eAppendix

Long-Term Residential Exposure to Air Pollution and Lung Cancer Risk

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Creating neighborhood context variables:

Neighborhood variables were selected to capture socioeconomic deprivation and long-term measures were obtained by linking residential histories to census information for the years 1971, 1981, 1986, 1991 and 1996. Census tract data were used to represent contextual characteristics of urban areas, and census sub-divisions were used in rural areas (as census tracts are not available for rural areas of Canada). For each year, quintiles of neighborhood variables were constructed within each Census Metropolitan Area (for census tracts) and each province (for census sub-divisions) to standardize variables geographically, due to the amount of variation across Canada, and temporally, due to changes in socioeconomic characteristics in Canada from 1975-1994. The number of years that individuals lived in the most deprived neighborhood quintiles for median household income, percent without a high school diploma and percent of households >30 years old were included in the final models.

eAppendix, eTable 1a. Descriptive statistics of individual-level variables for study participants

with 20 years of complete residential histories between 1975 and 1994.

Variable	Cases (n=2390)	Controls (n=3507)
Individual-Level Variables		
Age (Mean +/- SD)	63.5 (8.2)	59.0 (12.6)
Sex		
Female	1152 (48%)	1719 (49%)
Male	1238 (52%)	1788 (51%)
Education		
< High school	1379 (58%)	1514 (43%)
High school	406 (17%)	607 (17%)
> High school	590 (25%)	1373 (39%)
Smoking Status		
Never Smoking	130 (6%)	1337 (38%)
Former Smoker	969 (41%)	1446 (41%)
Current Smoker	1288 (54%)	718 (2%)
Age Started Smoking		
Non Smoker	130 (6%)	1337 (38%)
<15	894 (38%)	765 (22%)
15-19	958 (40%)	925 (26%)
20-24	293 (12%)	312 (9%)
≥25	112 (5%)	162 (5%)
Smoking Pack Years		
Non Smoker	130 (6%)	1337 (38%)
1 - 19	319 (14%)	1169 (34%)
20 -29	467 (20%)	392 (11%)
30 - 39	519 (22%)	247 (7%)
40 - 49	446 (19%)	149 (4%)
50 - 59	205 (9%)	69 (2%)
≥ 60	235 (10%)	79 (2%)
Years Since Cessation of Smoking		
Non Smoker (0)	130 (6%)	1337 (38%)
>35 (1)	29 (1%)	177 (5%)
26-35 (2)	70 (3%)	312 (9%)
16-25 (3)	158 (7%)	383 (11%)
11-15 (4)	168 (7%)	223 (6%)
6-10 (5)	268 (11%)	208 (6%)
2-5 (6)	276 (12%)	143 (4%)
Current Smoker (7)	1273 (54%)	715 (20%)
Median Household Income		
> $100,000	47 (2%)	137 (4%)

$50,000 - $99,999	283 (12%)	630 (18%)
$30,000 - 49,000	474 (20%)	840 (24%)
$20,000 - 29,999	398 (17%)	548 (16%)
$10,000 - 19,999	366 (15%)	363 (10%)
< $10,000	133 (6%)	100 (3%)
Prefer not to Report	689 (29%)	889 (25%)
Alcohol (servings/week)		
0	898 (38%)	1311 (37%)
1 - 2	426 (18%)	814 (23%)
3 - 5	223 (9%)	378 (11%)
5 - 10	342 (14%)	520 (15%)
> 10	501 (21%)	484 (14%)
Meat (servings/week)		
≤ 2	161 (7%)	391 (11%
3 - 5	462 (19%)	808 (23%)
6 - 10	925 (39%)	1310 (37%)
10 - 15	456 (19%)	595 (17%)
> 15	386 (16%)	403 (12%)
Residential Second Hand Smoke Exposure (exposure-years)[a]		
0	356 (15%)	978 (28%)
1 - 24	289 (12%)	664 (19%)
25 - 49	523 (22%)	781 (22%)
50 - 74	527 (22%)	602 (17%)
> 74	695 (29%)	482 (14%)
Occupational Second Hand Smoke Exposure (exposure-years)[b]		
0	750 (32%)	1244 (36%)
1 - 29	306 (13%)	620 (18%)
30 - 69	343 (14%)	577 (17%)
70 - 139	451 (19%)	506 (15%)
> 140	532 (22%)	549 (16%)
Years Working with Occupational Dust and Odors[c]		
0	1144 (48%)	1842 (53%)
1 - 9	287 (12%)	506 (15%)
10 - 19	205 (9%)	308 (9%)
20 - 29	237 (10%)	283 (8%)
> 29	514 (22%)	559 (16%)
Years Working with Hazardous Substances[d]		
0	1557 (65%)	2453 (70%)
1 - 9	200 (8%)	295 (8%)
10 - 19	132 (6%)	206 (6%)
20 - 39	234 (10%)	259 (7%)

> 40	267 (11%)	294 (8%)

* Summaries for individuals with 20 years of complete residential histories between 1975 and 1994.

[a] Person-years defined by the number of smokers in home multiplied by number of residential years.

[b] Person-years defined by the number of smokers in the immediate work environment multiplied by number of residential years.

[c] Self-reported daily or weekly exposure to industrial dusts and odors at work.

[d] Hazards include: arsenic, asbestos, asphalt, benzene, mustard gas, welding, wood dust.

eAppendix, eTable 1b. Descriptive statistics of geographic-level variables for study participants with 20 years of complete residential histories between 1975 and 1994.

Variable	Cases (n=2390)	Controls (n=3507)
Study Province		
Newfoundland	101 (4%)	213 (6%)
Prince Edward Island	60 (3%)	174 (5%)
Nova Scotia	314 (13%)	458 (13%)
Ontario	838 (35%)	1296 (37%)
Manitoba	157 (7%)	236 (7%)
Saskatchewan	141 (6%)	195 (6%)
Alberta	325 (14%)	411 (12%)
British Columbia	454 (19%)	524 (15%)
Urban Size Category[a]		
>500,000	783 (33%)	1139 (33%)
100,000-499,999	376 (16%)	516 (15%)
30,000-99,999	217 (9%)	316 (9%)
1,000-29,999	441 (19%)	688 (20%)
<1,000	573 (24%)	848 (24%)
Average Health Region Indoor Radon Measurements (bq/m^3) (Mean +/- SD)	81.3 (41)	78.6 (39.5)
Neighborhood Household Median Income[b]		
0	1584 (67%)	2467 (71%)
>0-2	165 (7%)	240 (7%)
>2 - 5	144 (6%)	233 (7%)
>5 - 10	201 (9%)	259 (7%)
>10	279 (12%)	287 (8%)
% No High School Diploma[b]		
0	1555 (66%)	2408 (69%)
>0-2	189 (8%)	257 (7%)
>2 - 5	158 (6%)	214 (6%)
>5 - 10	186 (8%)	277 (8%)
>10	285 (12%)	330 (10%)
% Old Dwellings[b]		
0	1565 (66%)	2245 (64%)
>0-5	277 (12%)	413 (12%)
>5 - 10	164 (7%)	309 (9%)
>10 - 15	173 (7%)	235 (7%)
>15	194 (8%)	284 (8%)

* Summaries for individuals with 20 years of complete residential histories (1975 -1994).
[b] Years in most deprived relative Quintile.
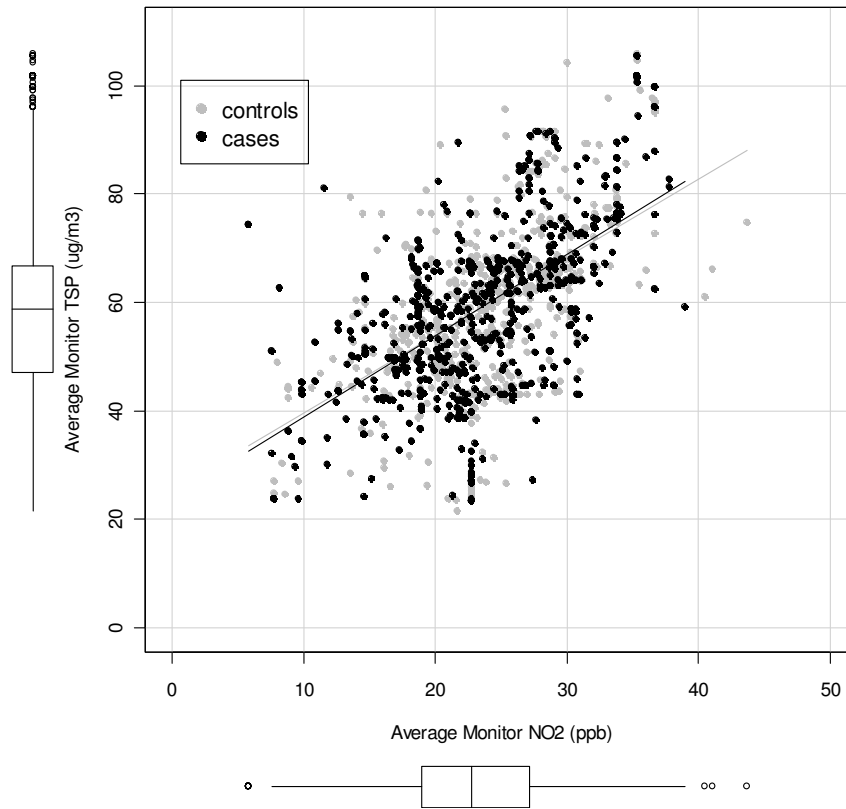[a] Not included in the final multivariate models due to the high correlation with NO_2.

Figure 1. Relationship between monitor based NO_2 and TSP concentrations in the urban monitor based analysis ($PM_{2.5}$ measurements were only available starting in 1984 and had limited coverage).