 14,251	\$ 121,034	\$ 10,771	\$ 1,508	\$ 108,756	\$ 994	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	3.391
Male	85+	47	\$ 54,393	\$ 40,143	\$ 14,251	\$ 82,571	\$ 7,802	\$ 1,092	\$ 73,677	\$ 994	\$ 13,338	\$ 86,437	\$ 6,033	\$ 80,404	2.406

**Table: Lung Cancer, Females (per case costs, 2011 Canadian dollars)**

sex	TY age group	Attrib cancers	Total Healthcare Costs (per case)	healthcare sector treatment costs (per case)	out-of-pocket costs (per case)	Total Productivity and Output Costs (per case)	wage and salary costs (per case)	fringe benefit costs (per case)	home production costs (per case)	Friction Costs (per case)	Informal Caregiver Costs (per case)	Total Insurance Administration Costs (per case)	healthcare administration costs (per case)	workers' compensation administration costs (per case)	Lost QALYs (per case)
Female	25 to 29	0	\$ 40,784	\$ 24,238	\$ 16,546	\$1,497,753	\$ 676,885	\$ 94,764	\$ 726,104	\$ 14,816	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	20.338
Female	30 to 34	0	\$ 40,784	\$ 24,238	\$ 16,546	\$1,473,441	\$ 618,571	\$ 86,600	\$ 681,670	\$ 16,116	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	19.352
Female	35 to 39	9	\$ 40,784	\$ 24,238	\$ 16,546	\$1,322,370	\$ 542,268	\$ 75,918	\$ 628,267	\$ 17,768	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	18.197
Female	40 to 44	0	\$ 40,784	\$ 24,238	\$ 16,546	\$1,144,662	\$ 448,043	\$ 62,726	\$ 571,167	\$ 18,843	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	16.929
Female	45 to 49	9	\$ 40,784	\$ 24,238	\$ 16,546	\$ 958,834	\$ 341,400	\$ 47,796	\$ 521,842	\$ 18,745	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	15.617
Female	50 to 54	0	\$ 40,784	\$ 24,238	\$ 16,546	\$ 766,388	\$ 229,945	\$ 32,192	\$ 472,058	\$ 17,853	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	14.174
Female	55 to 59	19	\$ 40,784	\$ 24,238	\$ 16,546	\$ 574,314	\$ 125,350	\$ 17,549	\$ 413,865	\$ 14,399	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	12.610
Female	60 to 64	28	\$ 40,784	\$ 24,238	\$ 16,546	\$ 420,818	\$ 53,969	\$ 7,556	\$ 351,738	\$ 8,292	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	10.936
Female	65 to 69	28	\$ 40,784	\$ 24,238	\$ 16,546	\$ 318,342	\$ 18,865	\$ 2,641	\$ 294,195	\$ 2,701	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	9.092
Female	70 to 74	28	\$ 40,784	\$ 24,238	\$ 16,546	\$ 248,893	\$ 8,252	\$ 1,155	\$ 238,331	\$ 755	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	7.275
Female	75 to 79	19	\$ 40,784	\$ 24,238	\$ 16,546	\$ 190,545	\$ 5,116	\$ 716	\$ 183,996	\$ 418	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	5.567
Female	80 to 84	19	\$ 40,784	\$ 24,238	\$ 16,546	\$ 138,025	\$ 3,593	\$ 503	\$ 133,426	\$ 305	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	3.821
Female	85+	19	\$ 40,784	\$ 24,238	\$ 16,546	\$ 92,329	\$ 2,554	\$ 358	\$ 89,060	\$ 305	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	2.687

**Table: Lung Cancer, Males (per case costs, 2011 Canadian dollars)**

sex	TY age group	Attrib cancers	Total Healthcare Costs (per case)	healthcare sector treatment costs (per case)	out-of-pocket costs (per case)	Total Productivity and Output Costs (per case)	wage and salary costs (per case)	fringe benefit costs (per case)	home production costs (per case)	Friction Costs (per case)	Informal Caregiver Costs (per case)	Total Insurance Administration Costs (per case)	healthcare administration costs (per case)	workers' compensation administration costs (per case)	Lost QALYs (per case)
Male	25 to 29	0	\$ 43,199	\$ 24,238	\$ 18,961	\$ 1,670,734	\$ 1,022,498	\$ 143,150	\$ 505,086	\$ 20,714	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	19.950
Male	30 to 34	0	\$ 43,199	\$ 24,238	\$ 18,961	\$ 1,692,249	\$ 941,430	\$ 131,800	\$ 487,219	\$ 24,512	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	18.911
Male	35 to 39	0	\$ 43,199	\$ 24,238	\$ 18,961	\$ 1,517,865	\$ 828,356	\$ 115,970	\$ 457,569	\$ 26,906	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	17.699
Male	40 to 44	0	\$ 43,199	\$ 24,238	\$ 18,961	\$ 1,310,699	\$ 693,272	\$ 97,058	\$ 423,311	\$ 27,461	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	16.367
Male	45 to 49	20	\$ 43,199	\$ 24,238	\$ 18,961	\$ 1,083,006	\$ 541,293	\$ 75,781	\$ 390,152	\$ 27,960	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	14.919
Male	50 to 54	40	\$ 43,199	\$ 24,238	\$ 18,961	\$ 842,721	\$ 380,247	\$ 53,235	\$ 356,005	\$ 26,798	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	13.348
Male	55 to 59	99	\$ 43,199	\$ 24,238	\$ 18,961	\$ 607,171	\$ 226,322	\$ 31,685	\$ 317,479	\$ 22,253	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	11.728
Male	60 to 64	159	\$ 43,199	\$ 24,238	\$ 18,961	\$ 423,336	\$ 114,368	\$ 16,012	\$ 276,945	\$ 14,640	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	9.985
Male	65 to 69	258	\$ 43,199	\$ 24,238	\$ 18,961	\$ 295,988	\$ 51,210	\$ 7,169	\$ 230,439	\$ 5,960	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	8.145
Male	70 to 74	298	\$ 43,199	\$ 24,238	\$ 18,961	\$ 217,334	\$ 26,447	\$ 3,703	\$ 183,481	\$ 2,537	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	6.380
Male	75 to 79	397	\$ 43,199	\$ 24,238	\$ 18,961	\$ 159,556	\$ 15,546	\$ 2,176	\$ 139,657	\$ 1,727	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	4.733
Male	80 to 84	238	\$ 43,199	\$ 24,238	\$ 18,961	\$ 113,498	\$ 10,034	\$ 1,405	\$ 100,655	\$ 994	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	3.170
Male	85+	218	\$ 43,199	\$ 24,238	\$ 18,961	\$ 77,256	\$ 7,265	\$ 1,017	\$ 67,957	\$ 994	\$ 17,255	\$ 11,134	\$ 4,005	\$ 7,128	2.254

**Table: Survival Probabilities, Females, General Population**

Probability of Survival (general population)		20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99
99,222	20 to 24	1.000	0.998	0.997	0.994	0.990	0.984	0.975	0.962	0.940	0.907	0.855	0.775	0.654	0.487	0.285	0.111
99,072	25 to 29		1.000	0.998	0.996	0.992	0.986	0.977	0.963	0.942	0.909	0.857	0.776	0.655	0.487	0.286	0.111
98,899	30 to 34			1.000	0.997	0.994	0.988	0.979	0.965	0.944	0.910	0.858	0.777	0.657	0.488	0.286	0.111
98,645	35 to 39				1.000	0.996	0.990	0.981	0.967	0.946	0.913	0.860	0.779	0.658	0.490	0.287	0.111
98,261	40 to 44					1.000	0.994	0.985	0.971	0.950	0.916	0.864	0.782	0.661	0.491	0.288	0.112
97,677	45 to 49						1.000	0.991	0.977	0.955	0.922	0.869	0.787	0.665	0.494	0.290	0.112
96,789	50 to 54							1.000	0.986	0.964	0.930	0.877	0.794	0.671	0.499	0.293	0.113
95,427	55 to 59								1.000	0.978	0.943	0.889	0.806	0.680	0.506	0.297	0.115
93,317	60 to 64									1.000	0.965	0.909	0.824	0.696	0.518	0.303	0.118
90,019	65 to 69										1.000	0.943	0.854	0.721	0.536	0.315	0.122
84,860	70 to 74											1.000	0.906	0.765	0.569	0.334	0.129
76,878	75 to 79												1.000	0.845	0.628	0.368	0.143
64,928	80 to 84													1.000	0.744	0.436	0.169
48,294	85 to 89														1.000	0.586	0.227
28,319	90 to 94															1.000	0.387
10,969	95 to 99																1.000

**Table: Survival Probabilities, Males, General Population**

Probability of Survival (general population)		20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99
98,902	20 to 24	1.000	0.996	0.993	0.988	0.982	0.973	0.960	0.939	0.906	0.854	0.777	0.667	0.518	0.340	0.168	0.054
98,540	25 to 29		1.000	0.996	0.992	0.986	0.977	0.963	0.942	0.909	0.858	0.780	0.669	0.519	0.342	0.169	0.054
98,184	30 to 34			1.000	0.995	0.989	0.980	0.967	0.946	0.912	0.861	0.783	0.671	0.521	0.343	0.170	0.054
97,738	35 to 39				1.000	0.994	0.985	0.971	0.950	0.916	0.865	0.787	0.674	0.524	0.344	0.170	0.054
97,132	40 to 44					1.000	0.991	0.977	0.956	0.922	0.870	0.792	0.679	0.527	0.347	0.171	0.055
96,261	45 to 49						1.000	0.986	0.964	0.930	0.878	0.799	0.685	0.532	0.350	0.173	0.055
94,932	50 to 54							1.000	0.978	0.943	0.890	0.810	0.694	0.539	0.355	0.175	0.056
92,841	55 to 59								1.000	0.965	0.910	0.828	0.710	0.551	0.363	0.179	0.057
89,565	60 to 64									1.000	0.944	0.859	0.736	0.572	0.376	0.186	0.059
84,507	65 to 69										1.000	0.910	0.780	0.606	0.398	0.197	0.063
76,896	70 to 74											1.000	0.857	0.666	0.438	0.216	0.069
65,920	75 to 79												1.000	0.777	0.511	0.253	0.080
51,189	80 to 84													1.000	0.658	0.325	0.103
33,663	85 to 89														1.000	0.495	0.157
16,647	90 to 94															1.000	0.318
5,294	95 to 99																1.000

**Table: Ten-year Weighted Average Survival for Mesothelioma Patients (Both Sexes), developed from SEER and CRMM**

Year after diagnosis	year 1	year 2	year 3	year 4	year 5	year 6	year 7	year 8	year 9	year 10
Probability of survival (weighted by stage)	42.4%	22.2%	14.6%	10.3%	8.0%	7.5%	6.3%	4.5%	4.5%	4.2%
Probability of death (weighted by stage)	57.6%	20.2%	7.6%	4.3%	2.3%	0.5%	1.3%	1.8%	0.0%	0.3%
Reduced HUI (weighted by stage/survival)	0.640	0.704	0.731	0.742	0.751	0.755	0.760	0.762	0.764	0.778

**Table: Ten-year Weighted Average Survival for Lung Cancer Patients (Both Sexes), developed from CRMM**

Year after diagnosis	year 1	year 2	year 3	year 4	year 5	year 6	year 7	year 8	year 9	year 10
Probability of survival (weighted by stage)	46.2%	28.6%	22.5%	19.0%	16.4%	14.4%	12.7%	11.4%	10.2%	9.1%
Probability of death (weighted by stage)	53.8%	17.6%	6.1%	3.5%	2.6%	2.0%	1.7%	1.4%	1.2%	1.0%
Reduced HUI (weighted by stage/survival)	0.640	0.704	0.731	0.742	0.751	0.755	0.760	0.762	0.764	0.778

**Table: HUI Values, General Population**

Sex	Age	CCHS 2010	Sex	Age	CCHS 2010
M	<b>20 to 24</b>	0.919	F	<b>20 to 24</b>	0.919
M	<b>25 to 29</b>	0.921	F	<b>25 to 29</b>	0.923
M	<b>30 to 34</b>	0.918	F	<b>30 to 34</b>	0.917
M	<b>35 to 39</b>	0.919	F	<b>35 to 39</b>	0.911
M	<b>40 to 44</b>	0.900	F	<b>40 to 44</b>	0.898
M	<b>45 to 49</b>	0.894	F	<b>45 to 49</b>	0.866
M	<b>50 to 54</b>	0.885	F	<b>50 to 54</b>	0.867
M	<b>55 to 59</b>	0.856	F	<b>55 to 59</b>	0.854
M	<b>60 to 64</b>	0.878	F	<b>60 to 64</b>	0.855
M	<b>65 to 69</b>	0.854	F	<b>65 to 69</b>	0.848
M	<b>70 to 74</b>	0.838	F	<b>70 to 74</b>	0.820
M	<b>75 to 79</b>	0.825	F	<b>75 to 79</b>	0.785
M	<b>80 to 84</b>	0.710	F	<b>80 to 84</b>	0.721
M	<b>85 to 89</b>		F	<b>85 to 89</b>	
M	<b>90+</b>		F	<b>90+</b>	

**Additional Sensitivity Analysis (0 and 5% interest rate, other parameters kept same as base case)**

<b>Economic Burden of Mesothelioma</b>				
Interest/Discount Rate of 5%				
<b>Based on 427 cases in 2011</b>				
	<b>All cases</b>		<b>Per case</b>	
Total Healthcare Costs:	\$ 22,982,248		\$ 53,854	
<i>healthcare sector treatment costs:</i>		\$ 17,130,994		\$ 40,143
<i>out-of-pocket costs:</i>		\$ 5,851,254		\$ 13,711
Total Productivity and Output Costs:	\$ 98,522,198		\$ 230,866	
<i>wage and salary costs:</i>		\$ 23,398,428		\$ 54,829
<i>fringe benefit costs:</i>		\$ 3,275,780		\$ 7,676
<i>home production costs:</i>		\$ 71,847,990		\$ 168,361
Total Friction Costs:	\$ 2,360,170		\$ 5,531	
Total Informal Care Giving Costs:	\$ 5,561,094		\$ 13,031	
Total Insurance Administration Costs:	\$ 36,886,993		\$ 86,437	
<i>healthcare administration costs:</i>		\$ 2,574,720		\$ 6,033
<i>workers' compensation administration costs:</i>		\$ 34,312,273		\$ 80,404
Total Health-related Quality of Life Costs:	\$247,480,673		\$ 579,920	
<b>Overall Total Costs:</b>	<b>\$413,793,375</b>		<b>\$ 969,639</b>	
* 2011 Canadian dollars				

<b>Economic Burden of Mesothelioma</b>				
Interest/Discount Rate of 0%				
<b>Based on 427 cases in 2011</b>				
	<b>All cases</b>		<b>Per case</b>	
Total Healthcare Costs:	\$ 23,609,863		\$ 55,325	
<i>healthcare sector treatment costs:</i>		\$ 17,130,994		\$ 40,143
<i>out-of-pocket costs:</i>		\$ 6,478,869		\$ 15,182
Total Productivity and Output Costs:	\$162,522,756		\$ 380,838	
<i>wage and salary costs:</i>		\$ 33,041,845		\$ 77,427
<i>fringe benefit costs:</i>		\$ 4,625,858		\$ 10,840
<i>home production costs:</i>		\$ 124,855,053		\$ 292,572
Total Friction Costs:	\$ 2,360,170		\$ 5,531	
Total Informal Care Giving Costs:	\$ 6,188,405		\$ 14,501	
Total Insurance Administration Costs:	\$ 36,886,993		\$ 86,437	
<i>healthcare administration costs:</i>		\$ 2,574,720		\$ 6,033
<i>workers' compensation administration costs:</i>		\$ 34,312,273		\$ 80,404
Total Health-related Quality of Life Costs:	\$407,886,171		\$ 955,797	
<b>Overall Total Costs:</b>	<b>\$639,454,357</b>		<b>\$ 1,498,428</b>	



Economic Burden of Asbestos-related Lung Cancer				
Interest/Discount Rate of 5%				
Based on 1904 cases in 2011		All cases		Per case
Total Healthcare Costs:	\$ 80,027,309		\$ 42,027	
<i>healthcare sector treatment costs:</i>		\$ 46,154,063		\$ 24,238
<i>out-of-pocket costs:</i>		\$ 33,873,246		\$ 17,789
Total Productivity and Output Costs:	\$ 418,056,374		\$ 219,545	
<i>wage and salary costs:</i>		\$ 111,727,478		\$ 58,674
<i>fringe benefit costs:</i>		\$ 13,720,918		\$ 7,206
<i>home production costs:</i>		\$ 292,607,978		\$ 153,665
Total Friction Costs:	\$ 10,542,816		\$ 5,537	
Total Informal Care Giving Costs:	\$ 31,042,326		\$ 16,302	
Total Insurance Administration Costs:	\$ 21,201,183		\$ 11,134	
<i>healthcare administration costs:</i>		\$ 7,627,244		\$ 4,005
<i>workers' compensation administration costs:</i>		\$ 13,573,939		\$ 7,128
Total Health-related Quality of Life Costs:	\$ 1,025,008,374		\$ 538,290	
<b>Overall Total Costs:</b>	<b>\$ 1,585,878,383</b>		<b>\$ 832,834</b>	
* 2011 Canadian dollars				

Economic Burden of Asbestos-related Lung Cancer				
Interest/Discount Rate of 0%				
Based on 1904 cases in 2011		All cases		Per case
Total Healthcare Costs:	\$ 84,991,724		\$ 44,634	
<i>healthcare sector treatment costs:</i>		\$ 46,154,063		\$ 24,238
<i>out-of-pocket costs:</i>		\$ 38,837,661		\$ 20,396
Total Productivity and Output Costs:	\$ 682,268,160		\$ 358,297	
<i>wage and salary costs:</i>		\$ 156,821,611		\$ 82,356
<i>fringe benefit costs:</i>		\$ 19,258,794		\$ 10,114
<i>home production costs:</i>		\$ 506,187,755		\$ 265,828
Total Friction Costs:	\$ 10,542,816		\$ 5,537	
Total Informal Care Giving Costs:	\$ 36,048,720		\$ 18,931	
Total Insurance Administration Costs:	\$ 21,201,183		\$ 11,134	
<i>healthcare administration costs:</i>		\$ 7,627,244		\$ 4,005
<i>workers' compensation administration costs:</i>		\$ 13,573,939		\$ 7,128
Total Health-related Quality of Life Costs:	\$ 1,677,482,637		\$ 880,941	
<b>Overall Total Costs:</b>	<b>\$ 2,512,535,241</b>		<b>\$ 1,319,474</b>	

## Data for Household Production Estimates

<b>Survey of Employment, Payrolls and Hours - 2612</b>							
Source: Statistics Canada. Table 281-0030 - Survey of Employment, Payrolls and Hours (SEPH), average hourly earnings for employees paid by the hour, by overtime status and detailed North American Industry Classification System (NAICS), annual (current dollars), calendar year 2011							
North American Industry Classification System (NAICS) (18), Personal and \$ <b>15.42</b>							
Source: Statistics Canada, General Social Survey, 2005 <a href="http://gsg.uottawa.ca/data/teaching/eco/gssc24gid-ver4">http://gsg.uottawa.ca/data/teaching/eco/gssc24gid-ver4</a>							
		Population (participants and non-participants in household work)			Participants (individuals with at least one occurrence of the activity)		
		Total	Male	Female	Total	Male	Female
Age group	Category	Hours per day					
15-24	Household work and related activities	1.4	1.1	1.8	2.3	1.9	2.6
25-34	Household work and related activities	3.3	2.1	4.5	3.9	2.8	4.8
35-44	Household work and related activities	3.7	2.8	4.6	4.2	3.3	4.9
45-54	Household work and related activities	3.2	2.4	3.9	3.7	3.1	4.2
55-64	Household work and related activities	3.5	2.7	4.2	4.0	3.3	4.5
65+	Household work and related activities	3.5	3.2	3.8	3.9	3.7	4.1
Age group	Category	Hours per year					
15-24	Household work and related activities	510	400	655	837	692	946
25-34	Household work and related activities	1201	764	1638	1420	1019	1747
35-44	Household work and related activities	1347	1019	1674	1529	1201	1784
45-54	Household work and related activities	1165	874	1420	1347	1128	1529
55-64	Household work and related activities	1274	983	1529	1456	1201	1638
65+	Household work and related activities	1274	1165	1383	1420	1347	1492
Category	Dollars per year						
15-24	Household work and related activities	\$ 7,858	\$ 6,174	\$ 10,103	\$ 12,910	\$ 10,664	\$ 14,593
25-34	Household work and related activities	\$ 18,523	\$ 11,787	\$ 25,258	\$ 21,890	\$ 15,716	\$ 26,942
35-44	Household work and related activities	\$ 20,768	\$ 15,716	\$ 25,819	\$ 23,574	\$ 18,523	\$ 27,503
45-54	Household work and related activities	\$ 17,961	\$ 13,471	\$ 21,890	\$ 20,768	\$ 17,400	\$ 23,574
55-64	Household work and related activities	\$ 19,645	\$ 15,155	\$ 23,574	\$ 22,452	\$ 18,523	\$ 25,258
65+	Household work and related activities	\$ 19,645	\$ 17,961	\$ 21,329	\$ 21,890	\$ 20,768	\$ 23,013