Supplemental Material

Associations of Plasma Concentrations of Dichlorodiphenyldichloroethylene and Polychlorinated Biphenyls with Prostate Cancer: A Case–Control Study in Guadeloupe (French West Indies)

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Table S1. Spearman's rank correlation analysis of the relationship between concentrations of frequently detected (Limit of detection >80 %) pollutants in plasma samples from controls subjects and cases patients.

Controls subjects (n = 655)	PCB138	PCB153	PCB180	Chlordecone
DDE	r = 0.48 P <0.001	r = 0.38 P <0.001	r = 0.26 P <0.001	r = 0.05 P = 0.18
PCB138	-	r = 0.88 P < 0.001	r = 0.84 P <0.001	r = 0.10 P = 0.007
PCB153	-	-	r = 0.81 P <0.001	r = 0.07 P = 0.06
PCB180	-	-	-	r = 0.09 P = 0.002
Cases patients (n = 576)				
DDE	r = 0.50 P <0.001	r = 0.44 P <0.001	r = 0.33 P < 0.001	r = 0.04 P = 0.29
PCB138	-	r = 0.84 P <0.001	r = 0.82 P <0.001	r = 0.12 P = 0.003
PCB153	-	-	r = 0.76 P <0.001	r = 0.07 P = 0.09
PCB180	-	-	-	r = 0.14 P = 0.0008

Table S2. Geometric means of DDE and PCB153 plasma concentrations according to study population characteristics.

Characteristic	DDE Geometric means (CI 95%)	P value[a]	PCB153 Geometric means (CI 95%)	P-value[a]
Caribbean origin		0.42		<0.001
French West Indies	1.96 (1.78, 2.15)		0.78 (0.73, 0.83)	
Haiti or Dominica	1.71 (1.19, 2.45)		0.28 (0.22, 0.35)	
Education		0.59		0.61
Primary	1.84 (1.62, 2.09)		0.78 (0.64, 0.95)	
Secondary	2.00 (1.67, 2.40)		0.72 (0.63, 0.81)	
High school and higher	2.02 (1.62, 2.68)		0.72 (0.66, 0.78)	
Body mass index (kg/m²)		<0.001		0.03
<25	1.59 (1.38, 1.84)		0.68 (0.62, 0.75)	
25 - <30	2.06 (1.78, 2.40)		0.79 (0.72, 0.88)	
$\geq$30	3.02 (2.27, 4.02)		0.73 (0.60, 0.89)	
Waist-to-hip-ratio		<0.001		0.01
$\leq$0.95	1.66 (1.47, 1.88)		0.70 (0.64, 0.77)	
>0.95	2.50 (2.12, 2.95)		0.83 (0.74, 0.93)	
Smoking		0.35		0.01
Never	1.89 (1.68, 2.12)		0.69 (0.64,0.75)	
Former or current	2.04 (1.76, 2.36)		0.80 (0.73,0.89)	
Alcohol consumption		0.01		0.009
Never	1.53 (1.21, 1.92)		0.62 (0.52, 0.72)	
Former or current	2.02 (1.83, 2.23)		0.75 (0.70, 0.81)	
Type 2 diabetes		<0.001		0.02
No	1.81 (1.64, 1.99)		0.72 (0.67, 0.77)	
Yes	2.71 (2.15, 3.42)		0.86 (0.73, 1.01)	
PSA screening history		0.30		0.44
No	1.83 (1.69, 2.10)		0.72 (0.67, 0.78)	
Yes	2.06 (1.75, 2.43)		0.76 (0.68, 0.85)	
Family history of prostate cancer		0.66		0.36
No	1.95 (1.73, 2.20)		0.75 (0.69, 0.81)	
Yes	1.94 (1.53, 2.46)		0.67 (0.57, 0.79)	
Do not know	1.75 (1.36, 2.26)		0.73 (0.61, 0.87)	
Past residence in Western countries		0.71		<0.001
No	1.92 (1.67, 2.37)		0.65 (0.61, 0.70)	
Yes	1.99 (1.73, 2.14)		1.00 (0.89, 1.13)	

[a]P-values were calculated using ANOVA tests (two-sided).

Table S3. Sensitivity analysis of the association between DDE exposure and prostate cancer.

	DDE exposure <0.79 µg/L	DDE exposure 0.79-1.62 µg/L	DDE exposure 1.63-2.89 µg/L	DDE exposure 2.90-5.18 µg/L	DDE exposure >5.19 µg/L	P-Trend
Controls subjects/cases patients (n)	131/106	130/96	133/111	131/104	130/159	
Adjusted[a] OR (95% CI)	1.0	0.96 (0.66, 1.42)	1.05 (0.71, 1.55)	1.02 (0.67, 1.53)	1.53 (1.02, 2.30)	0.01
Adjusted[b] OR (95% CI)	1.0	1.00 (0.63, 1.56)	1.05 (0.66, 1.64)	1.01 (0.63, 1.62)	1.64 (1.04, 2.59)	0.007
Adjusted[c] OR (95% CI)	1.0	1.04 (0.65, 1.63)	1.03 (0.64, 1.64)	0.99 (0.61, 1.61)	1.73 (1.08, 2.78)	0.006
Adjusted[a] including BMI OR (95% CI)	1.0	0.96 (0.65, 1.43)	1.05 (0.70, 1.55)	1.01 (0.67, 1.53)	1.54 (1.03, 2.31)	0.01
Adjusted[a] including family history of prostate cancer OR (95% CI)	1.0	1.00 (0.66, 1.51)	1.08 (0.72, 1.62)	1.01 (0.66, 1.55)	1.64 (1.08, 2.48)	0.006
Adjusted[a] including PSA screening history OR (95% CI)	1.0	1.00 (0.70, 1.64)	1.06 (0.69, 1.64)	1.05 (0.67, 1.65)	1.55 (1.00, 2.41)	0.03
Adjusted[a] including chlordecone OR (95% CI)	1.0	0.92 (0.62, 1.37)	1.04 (0.70, 1.54)	1.03 (0.68, 1.56)	1.51 (1.01, 2.27)	0.01
Adjusted[a,d] excluding subjects with BMI <18.5 and subjects with BMI >30 OR (95% CI)	1.0	1.00 (0.66, 1.54)	0.99 (0.65, 1.53)	1.07 (0.70, 1.66)	1.43 (0.93, 2.20)	0.04

[a]Adjusted for age, waist-to-hip-ratio, type 2 diabetes, alcohol, total plasma lipid concentration and PCB153, with missing values imputed using a Multiple Imputation by Chained Equation (MICE) approach in five data sets. [b]Adjusted for age, waist-to-hip-ratio, type 2 diabetes, alcohol, total plasma lipid concentration and PCB153, with missing value indicator categories. [c]Adjusted for age, waist-to-hip-ratio, type 2 diabetes, alcohol, total plasma lipid concentration and PCB153, and restricted to controls and cases with complete datasets. No. of controls/cases were, 125/64, 126/62, 126/63, 125/59, and 120/101 for quintiles 1 to 5 respectively. [d]No. of controls/cases were, 121/95, 108/81, 124/ 87, 110/88, and 110/120 for quintiles 1 to 5 respectively.

Table S4. Sensitivity analysis of the association between PCB153 exposure and prostate cancer.

	PCB153 exposure <0.41 µg/L	PCB153 exposure 0.41-0.69 µg/L	PCB153 exposure 0.70-1.07 µg/L	PCB153 exposure 1.08-1.70 µg/L	PCB153 exposure >1.71 µg/L	P-Trend
Controls subjects/cases patients (n)	132/141	132/109	134/135	131/110	130/159	
Adjusted[a] OR (95% CI)	1.0	0.56 (0.38, 0.83)	0.67 (0.46, 0.99)	0.45 (0.30, 0.63)	0.30 (0.19, 0.47)	<0.001
Adjusted[b] OR (95% CI)	1.0	0.65 (0.42, 1.01)	0.68 (0.43, 1.05)	0.43 (0.27, 0.70)	0.31 (0.18, 0.52)	<0.001
Adjusted[c] OR (95% CI)	1.0	0.64 (0.44, 1.09)	0.74 (0.47, 1.65)	0.40 (0.25, 0.66)	0.29 (0.17, 0.50)	<0.001
Adjusted[a] including BMI OR (95% CI)	1.0	0.56 (0.38, 0.83)	0.67 (0.46, 0.99)	0.45 (0.30, 0.69)	0.30 (0.19, 0.47)	<0.001
Adjusted[a] including family history of prostate cancer OR (95% CI)	1.0	0.60 (0.40, 0.89)	0.67 (0.45, 1.00)	0.48 (0.31, 0.73)	0.31 (0.19, 0.49)	<0.001
Adjusted[a] including PSA screening history OR (95% CI)	1.0	0.60 (0.40, 0.92)	0.68 (0.45, 1.03)	0.42 (0.26, 0.65)	0.31 (0.19, 0.51)	<0.001
Adjusted[a] including chlordecone OR (95% CI)	1.0	0.54 (0.37, 0.80)	0.64 (0.43, 0.65)	0.43 (0.28, 0.65)	0.28 (0.18, 0.45)	<0.001
Adjusted[a,d] excluding subjects with BMI <18.5 and subjects with BMI >30 OR (95% CI)	1.0	0.65 (0.43, 1.00)	0.73 (0.47, 1.11)	0.54 (0.36, 0.86)	0.31 (0.18, 0.51)	<0.001

[a]Adjusted for age, waist-to-hip-ratio, diabetes type 2, Caribbean origin, past residence in western countries, total plasma lipid concentration and DDE, with missing values imputed using a Multiple Imputation by Chained Equation (MICE) approach in five data sets. [b]Adjusted for age, waist-to-hip-ratio, diabetes type 2, Caribbean origin, past residence in western countries, total plasma lipid concentration and DDE, with missing value indicator categories. [c]Adjusted for age, waist-to-hip-ratio, diabetes type 2, Caribbean origin, past residence in western countries, total plasma lipid concentration and DDE, and restricted to controls and cases with complete datasets for. No. of controls/cases were 119/129, 111 /94, 123/118, 111/ 101, and 113/73 for quintiles 1 to 5 respectively. [d]No. of controls/cases were, 115/110, 109/90, 117/108, 108/97, and 112/66 for quintiles 1 to 5 respectively.

Table S5. PCB153 exposure and prostate cancer according to family history of prostate cancer.

PCB153 exposure (µg/L)	No family history No. controls	No family history No. cases	No family history: Adjusted OR[a] (95% CI)	With family history No. controls	With family history No. cases	With family history: Adjusted OR [a] (95% CI)	P-Interaction
<0.41	87	47	1.0	17	22	1.0	
0.41-0.69	99	38	0.42 (0.23, 0.78)	12	14	0.98 (0.29, 3.32)	0.31
0.70-1.07	97	41	0.47 (0.23, 0.80)	14	23	1.91 (0.60, 6.10)	0.07
1.08-1.70	99	36	0.30 (0.16, 0.59)	7	15	1.28 (0.33, 5.03)	0.10
>1.71	96	28	0.20 (0.10, 0.41)	10	14	0.84 (0.20, 3.40)	0.09
P-Trend			<0.001			0.88	

[a]Adjusted for age, waist-to-hip-ratio, Caribbean origin, past residence in western countries, type 2 diabetes, total plasma lipid concentration, alcohol and DDE, and restricted to controls and cases with complete datasets for.

Table S6. ORs (95% CIs) of prostate cancer according to quintile of chlordecone.

	Chlordecone exposure <0.13 µg/L	Chlordecone exposure 0.13-0.30 µg/L	Chlordecone exposure 0.31-0.51 µg/L	Chlordecone exposure 0.52-1.02 µg/L	Chlordecone exposure >1.03 µg/L	P-Trend
Controls subjects/cases patients (n)	132/113	128/85	131/127	134/121	130/130	
Adjusted[a] OR (95% CI)	1.0	1.00 (0.65, 1.54)	1.47 (0.98, 2.21)	1.41 (0.94, 2.13)	1.65 (1.09, 2.48)	0.01
Adjusted[a] including DDE OR (95% CI)	1.0	1.01 (0.66, 1.56)	1.48 (0.99, 2.22)	1.41 (0.93, 2.12)	1.64 (1.09, 2.47)	0.01
Adjusted[a] including PCB153 OR (95% CI)	1.0	0.98 (0.64, 1.52)	1.51 (1.01, 2.27)	1.45 (0.96, 2.27)	1.70 (1.12, 2.56)	0.008

[a]Adjusted for age, waist-to-hip-ratio, PSA screening history, and total plasma lipid concentration. Missing values were imputed using a Multiple Imputation by Chained Equation (MICE) approach in five datasets.