

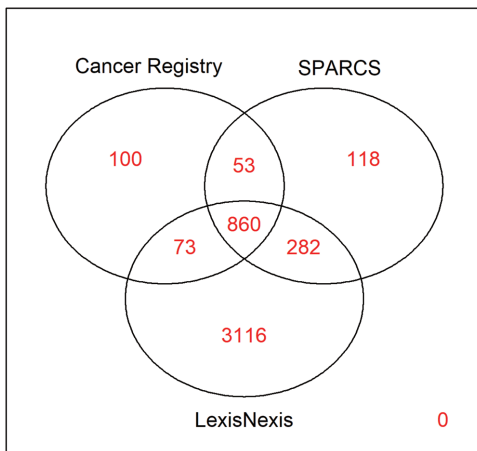
**Table S1** SMD between REcan and REses at the cancer diagnosis address and six alternative measures from patient’s residential history

Variables	SMD (95% CI)	P value	RE at the diagnosis tract, mean (SD)	RE of the comparison group, mean (SD)
<b>REcan</b>				
RE at the diagnosis tract—RE at the first tract	0.123 (0.036–0.21)*	0.006*	-0.14 (0.51)	-0.08 (0.43)
RE at the diagnosis tract—RE at the tract with the minimum RE	0.444 (0.356–0.532)*	<0.001*	-0.14 (0.51)	-0.36 (0.45)
RE at the diagnosis tract—RE at the tract with the maximum RE	0.503 (0.415–0.591)*	<0.001*	-0.14 (0.51)	0.10 (0.44)
RE at the diagnosis tract—RE at the tract with the longest duration	0.056 (-0.031 to 0.143)	0.206	-0.14 (0.51)	-0.11 (0.45)
RE at the diagnosis tract—simple-average RE	0.04 (-0.047 to 0.127)	0.363	-0.14 (0.51)	-0.12 (0.41)
RE at the diagnosis tract—TWA RE	0.055 (-0.032 to 0.142)	0.218	-0.14 (0.51)	-0.12 (0.42)
<b>REses</b>				
RE at the diagnosis tract—RE at the first tract	0.083 (-0.005 to 0.17)	0.063	-0.21 (0.53)	-0.16 (0.57)
RE at the diagnosis tract—RE at the tract with the minimum RE	0.572 (0.483–0.661)*	<0.001*	-0.21 (0.53)	-0.49 (0.46)
RE at the diagnosis tract—RE at the tract with the maximum RE	0.769 (0.679–0.859)*	<0.001*	-0.21 (0.53)	0.22 (0.57)
RE at the diagnosis tract—RE at the tract with the longest duration	0.028 (-0.059 to 0.115)	0.526	-0.21 (0.53)	-0.19 (0.55)
RE at the diagnosis tract—simple-average RE	0.076 (-0.011 to 0.163)	0.088	-0.21 (0.53)	-0.17 (0.44)
RE at the diagnosis tract—TWA RE	0.047 (-0.04 to 0.134)	0.286	-0.21 (0.53)	-0.18 (0.48)

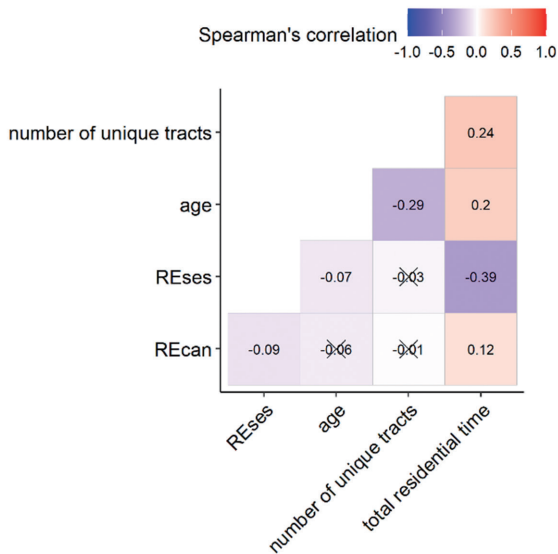
\*, statistically significant results. SMD, standardized mean difference; REcan, relative exposure for non-asbestos air toxics; REses, relative exposure for socioeconomic status; CI, confidence interval; RE, relative exposure; SD, standard deviation; TWA, time-weighted-average.

Address years	1953–1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
Cancer risk years	NATA 1996																				
		NATA 1999																			
				NATA 2002																	
						NATA 2005															
										NATA 2011											
																NATA 2014					
Address years	1953–1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Social risk years	1990 Yost index																				
		2000 Yost index																			
											2009–2013 Yost index										
																				2014–2018 Yost index	

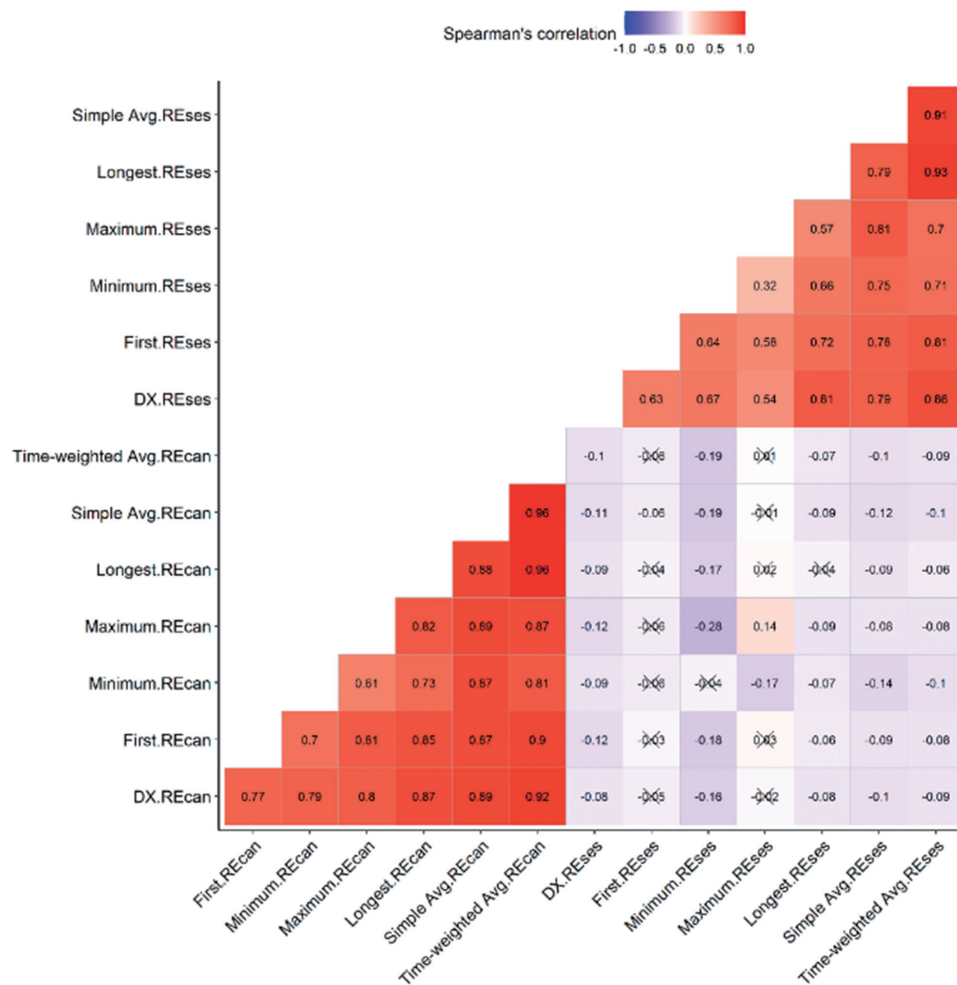
**Figure S1** Assignment of exposure data according to years of address/tract lived and the availability of NATA and Yost index data. To match NATA and Yost index data at census tract level, we coded each address by its census tract. The national percentile ranking of cancer risk was available at census tract level for calendar years 1996, 1999, 2002, 2005, 2011, and 2014. We calculated 4 sets of Yost index percentile ranking according to the published methods using the 1990 and 2000 decennial census data, as well as the 5-year estimates from the 2009–2013 and 2014–2018 U.S. Census American Community Survey. We matched the time of census tracts lived with the closest NATA years and Yost index years available. NATA, National Air Toxics Assessment.



**Figure S2** Venn diagram showing the number of overlapped unique addresses captured among the three data sources. Out of 4,602 unique census tracts, 860 addresses (18.9%) were captured by all three data sources. LexisNexis contributed to the largest address information, with 3,116 (67.7%) addresses were identified from this commercial database only, while 100 (2.2%) addresses were from the cancer registry only, and 118 (2.6%) from SPARCS only.



**Figure S3** Correlations between REcan, REses, and patient characteristics. Cells with “X” indicate P value  $\geq 0.05$ . REses, relative exposure for socioeconomic status; REcan, relative exposure for non-asbestos air toxics.



**Figure S4** Correlations between seven different measures of REcan and REses based on patient's residential history. Cells with "X" indicate P value  $\geq 0.05$ . RE estimated at DX address with those estimated for the First, address with the Longest, address with the minimum or maximum RE, as well as the simple Avg, and TWA of RE for all addresses lived. Avg, average; REses, relative exposure for socioeconomic status; Longest, longest residency; First, first known address; DX, diagnosis; REcan, relative exposure for non-asbestos air toxics; RE, relative exposure; TWA, time-weighted-average.