

Table S1. Characteristics of the participants who received health examination according to the annual exposure to PM₁₀.

Participants who received health examination, n	Quartiles of Air Pollutants in annual average				Total
	First quartile	Second quartile	Third quartile	Forth quartile	
Age, years, n (%)					49,380
40-49	6,218 (44.74)	5,418 (42.23)	4,916 (43.79)	4,493 (39.33)	21,045 (42.6)
50-59	4,479 (32.23)	4,140 (32.27)	3,668 (32.67)	3,892 (34.07)	16,179 (32.8)
60-69	2,302 (16.56)	2,427 (18.92)	1,943 (17.31)	2,294 (20.08)	8,966 (18.2)
≥70	899 (6.47)	845 (6.59)	700 (6.23)	746 (6.53)	3,190 (6.5)
Sex, N (%)					
Men	7,320 (52.67)	6,424 (50.07)	5,709 (50.85)	5,714 (50.01)	25,167 (51.0)
Women	6,578 (47.33)	6,406 (49.93)	5,518 (49.15)	5,711 (49.99)	24,213 (49.0)
Body mass index, kg/m ²	23.8 (2.9)	23.8 (2.9)	23.9 (3.0)	23.9 (2.9)	23.9 (2.9)
Systolic blood pressure, mmHg	125.2 (17.4)	125.3 (17.5)	125.7 (17.6)	125.9 (17.5)	125.7 (17.5)
Fasting serum glucose, mg/dL	98.0 (27.1)	97.9 (29.1)	97.0 (26.1)	97.8 (28.2)	98.0 (28.2)
Total cholesterol, mg/dL	197.6 (37.2)	199.9 (37.2)	200.2 (37.7)	200.0 (37.5)	199.4 (37.4)
Alcohol consumption frequency, n (%)					
None	7,982 (57.4)	7,627 (59.5)	6,527 (58.1)	6,600 (57.8)	28,736 (58.2)
2-3 times per month	2,196 (15.8)	1,858 (14.5)	1,767 (15.7)	1,747 (15.3)	7,568 (15.3)
1-2 times per week	2,406 (17.3)	2,126 (16.6)	1,845 (16.4)	1,884 (16.5)	8,261 (16.7)
3-4 times per week	870 (6.3)	816 (6.4)	732 (6.5)	759 (6.6)	3,177 (6.4)
≥5 times per week	444 (3.2)	403 (3.1)	356 (3.2)	435 (3.8)	1,638 (3.3)
Physical activity, times per week, n (%)					
None	6,437 (46.3)	6,176 (48.1)	5,223 (46.5)	5,569 (48.7)	23,405 (47.4)
1-2	4,050 (29.1)	3,530 (27.5)	3,344 (29.8)	3,021 (26.4)	13,945 (28.2)
3-4	1,779 (12.8)	1,679 (13.1)	1,516 (13.5)	1,440 (12.6)	6,414 (13.0)
5-6	480 (3.5)	409 (3.2)	416 (3.7)	402 (3.5)	1,707 (3.5)
7	1,152 (8.3)	1,036 (8.07)	728 (6.5)	993 (8.7)	3,909 (7.9)
Smoking, n (%)					
Never	9,812 (70.6)	9,243 (72.0)	8,075 (71.9)	8,248 (72.2)	35,378 (71.6)
Former	769 (5.5)	606 (4.7)	674 (6.0)	574 (5.0)	2,623 (5.3)
Current	3,317 (23.9)	2,981 (23.2)	2,478 (22.1)	2,603 (22.8)	11,379 (23.0)
Charlson comorbidity index, n (%)					
0	4,630 (33.3)	4,411 (34.4)	4,105 (36.6)	3,946 (34.5)	17,092 (34.6)
1	3,882 (27.9)	3,654 (28.5)	3,152 (28.1)	3,180 (27.8)	13,868 (28.1)
≥2	5,386 (38.8)	4,765 (37.1)	3,970 (35.4)	4,299 (37.6)	18,420 (37.3)

Data are mean (SD) unless indicated otherwise.

Table S2. Sensitivity analysis on association of the air pollutants with incident chronic kidney disease using the first and last annual exposures.

Air pollutant	Quartiles of Air Pollutants in annual average				P_{trend}
	First quartile	Second quartile	Third quartile	Forth quartile	
Annual exposure in 2002					
PM ₁₀ , µg/m ³ , range	42.8-61.2	64.9-72.9	73.6-77.1	77.4-101.7	0.240
aHR (95% CI)	1.00 (reference)	1.01 (0.84-1.22)	0.95 (0.78-1.17)	0.92 (0.75-1.13)	
SO ₂ , ppm, range	0.0024-0.0043	0.0044-0.0053	0.0053-0.0066	0.0066-0.0118	0.915
aHR (95% CI)	1.00 (reference)	0.96 (0.83-1.12)	0.94 (0.80-1.10)	1.04 (0.87-1.25)	
NO ₂ , ppm, range	0.0089-0.027	0.028-0.033	0.033-0.037	0.038-0.045	0.842
aHR (95% CI)	1.00 (reference)	1.11 (0.90-1.38)	0.93 (0.73-1.20)	1.06 (0.84-1.35)	
CO, ppm, range	0.23-0.61	0.62-0.70	0.71-0.74	0.74-1.01	0.622
aHR (95% CI)	1.00 (reference)	0.98 (0.85-1.14)	1.01 (0.86-1.17)	1.03 (0.89-1.20)	
O ₃ , ppm, range	0.011-0.014	0.014-0.016	0.016-0.020	0.020-0.030	0.138
aHR (95% CI)	1.00 (reference)	1.08 (0.93-1.25)	1.03 (0.87-1.23)	1.21 (0.99-1.49)	
Annual exposure in 2005					
PM ₁₀ , µg/m ³ , range	38.0-51.4	51.7-55.7	56.5-62.3	62.5-74.7	0.378
aHR (95% CI)	1.00 (reference)	0.97 (0.84-1.13)	0.97 (0.84-1.13)	1.07 (0.92-1.24)	
SO ₂ , ppm, range	0.0036-0.0044	0.0045-0.0056	0.0056-0.0065	0.0067-0.0130	0.234
aHR (95% CI)	1.00 (reference)	0.99 (0.85-1.15)	1.09 (0.94-1.26)	1.06 (0.90-1.25)	
NO ₂ , ppm, range	0.014-0.024	0.024-0.029	0.029-0.033	0.034-0.048	0.907
aHR (95% CI)	1.00 (reference)	1.12 (0.96-1.31)	1.08 (0.89-1.31)	1.04 (0.83-1.29)	
CO, ppm, range	0.28-0.50	0.51-0.57	0.58-0.71	0.72-1.28	0.538
aHR (95% CI)	1.00 (reference)	1.00 (0.86-1.16)	0.95 (0.82-1.09)	0.97 (0.81-1.16)	
O ₃ , ppm, range	0.013-0.017	0.017-0.020	0.020-0.022	0.022-0.031	0.301
aHR (95% CI)	1.00 (reference)	1.21 (1.02-1.43)	1.16 (1.00-1.34)	1.13 (0.94-1.34)	

aHR calculated by Cox proportional hazards regression after adjustments for age, sex, insurance premium, area of residence, and Charlson comorbidity index.

Acronyms: PM, particulate matter; aHR, adjusted hazard ratio; CI, confidence interval; SO₂, sulfur dioxide; NO₂, nitrogen dioxide; CO, carbon monoxide; O₃, ozone.

Table S3. Association of the air pollutants with incident chronic kidney disease among Korean adults aged at least 40 years.

Air pollutant	Quartiles of Air Pollutants in annual average				<i>P</i> _{trend}
	First quartile	Second quartile	Third quartile	Fourth quartile	
PM ₁₀ , µg/m ³ , range	37.3-58.1	58.1-62.9	63.4-65.3	65.4-81.5	
aHR (95% CI) ^a	1.00 (reference)	1.05 (0.86-1.28)	1.06 (0.87-1.30)	1.03 (0.84-1.26)	0.920
aHR (95% CI) ^b	1.00 (reference)	0.95 (0.76-1.19)	0.97 (0.77-1.22)	0.96 (0.76-1.21)	0.974
aHR (95% CI) ^c	1.00 (reference)	0.97 (0.74-1.28)	1.04 (0.79-1.38)	1.07 (0.81-1.42)	0.831
SO ₂ , ppm, range	0.0035-0.0045	0.0045-0.0054	0.0054-0.0062	0.0064-0.0120	
aHR (95% CI) ^a	1.00 (reference)	1.07 (0.92-1.25)	0.99 (0.84-1.18)	1.08 (0.88-1.33)	0.691
aHR (95% CI) ^b	1.00 (reference)	1.08 (0.90-1.29)	0.99 (0.82-1.21)	1.00 (0.79-1.27)	0.757
aHR (95% CI) ^c	1.00 (reference)	1.04 (0.84-1.28)	0.99 (0.79-1.25)	1.04 (0.78-1.38)	0.970
NO ₂ , ppm, range	0.015-0.027	0.027-0.032	0.032-0.037	0.037-0.043	
aHR (95% CI) ^a	1.00 (reference)	0.98 (0.79-1.21)	0.94 (0.74-1.20)	0.99 (0.77-1.27)	0.927
aHR (95% CI) ^b	1.00 (reference)	0.92 (0.72-1.18)	0.93 (0.71-1.23)	0.89 (0.67-1.19)	0.865
aHR (95% CI) ^c	1.00 (reference)	0.98 (0.73-1.31)	0.93 (0.67-1.30)	0.86 (0.61-1.23)	0.779
CO, ppm, range	0.28-0.58	0.58-0.64	0.66-0.68	0.69-0.84	
aHR (95% CI) ^a	1.00 (reference)	1.02 (0.87-1.19)	1.04 (0.89-1.22)	0.99 (0.83-1.16)	0.923
aHR (95% CI) ^b	1.00 (reference)	1.06 (0.88-1.27)	1.03 (0.86-1.25)	0.98 (0.81-1.19)	0.877
aHR (95% CI) ^c	1.00 (reference)	1.01 (0.81-1.26)	1.04 (0.84-1.30)	1.00 (0.79-1.26)	0.979
O ₃ , ppm, range	0.012-0.014	0.014-0.018	0.018-0.021	0.021-0.030	
aHR (95% CI) ^a	1.00 (reference)	1.07 (0.92-1.24)	1.08 (0.87-1.32)	1.05 (0.80-1.37)	0.835
aHR (95% CI) ^b	1.00 (reference)	1.06 (0.89-1.26)	1.04 (0.82-1.33)	0.99 (0.72-1.36)	0.876
aHR (95% CI) ^c	1.00 (reference)	1.02 (0.83-1.26)	1.05 (0.79-1.40)	0.89 (0.61-1.29)	0.622

aHR calculated by Cox proportional hazards regression after adjustments for age, sex, insurance premium, area of residence, and Charlson comorbidity index.

^acalculated after washing out 1 year of latent period.

^bcalculated after washing out 3 years of latent period.

^ccalculated after washing out 5 years of latent period.

Acronyms: PM, particulate matter; aHR, adjusted hazard ratio; CI, confidence interval; SO₂, sulfur dioxide; NO₂, nitrogen dioxide; CO, carbon monoxide; O₃, ozone.

Table S4. Sensitivity analysis on association of the air pollutants with incident chronic kidney disease after additional 3 years of air pollutant exposures.

Air pollutant	Quartiles of Air Pollutants in annual average				<i>P</i> _{trend}
	First quartile	Second quartile	Third quartile	Forth quartile	
PM ₁₀ , µg/m ³ , range	44.6-56.9	57.6-60.7	61.1-63.7	63.9-71.3	
aHR (95% CI)	1.00 (reference)	1.00 (0.81-1.24)	1.12 (0.90-1.40)	1.03 (0.84-1.27)	0.403
SO ₂ , ppm, range	0.0038-0.0049	0.0051-0.0055	0.0055-0.0066	0.0066-0.0146	
aHR (95% CI)	1.00 (reference)	0.99 (0.86-1.13)	1.01 (0.87-1.17)	0.95 (0.80-1.13)	0.922
NO ₂ , ppm, range	0.013-0.026	0.026-0.033	0.033-0.037	0.038-0.042	
aHR (95% CI)	1.00 (reference)	1.00 (0.83-1.19)	1.00 (0.79-1.27)	0.99 (0.78-1.25)	0.998
CO, ppm, range	0.30-0.57	0.57-0.60	0.61-0.65	0.66-0.79	
aHR (95% CI)	1.00 (reference)	1.14 (0.97-1.35)	1.09 (0.93-1.28)	1.01 (0.85-1.21)	0.276
O ₃ , ppm, range	0.014-0.016	0.016-0.018	0.018-0.021	0.021-0.030	
aHR (95% CI)	1.00 (reference)	0.96 (0.84-1.10)	1.02 (0.86-1.20)	1.19 (0.85-1.66)	0.636

aHR calculated by Cox proportional hazards regression after adjustments for age, sex, insurance premium, area of residence, and Charlson comorbidity index.

Acronyms: PM, particulate matter; aHR, adjusted hazard ratio; CI, confidence interval; SO₂, sulfur dioxide; NO₂, nitrogen dioxide; CO, carbon monoxide; O₃, ozone.