

Supplementary Table S1. Characteristics of participants by three CVD risk in the US adults, NHANES 2001–2016

Characteristics	Total (<i>n</i> = 6754)	Heart Failure		<i>P</i>	Coronary Heart Disease		<i>P</i>	Stroke		<i>P</i>
		Low risk (<i>n</i> = 3943)	High risk (<i>n</i> = 2811)		Low risk (<i>n</i> = 5719)	High risk (<i>n</i> = 1035)		Low group (<i>n</i> = 5892)	High risk (<i>n</i> = 862)	
Age, <i>n</i> (%)				< 0.001*			< 0.001*			< 0.001*
≥ 30	1703 (25.21)	1524 (38.65)	179 (6.37)		1695 (29.64)	8 (0.77)		1702 (28.89)	1 (0.12)	
40–50	1624 (24.05)	1175 (29.80)	449 (15.97)		1587 (27.75)	37 (3.57)		1610 (27.33)	14 (1.62)	
50–60	1380 (20.43)	774 (19.63)	606 (21.56)		1268 (22.17)	112 (10.82)		1327 (22.52)	53 (6.15)	
≥ 60	2047 (30.31)	470 (11.92)	1577 (56.10)		1169 (20.44)	878 (84.83)		1253 (21.27)	794 (92.11)	
Gender, <i>n</i> (%)				< 0.001*			< 0.001*			< 0.001*
Male	3393 (50.24)	1883 (47.76)	1510 (53.72)		2686 (46.97)	707 (68.31)		2867 (48.66)	526 (61.02)	
Female	3361 (49.76)	2060 (52.24)	1301 (46.28)		3033 (53.03)	328 (31.69)		3025 (51.34)	336 (38.98)	
Race/ethnicity, <i>n</i> (%)				< 0.001*			0.009*			< 0.001*
Mexican American	1149 (17.01)	680 (17.25)	469 (16.68)		979 (17.12)	170 (16.43)		1018 (17.28)	131 (15.20)	
Other Hispanic	538 (7.97)	318 (8.06)	220 (7.83)		454 (7.94)	84 (8.12)		468 (7.94)	70 (8.12)	
Non-Hispanic White	3207 (47.48)	1896 (48.09)	1311 (46.64)		2715 (47.47)	492 (47.54)		2793 (47.40)	414 (48.03)	
Non-Hispanic Black	1335 (19.77)	650 (16.48)	685 (24.37)		1102 (19.27)	233 (22.51)		1127 (19.13)	208 (24.13)	
Other Race	525 (7.77)	399 (10.12)	126 (4.48)		469 (8.20)	56 (5.41)		486 (8.25)	39 (4.52)	
Education level, <i>n</i> (%)				< 0.001*			< 0.001*			< 0.001*
Less than high school	1574 (23.30)	825 (20.92)	749 (26.65)		1246 (21.79)	328 (31.69)		1287 (21.84)	287 (33.29)	
High School or equivalent	1569 (23.23)	858 (21.76)	711 (25.29)		1287 (22.50)	282 (27.25)		1330 (22.57)	239 (27.73)	
Some College or AA	1853 (27.44)	1083 (27.47)	770 (27.39)		1613 (28.20)	240 (23.19)		1659 (28.16)	194 (22.51)	
College Graduate or	1758 (26.03)	1177 (29.85)	581 (20.67)		1573 (27.50)	185 (17.87)		1616 (27.43)	142 (16.47)	
Marital status, <i>n</i> (%)				< 0.001*			< 0.001*			< 0.001*
Married	4117 (60.96)	2446 (62.03)	1671 (59.45)		3502 (61.23)	615 (59.42)		3638 (61.74)	479 (55.57)	
Living with partner	428 (6.34)	321 (8.14)	107 (3.81)		398 (6.96)	30 (2.90)		407 (6.91)	21 (2.44)	
Living alone	2209 (32.71)	1176 (29.83)	1033 (36.75)		1819 (31.81)	390 (37.68)		1847 (31.35)	362 (42.00)	
PIR, (mean ± SD)	2.78 ± 1.65	2.83 ± 1.69	2.71 ± 1.60	0.003*	2.84 ± 1.67	2.47 ± 1.52	< 0.001*	2.83 ± 1.67	2.41 ± 1.50	< 0.001*
Serum cotinine ^a <i>n</i> (%)				0.817			0.290			0.737
Low	1747 (25.87)	1024 (25.97)	723 (25.72)		1493 (26.11)	254 (24.54)		1520 (25.80)	227 (26.33)	
High	5007 (74.13)	2919 (74.03)	2088 (74.28)		4226 (73.89)	781 (75.46)		4372 (74.20)	635 (73.67)	
Drinking status, <i>n</i> (%)				< 0.001*			0.033*			0.005*
No	1844 (27.30)	987 (25.03)	857 (30.49)		1533 (26.81)	311 (30.05)		1575 (26.73)	269 (31.21)	
Yes	4910 (72.70)	2956 (74.97)	1954 (69.51)		4186 (73.19)	724 (69.95)		4317 (73.27)	593 (68.79)	
BMI, kg/m ² , <i>n</i> (%)				< 0.001*			< 0.001*			< 0.001*
< 25	1794 (26.56)	1454 (36.88)	340 (12.10)		1599 (27.96)	195 (18.84)		1620 (27.49)	174 (20.19)	
25–30	2383 (35.28)	1842 (46.72)	541 (19.25)		1979 (34.60)	404 (39.03)		2048 (34.76)	335 (38.86)	
≥ 30	2577 (38.16)	647 (16.41)	1930 (68.66)		2141 (37.44)	436 (42.13)		2224 (37.75)	353 (40.95)	
Total energy intake, <i>n</i> (%)				< 0.001*			< 0.001*			< 0.001*
Low	2688 (39.80)	1405 (35.63)	1283 (45.64)		2133 (37.30)	555 (53.62)		2202 (37.37)	486 (56.38)	
Adequate	2531 (37.47)	1501 (38.07)	1030 (36.64)		2166 (37.87)	365 (35.27)		2245 (38.10)	286 (33.18)	
High	1535 (22.73)	1037 (26.30)	498 (17.72)		1420 (24.83)	115 (11.11)		1445 (24.52)	90 (10.44)	
Physical Activity, <i>n</i> (%)				< 0.001*			< 0.001*			< 0.001*
Mild	2548 (37.73)	1283 (32.54)	1265 (45.00)		2050 (35.85)	498 (48.12)		2123 (36.03)	425 (49.30)	
Moderate or vigorous	4206 (62.27)	2660 (67.46)	1546 (55.00)		3669 (64.15)	537 (51.88)		3769 (63.97)	437 (50.70)	

Note. NHANES: National Health and Nutrition Examination Survey; PIR: poverty-to-income ratio; BMI: body mass index; SD: standard deviation; *n*: numbers of subjects; %: weighted percentage. ^aReflects smoking and exposure to secondhand smoke in the study population. **P* < 0.05.

Supplementary Table S2. Exposure distribution of urinary OH-PAH levels (ng/g creatinine) in the US adults, NHANES 2001–2016

PAHs*	GM	Mean	Percentile		
			25th percentile	50th percentile	75th percentile
1-NAP	2409.98	30606.27	838.41	1797.90	6224.89
2-NAP	4210.60	7208.20	1937.10	3970.19	9139.29
2-FLU	281.55	555.61	128.57	211.48	521.64
3-FLU	113.33	279.35	46.61	79.00	231.97
1-PHE	134.55	192.10	81.45	129.15	213.35
1-PYR	99.31	170.78	52.90	96.00	183.96
ΣuNAP	7762.89	37814.47	3490.25	6517.59	15777.84
ΣuFLU	402.25	834.96	177.26	294.97	766.67
ΣuPHEN	134.55	192.10	81.45	129.15	213.35
ΣuPYR	99.31	170.78	52.90	96.00	183.96
ΣuPAH	8716.76	39012.31	3995.83	7231.83	17031.00

Note. NHANES: National Health and Nutrition Examination Survey; GM: Geometry Mean.
 *Concentration of each OH-PAHs was adjusted for urinary creatinine and expressed as ng/g creatinine.

Supplementary Table S3. Multivariate logistic regression analysis of urinary PAHs metabolites for total CVD risk

Variables	Model I		Model II		Model III	
	Crude OR (95% CI)	P	Adjusted OR (95% CI)	P	Adjusted OR (95% CI)	P
Individual PAH						
ΣuNAP						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	1.05 (0.92–1.21)	0.455	1.05 (0.82–1.33)	0.715	1.02 (0.80–1.31)	0.856
Q3	1.05 (0.91–1.20)	0.521	1.20 (0.93–1.53)	0.157	1.11 (0.86–1.43)	0.421
Q4	1.18 (1.03–1.36)	0.015*	1.54 (1.16–2.05)	0.003*	1.48 (1.10–1.99)	0.009*
ΣuFLU						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.79 (0.69–0.90)	< 0.001*	0.97 (0.76–1.24)	0.813	1.00 (0.77–1.30)	0.982
Q3	0.87 (0.76–0.99)	0.042*	1.06 (0.81–1.39)	0.674	1.04 (0.79–1.38)	0.775
Q4	0.96 (0.84–1.10)	0.557	2.65 (1.89–3.70)	< 0.001	2.83 (1.98–4.04)	< 0.001*
ΣuPHEN						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	1.09 (0.95–1.25)	0.217	1.14 (0.89–1.46)	0.288	1.17 (0.91–1.51)	0.218
Q3	1.08 (0.94–1.24)	0.265	0.97 (0.74–1.27)	0.807	1.00 (0.75–1.32)	0.980
Q4	1.14 (1.00–1.31)	0.058	0.81 (0.59–1.11)	0.187	0.88 (0.63–1.21)	0.426
ΣuPYR						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.86 (0.75–0.98)	0.027*	0.96 (0.76–1.22)	0.735	0.96 (0.75–1.23)	0.747
Q3	0.73 (0.63–0.83)	< 0.001*	0.82 (0.64–1.06)	0.135	0.81 (0.62–1.05)	0.116
Q4	0.68 (0.59–0.77)	< 0.001*	0.76 (0.56–1.04)	0.084	0.76 (0.55–1.04)	0.090
ΣuPAH						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	1.08 (0.94–1.23)	0.289	1.04 (0.83–1.32)	0.725	1.01 (0.80–1.29)	0.915
Q3	1.06 (0.92–1.21)	0.414	1.35 (1.07–1.69)	0.011*	1.25 (0.98–1.58)	0.073
Q4	1.19 (1.04–1.36)	0.012*	2.38 (1.90–2.98)	< 0.001*	2.32 (1.82–2.96)	< 0.001*

Note. Σ uNAP: sum of urinary Naphthalene metabolites (1- & 2-naphthalene), Σ uFLU: sum of urinary Fluorene metabolites (2- & 3-fluorene), Σ uPHEN: urinary Phenanthrene metabolites (1-phenanthrene), Σ uPYR: urinary Pyrene metabolites (1-pyrene), Σ uPAH: sum of urinary PAH metabolites (1- & 2-naphthalene, 2- & 3-fluorene, 1-phenanthrene, 1-pyrene). The Model I was a crude model without any adjustment. Model II adjusted for age, race, sex. Model III was further adjusted for BMI, marital status, education level, PIR, serum cotinine, drinking status, total energy intake and physical activity.

Supplementary Table S4. Multivariate logistic regression analysis of urinary PAHs metabolites for ASCVD risk						
Variables	Model I		Model II		Model III	
	Crude <i>OR</i> (95% <i>CI</i>)	<i>P</i>	Adjusted <i>OR</i> (95% <i>CI</i>)	<i>P</i>	Adjusted <i>OR</i> (95% <i>CI</i>)	<i>P</i>
Individual PAH						
ΣuNAP						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	1.06 (0.91–1.23)	0.447	1.09 (0.87–1.36)	0.468	1.07 (0.85–1.35)	0.551
Q3	1.06 (0.92–1.23)	0.403	1.30 (1.03–1.65)	0.025*	1.19 (0.93–1.51)	0.161
Q4	1.10 (0.95–1.27)	0.218	1.50 (1.15–1.97)	0.003*	1.39 (1.05–1.83)	0.022*
ΣuFLU						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.77 (0.66–0.89)	< 0.001*	0.95 (0.75–1.19)	0.638	0.97 (0.76–1.23)	0.779
Q3	0.90 (0.78–1.03)	0.134	1.09 (0.85–1.40)	0.505	1.07 (0.82–1.39)	0.635
Q4	0.87 (0.75–1.00)	0.050	2.05 (1.48–2.83)	< 0.001*	2.07 (1.47–2.91)	< 0.001*
ΣuPHEN						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	1.00 (0.87–1.16)	0.961	1.00 (0.79–1.27)	0.983	1.07 (0.84–1.36)	0.603
Q3	1.05 (0.91–1.22)	0.502	1.14 (0.87–1.47)	0.341	1.25 (0.95–1.63)	0.107
Q4	1.06 (0.91–1.22)	0.449	0.99 (0.73–1.32)	0.923	1.10 (0.81–1.49)	0.539
ΣuPYR						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.85 (0.74–0.98)	0.026*	0.91 (0.73–1.14)	0.427	0.87 (0.69–1.09)	0.237
Q3	0.71 (0.62–0.82)	< 0.001*	0.75 (0.59–0.95)	0.016*	0.71 (0.55–0.91)	0.006*
Q4	0.60 (0.51–0.69)	< 0.001*	0.62 (0.46–0.83)	0.001*	0.60 (0.44–0.80)	< 0.001*
ΣuPAH						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	1.07 (0.92–1.24)	0.382	1.03 (0.83–1.28)	0.791	1.01 (0.81–1.27)	0.922
Q3	1.09 (0.94–1.26)	0.257	1.39 (1.12–1.73)	0.003*	1.26 (1.01–1.59)	0.045*
Q4	1.09 (0.94–1.26)	0.261	1.86 (1.49–2.31)	< 0.001*	1.72 (1.36–2.17)	< 0.001*

Note. ΣuNAP: sum of urinary Naphthalene metabolites (1- & 2-naphthalene), ΣuFLU: sum of urinary Fluorene metabolites (2- & 3-fluorene), ΣuPHEN: urinary Phenanthrene metabolites (1-phenanthrene), ΣuPYR: urinary Pyrene metabolites(1-pyrene), ΣuPAH: sum of urinary PAH metabolites (1- & 2-naphthalene, 2- & 3-fluorene, 1-phenanthrene, 1-pyrene). The Model I was a crude model without any adjustment. Model II adjusted for age, race, sex. Model III was further adjusted for BMI, marital status, education level, PIR, serum cotinine, drinking status, total energy intake and physical activity.

Supplementary Table S5. Multivariate logistic regression analysis of urinary PAHs metabolites for Heart Failure risk

Variables	Model I		Model II		Model III	
	Crude <i>OR</i> (95% <i>CI</i>)	<i>P</i>	Adjusted <i>OR</i> (95% <i>CI</i>)	<i>P</i>	Adjusted <i>OR</i> (95% <i>CI</i>)	<i>P</i>
Individual PAH						
ΣuNAP						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	1.08 (0.94–1.24)	0.258	1.11 (0.94–1.31)	0.227	1.12 (0.89–1.42)	0.337
Q3	1.11 (0.97–1.28)	0.121	1.32 (1.11–1.57)	0.002*	1.40 (1.08–1.80)	0.010*
Q4	0.98 (0.85–1.12)	0.752	1.24 (1.01–1.53)	0.039*	1.41 (1.04–1.89)	0.025*
ΣuFLU						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.74 (0.64–0.85)	< 0.001*	0.73 (0.61–0.87)	< 0.001*	0.78 (0.60–0.99)	0.046*
Q3	0.81 (0.70–0.92)	0.002*	0.76 (0.63–0.92)	0.005*	0.82 (0.63–1.08)	0.161
Q4	0.72 (0.63–0.82)	< 0.001*	0.89 (0.70–1.14)	0.365	1.74 (1.21–2.49)	0.003*
ΣuPHEN						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.96 (0.84–1.10)	0.586	1.02 (0.86–1.22)	0.797	0.99 (0.77–1.27)	0.919
Q3	1.10 (0.96–1.27)	0.155	1.32 (1.09–1.61)	0.005*	1.62 (1.22–2.16)	< 0.001*
Q4	0.88 (0.76–1.01)	0.060	1.03 (0.82–1.29)	0.820	1.08 (0.78–1.50)	0.629
ΣuPYR						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.89 (0.78–1.02)	0.105	1.01 (0.85–1.19)	0.933	0.88 (0.69–1.11)	0.281
Q3	0.79 (0.69–0.90)	< 0.001*	0.95 (0.79–1.14)	0.570	0.72 (0.55–0.93)	0.012*
Q4	0.56 (0.49–0.64)	< 0.001*	0.69 (0.55–0.86)	0.001*	0.62 (0.45–0.85)	0.003*
ΣuPAH						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	1.11 (0.97–1.27)	0.130	1.09 (0.92–1.29)	0.304	1.08 (0.86–1.36)	0.502
Q3	1.14 (0.99–1.30)	0.067	1.25 (1.06–1.47)	0.009*	1.42 (1.12–1.81)	0.004*
Q4	0.99 (0.86–1.14)	0.888	1.11 (0.94–1.31)	0.204	1.82 (1.41–2.34)	< 0.001*

Note. ΣuNAP: sum of urinary Naphthalene metabolites (1- & 2-napthalene), ΣuFLU: sum of urinary Fluorene metabolites (2- & 3-fluorene), ΣuPHEN: urinary Phenanthrene metabolites (1-phenanthrene), ΣuPYR: urinary Pyrene metabolites(1-pyrene), ΣuPAH: sum of urinary PAH metabolites(1- & 2-napthalene, 2- & 3-fluorene, 1-phenanthrene, 1-pyrene). The Model I was a crude model without any adjustment. Model II adjusted for age, race, sex. Model III was further adjusted for BMI, marital status, education level, PIR, serum cotinine, drinking status, total energy intake and physical activity.

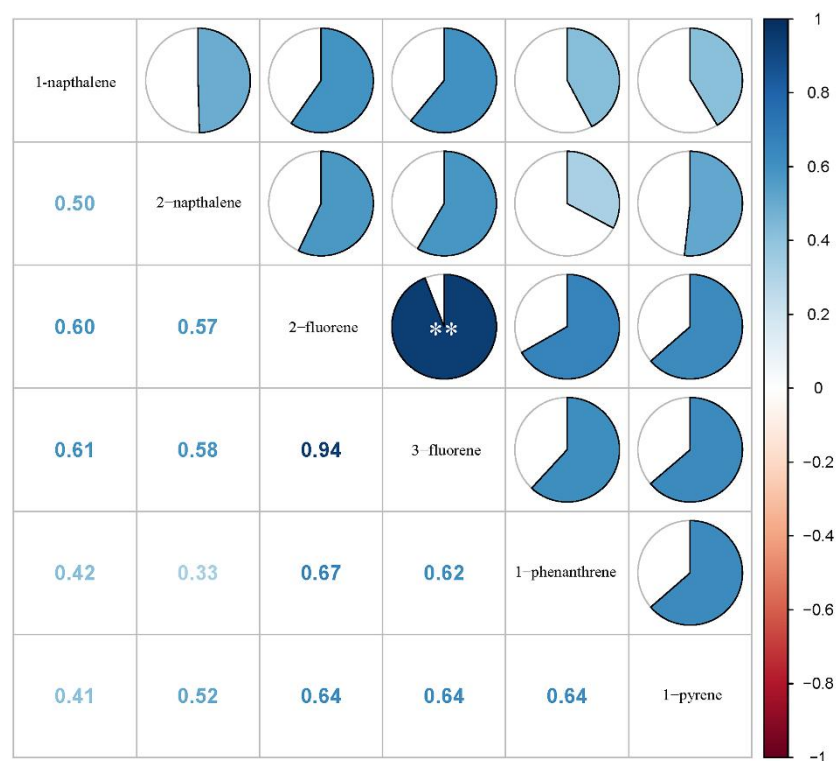
Supplementary Table S6. Multivariate logistic regression analysis of urinary PAHs metabolites for Coronary Heart Disease risk

Variables	Model I		Model II		Model III	
	Crude OR (95% CI)	P	Adjusted OR (95% CI)	P	Adjusted OR (95% CI)	P
Individual PAH						
ΣuNAP						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.90 (0.75–1.08)	0.257	0.94 (0.74–1.18)	0.585	0.92 (0.72–1.16)	0.473
Q3	0.93 (0.77–1.12)	0.426	1.11 (0.87–1.42)	0.384	1.01 (0.79–1.29)	0.949
Q4	0.91 (0.76–1.10)	0.343	1.16 (0.87–1.53)	0.307	1.05 (0.79–1.40)	0.727
ΣuFLU						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.72 (0.60–0.87)	< 0.001*	1.01 (0.79–1.29)	0.939	1.03 (0.80–1.32)	0.836
Q3	0.79 (0.66–0.95)	0.012*	1.01 (0.78–1.32)	0.926	0.97 (0.74–1.27)	0.819
Q4	0.83 (0.69–0.99)	0.047*	1.82 (1.30–2.55)	< 0.001*	1.67 (1.17–2.38)	0.004*
ΣuPHEN						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.85 (0.71–1.03)	0.090	0.88 (0.69–1.12)	0.294	0.92 (0.72–1.19)	0.535
Q3	0.84 (0.70–1.02)	0.072	0.99 (0.75–1.30)	0.920	1.08 (0.81–1.43)	0.597
Q4	0.90 (0.75–1.09)	0.285	1.03 (0.76–1.40)	0.863	1.13 (0.83–1.55)	0.441
ΣuPYR						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.79 (0.66–0.94)	0.008*	0.87 (0.70–1.09)	0.232	0.82 (0.65–1.03)	0.081
Q3	0.63 (0.53–0.76)	< 0.001*	0.70 (0.55–0.90)	0.006*	0.68 (0.52–0.87)	0.003*
Q4	0.49 (0.40–0.59)	< 0.001*	0.52 (0.38–0.72)	< 0.001*	0.52 (0.38–0.72)	< 0.001*
ΣuPAH						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.91 (0.75–1.09)	0.298	0.88 (0.70–1.11)	0.278	0.86 (0.68–1.08)	0.192
Q3	0.96 (0.80–1.15)	0.642	1.12 (0.89–1.41)	0.337	1.00 (0.79–1.26)	0.987
Q4	0.93 (0.77–1.12)	0.420	1.30 (1.03–1.64)	0.027*	1.16 (0.91–1.48)	0.239

Note. Σ uNAP: sum of urinary Naphthalene metabolites (1- & 2-naphthalene), Σ uFLU: sum of urinary Fluorene metabolites (2- & 3-fluorene), Σ uPHEN: urinary Phenanthrene metabolites (1-phenanthrene), Σ uPYR: urinary Pyrene metabolites(1-pyrene), Σ uPAH: sum of urinary PAH metabolites (1- & 2-naphthalene, 2- & 3-fluorene, 1-phenanthrene, 1-pyrene). The Model I was a crude model without any adjustment. Model II adjusted for age, race, sex. Model III was further adjusted for BMI, marital status, education level, PIR, serum cotinine, drinking status, total energy intake and physical activity.

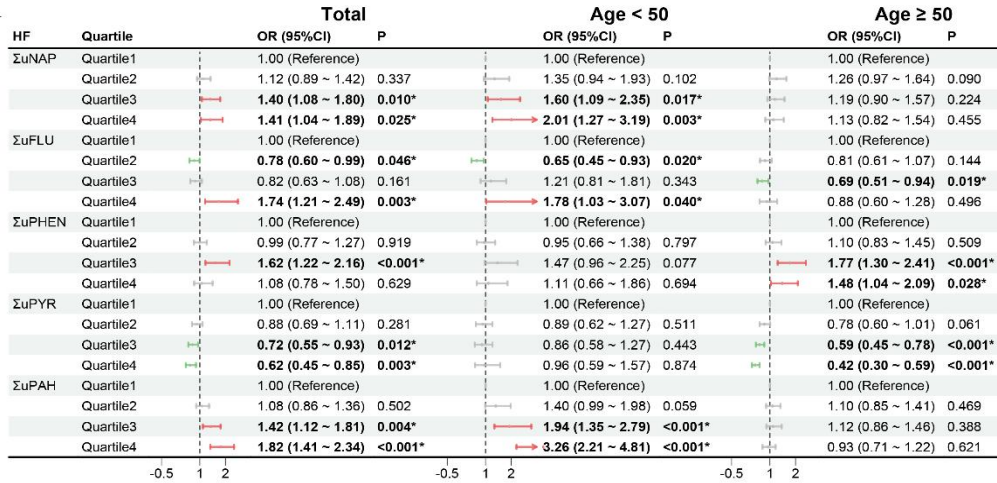
Supplementary Table S7. Multivariate logistic regression analysis of urinary PAHs metabolites for Stroke risk						
Variables	Model I		Model II		Model III	
	Crude <i>OR</i> (95% <i>CI</i>)	<i>P</i>	Adjusted <i>OR</i> (95% <i>CI</i>)	<i>P</i>	Adjusted <i>OR</i> (95% <i>CI</i>)	<i>P</i>
Individual PAH						
ΣuNAP						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	1.03 (0.84–1.27)	0.751	1.09 (0.85–1.39)	0.498	1.07 (0.83–1.38)	0.583
Q3	1.02 (0.83–1.25)	0.831	1.28 (0.99–1.65)	0.063	1.17 (0.90–1.53)	0.238
Q4	1.04 (0.85–1.28)	0.680	1.45 (1.08–1.95)	0.014*	1.31 (0.96–1.77)	0.085
ΣuFLU						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.74 (0.61–0.91)	0.003*	0.92 (0.72–1.19)	0.549	0.94 (0.72–1.22)	0.642
Q3	0.81 (0.67–0.99)	0.041*	0.93 (0.70–1.22)	0.593	0.89 (0.67–1.19)	0.445
Q4	0.79 (0.65–0.96)	0.018*	1.45 (1.02–2.06)	0.041*	1.29 (0.89–1.88)	0.176
ΣuPHEN						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.86 (0.70–1.06)	0.150	0.85 (0.66–1.11)	0.234	0.90 (0.69–1.17)	0.437
Q3	0.95 (0.78–1.16)	0.611	1.11 (0.83–1.49)	0.469	1.24 (0.92–1.68)	0.162
Q4	0.94 (0.77–1.15)	0.546	1.04 (0.75–1.43)	0.832	1.14 (0.82–1.60)	0.433
ΣuPYR						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	0.79 (0.65–0.95)	0.012*	0.85 (0.67–1.07)	0.161	0.79 (0.62–1.00)	0.055
Q3	0.64 (0.53–0.78)	< 0.001*	0.70 (0.54–0.91)	0.008*	0.68 (0.52–0.89)	0.005*
Q4	0.49 (0.40–0.61)	< 0.001*	0.56 (0.40–0.78)	< 0.001*	0.55 (0.39–0.77)	< 0.001*
ΣuPAH						
Q1	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Q2	1.00 (0.82–1.23)	0.995	0.95 (0.75–1.21)	0.698	0.93 (0.73–1.19)	0.579
Q3	1.03 (0.84–1.26)	0.791	1.19 (0.93–1.51)	0.167	1.07 (0.83–1.38)	0.588
Q4	1.03 (0.84–1.26)	0.797	1.44 (1.13–1.85)	0.003*	1.27 (0.97–1.64)	0.077

Note. ΣuNAP: sum of urinary Naphthalene metabolites (1- & 2-napthalene), ΣuFLU: sum of urinary Fluorene metabolites (2- & 3-fluorene), ΣuPHEN: urinary Phenanthrene metabolites (1-phenanthrene), ΣuPYR: urinary Pyrene metabolites(1-pyrene), ΣuPAH: sum of urinary PAH metabolites(1- & 2-napthalene, 2- & 3-fluorene, 1-phenanthrene, 1-pyrene). The Model I was a crude model without any adjustment. Model II adjusted for age, race, sex. Model III was further adjusted for BMI, marital status, education level, PIR, serum cotinine, drinking status, total energy intake and physical activity.

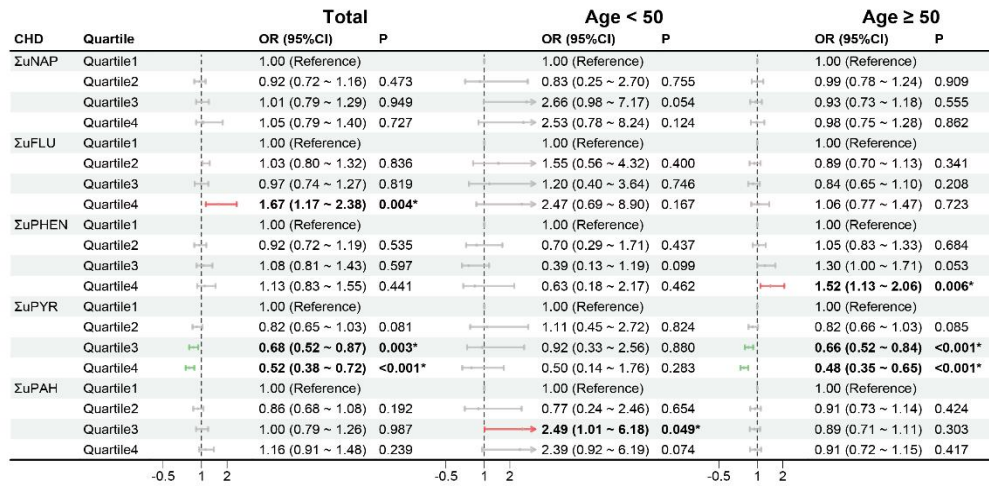


Supplementary Figure S1. Pearson correlations between urinary OH-PAH levels (ng/g creatinine). The blue numbers in the lower left part were the correlation coefficients. The upper right part was the heat map of the correlation coefficients between urinary OH-PAHs concentrations. The white represents a null correlation, the blue represents a positive correlation, and the red represents a negative correlation. The darker the color is, the greater the correlation coefficient is. The white *, **, and *** indicate $P < 0.05$, $P < 0.01$, and $P < 0.001$, respectively.

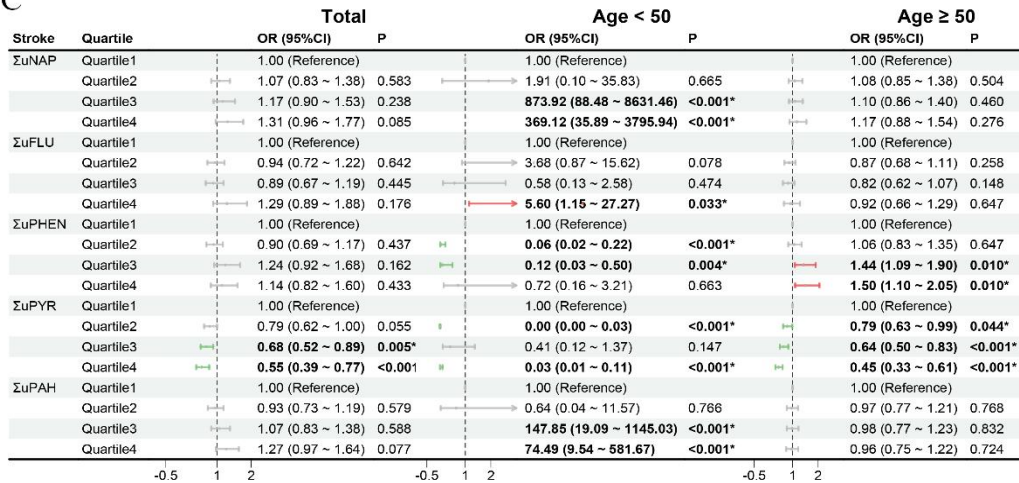
A



B



C



Supplementary Figure S2. Association between urinary OH-PAHs and the risk of HF (A), CHD (B), Stroke (C) in total population and subgroups. Models were adjusted for age, race, sex, body mass index, marital status, education level, poverty income ratio, serum cotinine, drinking status, total energy intake and physical activity. *, $P < 0.05$. ΣuNAP: sum of urinary Naphthalene metabolites (1- & 2-NAP), ΣuFLU: sum of urinary Fluorene metabolites (2- & 3-FLU), ΣuPHEN: urinary Phenanthrene metabolites (1-PHE), ΣuPYR: urinary Pyrene metabolites (1-PYR). ΣuPAH: sum of urinary PAH metabolites (1- & 2-NAP, 2- & 3-FLU, 1-PHE, 1-PYR).