|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supplemental Table1 Association between prenatal exposure to OCPs and Bayley Scales of Infant Development score after adjusting for dioxin. | | | | | | | | | |
|  | **6M (M=164)** | | | |  | **18M (N=115)** | | | |
| MDI | | PDI | |  | MDI | | PDI | |
| βa | 95% CI | βa | 95% CI |  | βa | 95% CI | βa | 95% CI |
| Oxychlordane | 1.69 | (−3.25, 6.63) | 6.46 | (−2.59, 15.51) |  | −5.11 | (−16.45, 6.24) | 0.55 | (−10.93, 12.03) |
| cis−Nonachlor | 0.77 | (−3.88, 5.42) | −0.12 | (−8.69, 8.45) |  | −3.66 | (−14.56, 7.24) | −0.29 | (−11.3, 10.72) |
| trans−Nonachlor | 1.37 | (−3.01, 5.75) | 4.32 | (−3.72, 12.37) |  | −4.2 | (−14.5, 6.09) | −0.81 | (−11.22, 9.6) |
| p,p'−DDD | 0.25 | (−2.29, 2.79) | 0.98 | (−3.7, 5.66) |  | −2.13 | (−8.58, 4.32) | −1.26 | (−7.77, 5.25) |
| o,p'−DDE | 0.47 | (−2.25, 3.19) | 1.01 | (−4, 6.02) |  | −1.44 | (−7.81, 4.92) | −0.97 | (−7.39, 5.45) |
| p,p'−DDE | −1.24 | (−4.57, 2.09) | 0.09 | (−6.06, 6.23) |  | −4.12 | (−12, 3.76) | −2.49 | (−10.46, 5.48) |
| o,p'−DDT | 0.09 | (−3.06, 3.24) | 0.97 | (−4.83, 6.77) |  | −0.26 | (−7.89, 7.37) | −1.41 | (−9.1, 6.28) |
| p,p'−DDT | −0.39 | (−4.56, 3.78) | −0.78 | (−8.46, 6.9) |  | −9.46 | (−19.42, 0.5) | −4.62 | (−14.79, 5.56) |
| Dieldrin | −2 | (−7.04, 3.04) | −2.02 | (−11.32, 7.27) |  | −9.61 | (−21.11, 1.89) | −1.95 | (−13.69, 9.79) |
| cis−Heptachlor epoxide | −1.24 | (−5.41, 2.94) | 2.49 | (−5.2, 10.19) |  | −13.16 | (−22.34, −3.99)\* | −2.93 | (−12.52, 6.66) |
| HCB | 1.48 | (−5.97, 8.92) | 1.78 | (−11.94, 15.49) |  | −1.86 | (−18.16, 14.43) | −2.62 | (−19.05, 13.8) |
| βHCH | −0.96 | (−4.67, 2.75) | −0.62 | (−7.46, 6.23) |  | −1.83 | (−10.38, 6.72) | −1.58 | (−10.2, 7.05) |
| Mirex | −0.92 | (−5.43, 3.6) | −3.2 | (−11.51, 5.1) |  | −4.48 | (−14.89, 5.92) | −6.73 | (−17.18, 3.71) |
| Parlar−26 | −0.13 | (−3.61, 3.34) | −2.14 | (−8.52, 4.24) |  | −3.21 | (−11.38, 4.96) | −2.31 | (−10.56, 5.94) |
| Parlar−50 | −0.21 | (−3.78, 3.36) | −1.59 | (−8.16, 4.97) |  | −1.98 | (−10.47, 6.51) | −1.7 | (−10.26, 6.86) |
| 6M: Adjusted for annual income, first-born, smoking during pregnancy, education level, blood sampling period, and infant sex, postpartum depression at 1 month and child care environment + Total dioxin TEQ. | | | | | | | | | |
| 18M: Adjusted for annual income, first-born, smoking during pregnancy, education level, blood sampling period, and infant sex, 6M deppression scale, child care environment + Total dioxin TEQ. | | | | | | | | | |
| DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; CI, confidence interval; cis−HCE dichlorodiphenyltrichloroethane; HCB, hexachlorobenzene; HCH, hexachlorocyclohexane; OCP, organochlorine pesticides | | | | | | | | | |
| \* p < 0 .05 |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supplemental Table2 Association between prenatal exposure to OCPs and Bayley Scales of Infant Development score after adjusting for perfluorooctanoate. | | | | | | | | | |
|  | **6M (N=133)** | | | |  | **18M (N=94)** | | | |
| MDI | | PDI | |  | MDI | | PDI | |
| βa | 95% CI | βa | 95% CI |  | βa | 95% CI | βa | 95% CI |
| Oxychlordane | 1.48 | (−2.8, 5.76) | 4.36 | (−3.85, 12.57) |  | 0.42 | (−10.31, 11.15) | −4.26 | (−14.46, 5.94) |
| cis−Nonachlor | 0.42 | (−3.64, 4.48) | −0.58 | (−8.38, 7.22) |  | 2.28 | (−7.97, 12.53) | −6.2 | (−15.9, 3.51) |
| trans−Nonachlor | 1.62 | (−2.32, 5.56) | 4.20 | (−3.37, 11.76) |  | 0.12 | (−9.82, 10.06) | −5.6 | (−15.01, 3.82) |
| p,p'−DDD | −0.4 | (−3.05, 2.24) | −0.86 | (−5.94, 4.23) |  | −1.65 | (−8.63, 5.32) | −5.65 | (−12.21, 0.9) |
| o,p'−DDE | 0.66 | (−2.13, 3.46) | 1.37 | (−4, 6.75) |  | 0.18 | (−6.99, 7.35) | −3.83 | (−10.63, 2.96) |
| p,p'−DDE | 0.14 | (−3.1, 3.38) | −0.18 | (−6.41, 6.06) |  | −3.06 | (−11.82, 5.71) | −4.19 | (−12.54, 4.15) |
| o,p'−DDT | 0.07 | (−3.35, 3.48) | −0.1 | (−6.66, 6.46) |  | 2.31 | (−7.2, 11.83) | −5.17 | (−14.2, 3.86) |
| p,p'−DDT | −0.5 | (−4.27, 3.26) | −1.47 | (−8.71, 5.77) |  | −5.89 | (−15.99, 4.22) | −8.21 | (−17.78, 1.35) |
| Dieldrin | 0.42 | (−4.83, 5.67) | 0.11 | (−9.99, 10.21) |  | −5.43 | (−18.92, 8.07) | −4.5 | (−17.41, 8.4) |
| cis−Heptachlor epoxide | −0.45 | (−4.7, 3.79) | 3.12 | (−5.03, 11.27) |  | −10.07 | (−20.58, 0.44) | −8.12 | (−18.22, 1.99) |
| HCB | 2.27 | (−4.09, 8.63) | −0.28 | (−12.53, 11.97) |  | 3.59 | (−12.68, 19.85) | −11.13 | (−26.49, 4.23) |
| βHCH | 0.62 | (−2.91, 4.14) | −1.25 | (−8.04, 5.53) |  | 0.49 | (−8.9, 9.88) | −4.16 | (−13.09, 4.76) |
| Mirex | −0.83 | (−4.96, 3.3) | −2.95 | (−10.89, 4.99) |  | 3.10 | (−7.55, 13.76) | −8.1 | (−18.14, 1.94) |
| Parlar−26 | −0.09 | (−3.49, 3.32) | −2.68 | (−9.21, 3.86) |  | 1.22 | (−7.52, 9.95) | −6.16 | (−14.4, 2.08) |
| Parlar−50 | 0.07 | (−3.39, 3.53) | −2.19 | (−8.84, 4.46) |  | 2.30 | (−6.67, 11.27) | −5.59 | (−14.08, 2.91) |
| 6M: Adjusted for annual income, first-born, smoking during pregnancy, education level, blood sampling period, and infant sex, postpartum depression at 1 month and child care environment + PFOA. | | | | | | | | | |
| 18M: Adjusted for annual income, first-born, smoking during pregnancy, education level, blood sampling period, and infant sex, 6M deppression scale, child care environment + PFOA. | | | | | | | | | |
| DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; CI, confidence interval; cis−HCE dichlorodiphenyltrichloroethane; HCB, hexachlorobenzene; HCH, hexachlorocyclohexane; OCP, organochlorine pesticides | | | | | | | | | |
| \* p < 0 .05 |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Supplemental Table3  Adjusted least square means (LSM) and regression coefficients (β) for the MDIs, according to cis−heptachlor epoxide quartiles, and PDIs, according to mirex quartiles at 18 months of age (n = 115). | | | | | | |
| Quartiles (pg/mL) | | | LSM (95%CI) | | β (95%CI) | |
| *cis−Heptachlor epoxide* | | | | | | |
|  | Quartile 1 | (7.6–17.3) | 86.57 | (82.73, 90.4) | Reference | |
|  | Quartile 2 | (17.3–26.0) | 81.85 | (78.02, 85.67) | −4.60 | (−11.13, 1.93) |
|  | Quartile 3 | (26.1–37.0) | 86.67 | (82.82, 90.51) | 0.74 | (−5.81, 7.28) |
|  | Quartile 4 | (39.0–200.5) | 76.45 | (72.56, 80.34) | −9.14 | (−15.96, −2.31) |
|  |  |  |  |  |  |  |
| MDI, Mental Development Index; PDI, Psychomotor Development Index; CI, confidence interval | | | | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supplemental Table4 Association between prenatal exposure to OCPs and MDI and PDI at 6 and 18 months (n = 94). | | | | | | | | | |
|  | **6M** | | | |  | **18M** | | | |
| MDI | | PDI | |  | MDI | | PDI | |
| βa | 95% CI | βa | 95% CI |  | βa | 95% CI | βa | 95% CI |
| Oxychlordane | 1.04 | (−3.96, 6.05) | 1.88 | (−6.51, 10.26) |  | −3.87 | (−12.71, 4.98) | −6.11 | (−15.14, 2.93) |
| cis−Nonachlor | 0.94 | (−3.8, 5.67) | −1.12 | (−9.06, 6.81) |  | −2.03 | (−10.48, 6.42) | −6.74 | (−15.31, 1.84) |
| trans−Nonachlor | 0.73 | (−3.95, 5.41) | −0.12 | (−7.96, 7.73) |  | −4.05 | (−12.27, 4.17) | −6.42 | (−14.8, 1.96) |
| p,p'−DDD | 1.46 | (−2.38, 5.3) | 0.43 | (−6.03, 6.88) |  | −2.14 | (−8.99, 4.71) | −2.21 | (−9.25, 4.83) |
| o,p'−DDE | 1.45 | (−2.65, 5.54) | 3.20 | (−3.65, 10.05) |  | 1.22 | (−6.05, 8.48) | −2.30 | (−9.75, 5.15) |
| p,p'−DDE | −2.3 | (−6.6, 1.93) | 1.40 | (−5.79, 8.59) |  | −3.04 | (−10.64, 4.56) | −3.40 | (−11.21, 4.4) |
| o,p'−DDT | −0.75 | (−5.15, 3.64) | 4.40 | (−2.91, 11.72) |  | 2.82 | (−4.88, 10.52) | −1.23 | (−9.16, 6.71) |
| p,p'−DDT | 0.20 | (−5.21, 5.61) | 2.66 | (−6.39, 11.71) |  | −4.44 | (−13.88, 5.01) | −7.45 | (−17.07, 2.17) |
| Dieldrin | −0.74 | (−7.4, 5.92) | 4.07 | (−7.06, 15.2) |  | −4.80 | (−16.71, 7.12) | −8.51 | (−20.67, 3.64) |
| cis−HCE | −1.17 | (−6.72, 4.37) | 2.33 | (−6.96, 11.62) |  | −8.71 | (−18.49, 1.08) | −9.77 | (−19.8, 0.25) |
| HCB | 1.17 | (−6.41, 8.74) | 4.18 | (−8.49, 16.84) |  | −1.95 | (−15.36, 11.46) | −10.37 | (−23.97, 3.23) |
| βHCH | 0.64 | (−3.62, 4.9) | 1.95 | (−5.18, 9.09) |  | −1.75 | (−9.34, 5.84) | −4.57 | (−12.32, 3.17) |
| Mirex | −1.10 | (−6.59, 4.4) | −4.63 | (−13.79, 4.53) |  | 0.11 | (−9.68, 9.9) | −8.92 | (−18.8, 0.95) |
| Parlar−26 | 0.26 | (−4.27, 4.8) | −0.51 | (−8.11, 7.1) |  | −0.89 | (−8.91, 7.12) | −7.36 | (−15.45, 0.73) |
| Parlar−50 | 0.06 | (−4.54, 4.66) | 0.78 | (−6.93, 8.48) |  | 0.70 | (−7.5, 8.9) | −5.67 | (−14.01, 2.67) |
| 6M: Adjusted for maternal age, worked during pregnancy, alcohol consumption during pregnancy, gestational days, blood sampling period, infant sex, postpartum depression at 1 month and child care environment. | | | | | | | | | |
| 18M: Adjusted for maternal age, annual income, gestational days, blood sampling period, infant sex. postpartum depression at 6 months and child care environment. | | | | | | | | | |
| a β is the point increase in developmental score per tenfold increase of OCP level . | | | | | | | | | |
| DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; cis-HCE dichlorodiphenyltrichloroethane; HCB, hexachlorobenzene; HCH, hexachlorocyclohexane; OCPs, organochlorine pesticides; CI, confidence interval. | | | | | | | | | |
| \* p < 0 .05 |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supplemental Table5 Charasteristics of mothers and infants for the assessment group. | | | | | | | | | | | | |
| Characteristic |  |  | Both  assessment (N = 94) | |  | Only 6-month assessment (N = 70) | |  | Only 18-month assessment (N = 21) | |  | p-value |
|  |  |  |
|  | Mean(± SD) or No.(%) | |  | Mean(± SD) or No.(%) | |  | Mean(± SD) or No.(%) | |  |
| *Mother* |  |  |  |  |  |  |  |  |  |  |  |  |
| Age at delivery (years) |  |  | 31.24 | (± 4.5) |  | 31.26 | (± 4.9) |  | 32.1 | (± 6.5) |  | 0.76 |
| Education Level (years) | <13 |  | 34 | (36.2) |  | 27 | (38.6) |  | 8 | (38.1) |  | 0.95 |
|  | ≥13 |  | 60 | (63.8) |  | 43 | (61.4) |  | 13 | (61.9) |  |  |
| Annual income (million yen) | <5 |  | 61 | (64.9) |  | 42 | (60.0) |  | 17 | (81.0) |  | 0.21 |
|  | ≥5 |  | 33 | (35.1) |  | 28 | (40.0) |  | 4 | (19.0) |  |  |
| Worked during pregnancy |  |  | 8 | (8.5) |  | 11 | (15.7) |  | 3 | (14.3) |  | 0.35 |
| Smoked during pregnancy |  |  | 5 | (5.3) |  | 16 | (22.9) |  | 4 | (19.0) |  | 0.00 |
| Alcohol intake during pregnancy |  |  | 25 | (26.6) |  | 22 | (31.4) |  | 7 | (33.3) |  | 0.72 |
| Blood sampling period | During pregnancy |  | 62 | (66.0) |  | 48 | (68.6) |  | 13 | (61.9) |  | 0.84 |
|  | After delivery |  | 32 | (34.0) |  | 22 | (31.4) |  | 8 | (38.1) |  |  |
| EPDS 1M |  |  | 2.38 | (± 3.0) |  | 3.21 | (± 4.9) |  | 2.43 | (± 4.2) |  | 0.12 |
| EPDS 6M |  |  | 3.44 | (± 3.5) |  | 4.87 | (± 5.5) |  | 4.31 | (± 3.6) |  | 0.41 |
| *Infant* |  |  |  |  |  |  |  |  |  |  |  |  |
| Sex | Male |  | 40 | (42.6) |  | 39 | (55.7) |  | 11 | (52.4) |  | 0.23 |
|  | Female |  | 54 | (57.4) |  | 31 | (44.3) |  | 10 | (47.6) |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Gestational age (days) |  |  | 277 | (± 8.1) |  | 277 | (± 8.2) |  | 275 | (± 7.3) |  | 0.43 |
| Birth weight (g) |  |  | 3121 | (± 295.1) |  | 3141 | (± 374.4) |  | 3055 | (± 362.7) |  | 0.59 |
| Birth length (cm) |  |  | 48.3 | (± 1.4) |  | 48.4 | (± 1.6) |  | 48.1 | (± 2.0) |  | 0.71 |
| First-born |  |  | 45 | (47.9) |  | 39 | (55.7) |  | 9 | (42.9) |  | 0.47 |
| Duration of breast-feeding | < 3Months |  | 9 | (9.6) |  | 8 | (11.4) |  | 2 | (9.5) |  | 0.68 |
|  | ≥ 3Months |  | 83 | (88.3) |  | 48 | (68.6) |  | 19 | (90.5) |  |  |
| MDI at 6-month |  |  | 90.23 | ±6.0 |  | 91.21 | ±5.1 |  |  |  |  | 0.27 |
| PDI at 6-month |  |  | 90.02 | ±10.4 |  | 89.37 | ±10.3 |  |  |  |  | 0.69 |
| ICCE at 6-month |  |  | 22.64 | ±2.6 |  | 22.56 | ±2.5 |  |  |  |  | 0.84 |
| MDI at 18-month |  |  | 82.76 | ±11.3 |  |  |  |  | 83.76 | (± 11.4) |  | 0.71 |
| PDI at 18-month |  |  | 86.19 | ±11.5 |  |  |  |  | 86.38 | (± 11.0) |  | 0.95 |
| ICCE at 18-month |  |  | 28.64 | ±3.2 |  |  |  |  | 27.57 | (± 4.3) |  | 0.29 |
| BSID-II: Bayley Scales of Infant Development second edition, EPDS:Edinburgh Postnatal Depression Scale, ICCE: Index of Child Care Environment | | | | | | | | | |  |  |  |
| ALL indicates participants with available OCP data who were followed up until 18 months. | | | |  |  |  |  |  |  |  |  |  |
| 6M BSID-II and 18 M BSID-II indicates participants with available OCP data who were followed up until 18 months and completed the BSID assessment at 6 and 18 months, respectively. | | | | | | | | | | |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supplemental Table6 Correlation between OCPs in maternal blood (n =185). | | | | | | | | | | | | | | | |
|  | Oxychlordane | cis-nonachlor | trans-nonachlor | p,p'-DDD | o,p'-DDE | p,p'-DDE | o,p'-DDT | p,p'-DDT | Dieldrin | cis-HCE | HCB | βHCH | Mirex | Parlar-26 | Parlar-50 |
| Oxychlordane | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| cis-nonachlor | 0.85\* | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| trans-nonachlor | 0.95\* | 0.86\* | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| p,p'-DDD | 0.25\* | 0.35\* | 0.27\* | 1 |  |  |  |  |  |  |  |  |  |  |  |
| o,p'-DDE | 0.44\* | 0.53\* | 0.41\* | 0.42\* | 1 |  |  |  |  |  |  |  |  |  |  |
| p,p'-DDE | 0.47\* | 0.53\* | 0.43\* | 0.40\* | 0.66\* | 1 |  |  |  |  |  |  |  |  |  |
| o,p'-DDT | 0.37\* | 0.47\* | 0.36\* | 0.45\* | 0.87\* | 0.71\* | 1 |  |  |  |  |  |  |  |  |
| p,p'-DDT | 0.51\* | 0.61\* | 0.47\* | 0.51\* | 0.72\* | 0.74\* | 0.73\* | 1 |  |  |  |  |  |  |  |
| Dieldrin | 0.44\* | 0.60\* | 0.44\* | 0.27\* | 0.57\* | 0.49\* | 0.54\* | 0.64\* | 1 |  |  |  |  |  |  |
| cis-HCE | 0.57\* | 0.60\* | 0.58\* | 0.21\* | 0.47\* | 0.46\* | 0.44\* | 0.560\* | 0.75\* | 1 |  |  |  |  |  |
| HCB | 0.70\* | 0.78\* | 0.63\* | 0.32\* | 0.51\* | 0.67\* | 0.48\* | 0.68\* | 0.60\* | 0.58\* | 1 |  |  |  |  |
| βHCH | 0.52\* | 0.51\* | 0.46\* | 0.17\* | 0.33\* | 0.65\* | 0.30\* | 0.49\* | 0.51\* | 0.55\* | 0.74\* | 1 |  |  |  |
| Mirex | 0.54\* | 0.66\* | 0.50\* | 0.28\* | 0.43\* | 0.42\* | 0.34\* | 0.44\* | 0.29\* | 0.32\* | 0.54\* | 0.33\* | 1 |  |  |
| Parlar-26 | 0.53\* | 0.79\* | 0.53\* | 0.36\* | 0.65\* | 0.55\* | 0.61\* | 0.70\* | 0.75\* | 0.61\* | 0.69\* | 0.42\* | 0.52\* | 1 |  |
| Parlar-50 | 0.55\* | 0.80\* | 0.54\* | 0.36\* | 0.66\* | 0.53\* | 0.60\* | 0.68\* | 0.74\* | 0.61\* | 0.68\* | 0.39\* | 0.53\* | 0.96\* | 1 |
| DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; cis-HCE dichlorodiphenyltrichloroethane; HCB, hexachlorobenzene; HCH, hexachlorocyclohexane; OCPs, organochlorine pesticides; CI, confidence interval. | | | | | | | | | | | | | | | |
| Peason's correlation coefficient test (\* p < 0.01) | | | | | | | | | | | | | | | |