# Appendix C: Results from all sub-analyses

All odds ratios are per 1-unit increase.

| Model | Covariates | OR | 95% CI |
| --- | --- | --- | --- |
| **ER-/PR-: Ever/Never Exposure to MAHs** | | | |
| Model-01 | Age | 0.96 | 0.22-2.87 |
| Model-02 | Model-01+ education | 0.94 | 0.22-2.81 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.06 | 0.24-3.24 |
| Model-08 | Age + family history | 0.97 | 0.22-2.88 |
| Model-10 | Age + family history + chlorinated alkanes | 0.93 | 0.22-2.8 |
| **ER-/PR+** | No exposed cases. |  |  |
| **ER+/PR-: Ever/Never Exposure to MAHs** | | |  |
| Model-01 | Age | 2.88 | 1.16-6.51 |
| Model-02 | Model-01+ education | 2.91 | 1.17-6.63 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 3.31 | 1.28-7.91 |
| Model-08 | Age + family history | 3.12 | 1.25-7.13 |
| Model-10 | Age + family history + chlorinated alkanes | 2.61 | 1-6.19 |
| **ER+/PR+: Ever/Never Exposure to MAHs** | | |  |
| Model-01 | Age | 1.83 | 1.05-3.24 |
| Model-02 | Model-01+ education | 1.78 | 1.02-3.17 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.94 | 1.1-3.49 |
| Model-08 | Age + family history | 1.95 | 1.11-3.47 |
| Model-10 | Age + family history + chlorinated alkanes | 1.74 | 0.97-3.14 |
| **Luminal A: ER positive and/or PR positive/HER-2 negative: Ever/Never Exposure to MAHs** | | |  |
| Model-01 | Age | 1.97 | 1.14-3.45 |
| Model-02 | Model-01+ education | 1.94 | 1.12-3.41 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.11 | 1.21-3.78 |
| Model-08 | Age + family history | 2.12 | 1.23-3.73 |
| Model-10 | Age + family history + chlorinated alkanes | 1.83 | 1.03-3.28 |
| **Luminal B: ER positive and/or PR positive/HER-2 positive: Ever/Never Exposure to MAHs** | | |  |
| Model-01 | Age | 2.71 | 0.87-7.01 |
| Model-02 | Model-01+ education | 2.64 | 0.85-6.88 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 3.01 | 0.93-8.24 |
| Model-08 | Age + family history | 2.91 | 0.93-7.6 |
| Model-10 | Age + family history + chlorinated alkanes | 2.87 | 0.91-7.62 |
| **HER2 Overexpressed: ER negative/PR negative/HER-2 positive: Ever/Never Exposure to MAHs** | | |  |
| Model-01 | Age | 1.04 | 0.06-5.31 |
| Model-02 | Model-01+ education | |  |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.29 | 0.07-7.3 |
| Model-08 | Age + family history | 1.04 | 0.06-5.34 |
| Model-10 | Age + family history + chlorinated alkanes | 0.99 | 0.05-5.13 |
| **Triple Negative: ER negative/PR negative/HER-2 negative: Ever/Never Exposure to MAHs** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 0.93 | 0.15-3.3 |
| Model-02: not sufficient number of exposed cases with covariates | | | |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 0.96 | 0.15-3.53 |
| Model-08 | Age + family history | 0.94 | 0.15-3.31 |
| Model-10 | Age + family history + chlorinated alkanes | 0.91 | 0.14-3.25 |
| **ER-/PR-: Avg concentration Exposure to MAHs (1, 2, 3)** | | | |
| Model-01 | Age | 1.2 | 0.47-2.44 |
| Model-02 | Model-01+ education | 1.14 | 0.45-2.32 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.28 | 0.49-2.67 |
| Model-08 | Age + family history | 1.2 | 0.47-2.45 |
| Model-10 | Age + family history + chlorinated alkanes | 1.17 | 0.45-2.41 |
| **ER-/PR+** | No exposed cases. |  |  |
| **ER+/PR-: Avg concentration Exposure to MAHs (1, 2, 3)** | | |  |
| Model-01 | Age | 2.06 | 1.05-3.77 |
| Model-02 | Model-01+ education | 1.99 | 1.01-3.66 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.13 | 1.06-4.01 |
| Model-08 | Age + family history | 2.21 | 1.12-4.05 |
| Model-10 | Age + family history + chlorinated alkanes | 1.89 | 0.89-3.61 |
| **ER+/PR+: Avg concentration Exposure to MAHs (1, 2, 3)** | | |  |
| Model-01 | Age | 1.58 | 1.06-2.42 |
| Model-02 | Model-01+ education | 1.54 | 1.03-2.37 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.61 | 1.07-2.49 |
| Model-08 | Age + family history | 1.66 | 1.11-2.54 |
| Model-10 | Age + family history + chlorinated alkanes | 1.49 | 0.97-2.33 |
| **Luminal A: ER positive and/or PR positive/HER-2 negative: Avg concentration Exposure to MAHs 1, 2, 3** | | |  |
| Model-01 | Age | 1.65 | 1.11-2.51 |
| Model-02 | Model-01+ education | 1.61 | 1.08-2.47 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.68 | 1.11-2.6 |
| Model-08 | Age + family history | 1.74 | 1.16-2.66 |
| Model-10 | Age + family history + chlorinated alkanes | 1.51 | 0.98-2.36 |
| **Luminal B: ER positive and/or PR positive/HER-2 positive: Avg concentration Exposure to MAHs 1, 2, 3** | | |  |
| Model-01 | Age | 2.12 | 0.96-4.12 |
| Model-02 | Model-01+ education | 2 | 0.91-3.92 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.14 | 0.95-4.35 |
| Model-08 | Age + family history | 2.27 | 1.02-4.45 |
| Model-10 | Age + family history + chlorinated alkanes | 2.26 | 1.02-4.45 |

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| --- | --- | --- | --- |
| Model Names | Covariates | OR | 95% CI |
| **ER-/PR-: Duration of Exposure to MAHs** | | | |
| Model-01 | Age | 0.99 | 0.87-1.07 |
| Model-02 | Model-01+ education | 0.99 | 0.87-1.07 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 0.99 | 0.87-1.08 |
| Model-08 | Age + family history | 0.99 | 0.87-1.07 |
| Model-10 | Age + family history + chlorinated alkanes | 0.99 | 0.87-1.06 |
| **ER-/PR+** | No exposed cases. |  |  |
| **ER+/PR-: Duration of exposure to MAHs** | | |  |
| Model-01 | Age | 1.06 | 1-1.11 |
| Model-02 | Model-01+ education | 1.06 | 1-1.11 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.07 | 1.01-1.12 |
| Model-08 | Age + family history | 1.06 | 1-1.11 |
| Model-10 | Age + family history + chlorinated alkanes | 1.06 | 1-1.11 |
| **ER+/PR+** |  |  |  |
| **Duration of exposure to MAHs** | | |  |
| Model-01 | Age | 1.04 | 1-1.08 |
| Model-02 | Model-01+ education | 1.04 | 1-1.08 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.04 | 1-1.08 |
| Model-08 | Age + family history | 1.04 | 1-1.08 |
| Model-10 | Age + family history + chlorinated alkanes | 1.03 | 0.99-1.08 |
| **Luminal A: ER positive and/or PR positive/HER-2 negative** | | |  |
| **Duration of exposure to MAHs** | | |  |
| Model-01 | Age | 1.04 | 1.01-1.08 |
| Model-02 | Model-01+ education | 1.04 | 1.01-1.08 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.05 | 1.01-1.09 |
| Model-08 | Age + family history | 1.05 | 1.01-1.09 |
| Model-10 | Age + family history + chlorinated alkanes | 1.04 | 1-1.08 |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| **Duration of exposure to MAHs** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.05 | 0.98-1.11 |
| Model-02 | Model-01+ education | 1.05 | 0.98-1.12 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.06 | 0.99-1.12 |
| Model-08 | Age + family history | 1.05 | 0.98-1.11 |
| Model-10 | Age + family history + chlorinated alkanes | 1.05 | 0.97-1.11 |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Avg Frequency of exposure to MAHs** | | | | | |  | |
| **ER-/PR-** |  | | | |  |  | |
| **Avg Frequency of exposure to MAHs** | | | | | |  | |
| Model Names | Covariates | | | | OR | 95% CI | |
| Model-01 | Age | | | | 1.01 | 0.94-1.06 | |
| Model-02 | Model-01+ education | | | | 1.01 | 0.94-1.06 | |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | | | | 1.01 | 0.94-1.07 | |
| Model-08 | Age + family history | | | | 1.01 | 0.94-1.06 | |
| Model-10 | Age + family history + chlorinated alkanes | | | | 1.01 | 0.94-1.06 | |
| **ER-/PR+** |  | | | |  |  | |
| No exposed cases. | | | | | | |
| **ER+/PR-** |  | | | |  |  | |
| **Avg Frequency of exposure to MAHs** | | | | | |  | |
| Model Names | Covariates | | | | OR | 95% CI | |
| Model-01 | Age | | | | 1.03 | 0.98-1.08 | |
| Model-02 | Model-01+ education | | | | 1.03 | 0.98-1.08 | |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | | | | 1.03 | 0.98-1.08 | |
| Model-08 | Age + family history | | | | 1.04 | 0.98-1.08 | |
| Model-10 | Age + family history + chlorinated alkanes | | | | 1.03 | 0.98-1.08 | |
| **ER+/PR+** |  | | | |  |  | |
| **Avg Frequency of exposure to MAHs** | | | | | |  | |
| Model Names | Covariates | | | | OR | 95% CI | |
| Model-01 | Age | | | | 1.03 | 1-1.06 | |
| Model-02 | Model-01+ education | | | | 1.03 | 1-1.06 | |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | | | | 1.03 | 1-1.06 | |
| Model-08 | Age + family history | | | | 1.03 | 1.01-1.07 | |
| Model-10 | Age + family history + chlorinated alkanes | | | | 1.03 | 1-1.06 | |
| **Luminal A: ER positive and/or PR positive/HER-2 negative** | | | | | |  | |
| **Avg Frequency of exposure to MAHs** | | | | | |  | |
| Model-01 | Age | | | | 1.03 | 1-1.07 | |
| Model-02 | Model-01+ education | | | | 1.03 | 1-1.06 | |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | | | | 1.03 | 1-1.07 | |
| Model-08 | Age + family history | | | | 1.04 | 1.01-1.07 | |
| Model-10 | Age + family history + chlorinated alkanes | | | | 1.03 | 1-1.07 | |
| **Luminal B: ER positive and/or PR positive/HER-2 positive** | | | | | |  | |
| **Avg Frequency of exposure to MAHs** | | | | | |  | |
| Model-01 | Age | | | | 1.04 | 0.99-1.09 | |
| Model-02 | Model-01+ education | | | | 1.04 | 0.99-1.08 | |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | | | | 1.04 | 0.99-1.09 | |
| Model-08 | Age + family history | | | | 1.05 | 0.99-1.09 | |
| Model-10 | | Age + family history + chlorinated alkanes | 1.05 | 0.99-1.09 | | | |

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| --- | --- | --- | --- |
| MAH duration of exposure lagged 5 years before interview | | | |
| Model-01 | Age | 1.04 | 1.01-1.09 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.05 | 1.01-1.09 |
| Model-08 | Age + family history | 1.05 | 1.01-1.09 |
| Model-10 | Age + family history + chlorinated alkanes | 1.04 | 1-1.09 |
| MAH exposure duration before 36 years old |
| Model-01 | Age | 1.08 | 0.99-1.19 |
| Model-02 | Model-01+ education | 1.07 | 0.98-1.19 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.09 | 1-1.21 |
| Model-08 | Age + family history | 1.08 | 0.99-1.2 |
| Model-10 | Age + family history + chlorinated alkanes | 1.08 | 0.99-1.19 |
| MAH exposure avg concentration (1, 2, 3) before 36 years old |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.31 | 0.83-2.12 |
| Model-02 | Model-01+ education | 1.27 | 0.8-2.06 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40)+smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.34 | 0.84-2.2 |
| Model-08 | Age + family history | 1.35 | 0.86-2.19 |
| Model-10 | Age + family history + chlorinated alkanes | 1.29 | 0.81-2.11 |

BENZENE

|  |  |  |  |
| --- | --- | --- | --- |
| ER-/PR- |  |  |  |
| **Ever/Never Exposure to Benzene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 0.57 | 0.03-2.96 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 0.65 | 0.03-3.45 |
| Model-08 | Age + family history + oral contraceptive use + education + NO2 land use regression | 0.58 | 0.03-3.04 |
| Model-10 | Age + chlorinated alkanes + OC use + family history + education | 0.6 | 0.03-3.13 |
| **ER-/PR+: Ever/Never Exposure to Benzene** | | | |
| No exposed cases | |  |  |
| **ER+/PR-:** **Ever/Never Exposure to Benzene** | | | |
| Model-01 | Age | 1.79 | 0.4-5.84 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.13 | 0.46-7.35 |
| Model-08 | Age + family history + oral contraceptive use + education + NO2 land use regression | 2.22 | 0.49-7.41 |
| Model-10 | Age + chlorinated alkanes + OC use + family history + education | 2.06 | 0.44-7.07 |
| **ER+/PR+: Ever/Never Exposure to Benzene** | | | |
| Model-01 | Age | 1.38 | 0.63-3.09 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.41 | 0.63-3.21 |
| Model-08 | Age + family history + oral contraceptive use + education + NO2 land use regression | 1.3 | 0.58-2.96 |
| Model-10 | Age + chlorinated alkanes + OC use + family history + education | 1.3 | 0.57-2.96 |
| **Luminal A: ER positive and/or PR positive/HER-2 negative** | | | |
| **Ever/Never Exposure to Benzene** | | |  |
| Model-01 | Age | 1.31 | 0.6-2.94 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.46 | 0.65-3.34 |
| Model-08 | Age + family history + oral contraceptive use + education + NO2 land use regression | 1.31 | 0.58-2.96 |
| Model-10 | Age + chlorinated alkanes + OC use + family history + education | 1.29 | 0.57-2.95 |
| **Luminal B: ER positive and/or PR positive/HER-2 positive** | | | |
| **Ever/Never Exposure to Benzene** | | |  |
| Model-01 | Age | 2.85 | 0.63-9.45 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 3.41 | 0.72-12.03 |
| Model-08 | Age + family history + oral contraceptive use + education + NO2 land use regression | 3.04 | 0.67-10.2 |
| Model-10 | Age + chlorinated alkanes + OC use + family history + education | 3.06 | 0.66-10.38 |
| **HER2 Overexpressed: ER negative/PR negative/HER-2 positive** | | | |
| 0 exposed cases |  |  |  |
| **Triple Negative: ER negative/PR negative/HER-2 negative** | | | |
| **Ever/Never Exposure to Benzene** | | |  |
| Model-01 | Age | 0.84 | 0.05-4.4 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 0.89 | 0.05-4.88 |
| Model-08 | Age + family history + oral contraceptive use + education + NO2 land use regression | 0.83 | 0.04-4.42 |
| Model-10 | Age + chlorinated alkanes + OC use + family history + education | 0.84 | 0.05-4.52 |

BENZENE

|  |  |  |  |
| --- | --- | --- | --- |
| **ER-/PR-** |  |  |  |
| **Ever/Never Exposure to Benzene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 0.57 | 0.03-2.96 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 0.65 | 0.03-3.45 |
| Model-08 | Age + family history + oral contraceptive use + education + NO2 land use regression | 0.58 | 0.03-3.04 |
| Model-10 | Age + chlorinated alkanes + OC use + family history + education | 0.6 | 0.03-3.13 |
| **ER-/PR+** |  |  |  |
| **Ever/Never Exposure to Benzene** | | |  |
| No exposed cases | |  |  |
| **ER+/PR-** |  |  |  |
| **Ever/Never Exposure to Benzene** | | |  |
| Model-01 | Age | 1.79 | 0.4-5.84 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.13 | 0.46-7.35 |
| Model-08 | Age + family history + oral contraceptive use + education + NO2 land use regression | 2.22 | 0.49-7.41 |
| Model-10 | Age + chlorinated alkanes + OC use + family history + education | 2.06 | 0.44-7.07 |
| **ER+/PR+** |  |  |  |
| **Ever/Never Exposure to Benzene** | | |  |
| Model-01 | Age | 1.38 | 0.63-3.09 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.41 | 0.63-3.21 |
| Model-08 | Age + family history + oral contraceptive use + education + NO2 land use regression | 1.3 | 0.58-2.96 |
| Model-10 | Age + chlorinated alkanes + OC use + family history + education | 1.3 | 0.57-2.96 |
| **Luminal A: ER positive and/or PR positive/HER-2 negative** | | |  |
| **Ever/Never Exposure to Benzene** | | |  |
| Model-01 | Age | 1.31 | 0.6-2.94 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.46 | 0.65-3.34 |
| Model-08 | Age + family history + oral contraceptive use + education + NO2 land use regression | 1.31 | 0.58-2.96 |
| Model-10 | Age + chlorinated alkanes + OC use + family history + education | 1.29 | 0.57-2.95 |
| **Luminal B: ER positive and/or PR positive/HER-2 positive** | | |  |
| **Ever/Never Exposure to Benzene** | | |  |
| Model-01 | Age | 2.85 | 0.63-9.45 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 3.41 | 0.72-12.03 |
| Model-08 | Age + family history + oral contraceptive use + education + NO2 land use regression | 3.04 | 0.67-10.2 |
| Model-10 | Age + chlorinated alkanes + OC use + family history + education | 3.06 | 0.66-10.38 |
| **HER2 Overexpressed: ER negative/PR negative/HER-2 positive** | | |  |
| No exposed cases. | |  |  |
| **Triple Negative: ER negative/PR negative/HER-2 negative** | | |  |
| **Ever/Never Exposure to Benzene** | | |  |
| Model-01 | Age | 0.84 | 0.05-4.4 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 0.89 | 0.05-4.88 |
| Model-08 | Age + family history + oral contraceptive use + education + NO2 land use regression | 0.83 | 0.04-4.42 |
| Model-10 | Age + chlorinated alkanes + OC use + family history + education | 0.84 | 0.05-4.52 |

Methylene Chloride

|  |  |  |  |
| --- | --- | --- | --- |
| **Exposure duration 5 years before interview** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.02 | 0.97-1.08 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.01 | 0.96-1.07 |
| Model-08 | Age + family history + cbfcumwks + education | 1.02 | 0.97-1.07 |
| Model-10 | Age + Chlorinated\_Alkenes + cbfcumwks | 1.02 | 0.96-1.09 |
| **Exposure before 36 years age** | | | |
| Meth Chloride exposure before 36 years: duration of exposure | | | |
| Model-01 | Age | 1.05 | 0.96-1.19 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.03 | 0.94-1.17 |
| Model-08 | Age + family history + cbfcumwks + education | 1.04 | 0.95-1.18 |
| Model-10 | Age + Chlorinated\_Alkenes + cbfcumwks | 1.06 | 0.94-1.22 |

|  |  |  |  |
| --- | --- | --- | --- |
| **ER-/PR-** |  |  |  |
| **Ever/Never Exposure to Methylene Chloride** | | | |
| Model-01 | Age | 2.94 | 0.41-14.02 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 5.37 | 0.66-31.17 |
| Model-08 | Age + family history + cbfcumwks + education | 3.17 | 0.43-16.43 |
| Model-10 | Age + Chlorinated\_Alkenes + cbfcumwks | 7.46 | 0.7-86.61 |
| **ER-/PR+** |  |  |  |
| No exposed cases. | |  |  |
| **ER+/PR-** |  |  |  |
| **Ever/Never Exposure to Methylene Chloride** | | | |
| Model-01 | Age | 1.53 | 0.08-9.78 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.07 | 0.05-8.89 |
| Model-08 | Age + family history + cbfcumwks + education | 1.24 | 0.06-8.99 |
| Model-10 | Age + Chlorinated\_Alkenes + cbfcumwks | 1.47 | 0.07-13.06 |
| **ER+/PR+** |  |  |  |
| **Ever/Never Exposure to Methylene Chloride** | | | |
| Model-01 | Age | 1.65 | 0.52-5.63 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.41 | 0.42-4.99 |
| Model-08 | Age + family history + cbfcumwks + education | 1.56 | 0.48-5.43 |
| Model-10 | Age + Chlorinated\_Alkenes + cbfcumwks | 1.2 | 0.31-4.76 |
| **Luminal A: ER positive and/or PR positive/HER-2 negative** | | |  |
| **Ever/Never Exposure to Methylene Chloride** | | | |
| Model-01 | Age | 1.79 | 0.59-6 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.44 | 0.45-5.03 |
| Model-08 | Age + family history + cbfcumwks + education | 1.7 | 0.55-5.78 |
| Model-10 | Age + Chlorinated\_Alkenes + cbfcumwks | 1.38 | 0.39-5.22 |
| **Luminal B: ER positive and/or PR positive/HER-2 positive** | | |  |
| **Ever/Never Exposure to Methylene Chloride** | | | |
| No exposed cases. | |  |  |
| **HER2 Overexpressed: ER negative/PR negative/HER-2 positive** | | |  |
| **Ever/Never Exposure to Methylene Chloride** | | | |
| Model-01 | Age | 4.57 | 0.23-30.76 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 11.03 | 0.33-166.54 |
| Model-08 | Age + family history + cbfcumwks + education | 4.06 | 0.19-32.5 |
| Model-10 | Age + Chlorinated\_Alkenes + cbfcumwks | 9.14 | 0.34-148.45 |
| **Triple Negative: ER negative/PR negative/HER-2 negative** | | |  |
| **Ever/Never Exposure to Methylene Chloride** | | | |
| Model-01 | Age | 2.2 | 0.11-14.03 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 3.37 | 0.16-27.71 |
| Model-08 | Age + family history + cbfcumwks + education | 2.3 | 0.11-16.21 |
| Model-10 | Age + Chlorinated\_Alkenes + cbfcumwks | 3.91 | 0.13-74 |

Vinyl Chloride

|  |  |  |  |
| --- | --- | --- | --- |
| Vinyl Chloride exposure duration 5 years before interview | | | |
| **Duration Exposure to Vinyl Chloride** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.04 | 0.98-1.14 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.02 | 0.96-1.12 |
| Model-08 | Age + education + age first full-term pregnancy | 1.03 | 0.97-1.13 |
| Model-10 | Model-09 + Chlorinated Alkanes + education + MAH | 1.01 | 0.92-1.12 |
| Sensitivity analysis: exposure before 36 years | | | |
| Vinyl Chloride exposure before 36 years duration | | | |
| **Duration Exposure to Vinyl Chloride** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.07 | 0.95-1.27 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.05 | 0.93-1.25 |
| Model-08 | Age + education + age first full-term pregnancy | 1.07 | 0.94-1.26 |
| Model-10 | Model-09 + Chlorinated Alkanes + education + MAH | 0.99 | 0.81-1.22 |

|  |  |  |  |
| --- | --- | --- | --- |
| Xylene exposure duration 5 years before interview | | | |
| **Duration Exposure to Xylene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.04 | 0.99-1.11 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.04 | 0.99-1.1 |
| Model-08 | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 1.04 | 0.99-1.1 |
| Model-10 | Age + education + age first full term pregnancy + OC use duration + family history | 1.04 | 0.99-1.1 |
| Sensitivity analysis: exposure before 36 years | | | |
| Xylene exposure before 36 years duration | | | |
| **Duration Exposure to Xylene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.1 | 0.97-1.3 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.1 | 0.97-1.3 |
| Model-08 | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 1.1 | 0.97-1.3 |
| Model-10 | Age + education + age first full term pregnancy + OC use duration + family history | 1.1 | 0.97-1.29 |

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| --- | --- | --- | --- |
| Xylene exposure duration 5 years before interview | | | |
| **Duration Exposure to Xylene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.04 | 0.99-1.11 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.04 | 0.99-1.1 |
| Model-08 | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 1.04 | 0.99-1.1 |
| Model-10 | Age + education + age first full term pregnancy + OC use duration + family history | 1.04 | 0.99-1.1 |
| Sensitivity analysis: exposure before 36 years | | | |
| Xylene exposure before 36 years duration | | | |
| **Duration Exposure to Xylene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.1 | 0.97-1.3 |
| Model-03: known risk factors | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.1 | 0.97-1.3 |
| Model-08: Model-07- covariates not associated with solvents (change in OR 5%) but not age | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 1.1 | 0.97-1.3 |
| Model-10: Model-09- covariates not associated with solvents (change in OR 5%) but not age | Age + education + age first full term pregnancy + OC use duration + family history | 1.1 | 0.97-1.29 |

Xylene

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| --- | --- | --- | --- |
| **ER-/PR-** |  |  |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 0.53 | 0.03-2.73 |
| Model-02 | Model-01+ education | 0.5 | 0.03-2.59 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 0.6 | 0.03-3.17 |
| Model-08 | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 0.53 | 0.03-2.76 |
| Model-10 | Age + education + age first full term pregnancy + OC use duration + family history | 0.51 | 0.03-2.69 |
| **ER-/PR+** |  |  |  |
| No exposed cases. |  |  |  |
| **ER+/PR-** |  |  |  |
| Model-01 | Age | 2.31 | 0.64-6.78 |
| Model-02 | Model-01+ education | 2.31 | 0.63-6.80 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.38 | 0.62-7.48 |
| Model-08 | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 2.73 | 0.74-8.17 |
| Model-10 | Age + education + age first full term pregnancy + OC use duration + family history | 2.74 | 0.74-8.22 |
| **ER+/PR+** |  |  |  |
| Model-01 | Age | 1.75 | 0.85-3.71 |
| Model-02 | Model-01+ education | 1.6 | 0.77-3.42 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.71 | 0.81-3.69 |
| Model-08 | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 1.7 | 0.81-3.64 |
| Model-10 | Age + education + age first full term pregnancy + OC use duration + family history | 1.7 | 0.82-3.63 |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.95 | 0.97-4.07 |
| Model-02 | Model-01+ education | 1.81 | 0.90-3.79 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.91 | 0.93-4.07 |
| Model-08 | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 1.93 | 0.95-4.07 |
| Model-10 | Age + education + age first full term pregnancy + OC use duration + family history | 1.93 | 0.95-4.05 |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| Model-01 | Age | 1.7 | 0.26-6.46 |
| Model-02 | Model-01+ education | 1.62 | 0.25-6.15 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.77 | 0.26-7.1 |
| Model-08 | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 1.86 | 0.28-7.17 |
| Model-10 | Age + education + age first full term pregnancy + OC use duration + family history | 1.89 | 0.29-7.3 |
| **ER negative/PR negative/HER-2 positive** | | | HER2 Overexpressed |
| No exposed cases. |  |  |  |
| **ER negative/PR negative/HER-2 negative** | | | Triple Negative |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 0.78 | 0.04-4.06 |
| Model-02 | Model-01+ education | 0.72 | 0.04-3.80 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 0.82 | 0.04-4.48 |
| Model-08 | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 0.75 | 0.04-3.94 |
| Model-10 | Age + education + age first full term pregnancy + OC use duration + family history | 0.7 | 0.04-3.77 |
| **Average Concentration (1, 2, 3)** | | |  |
| **ER-/PR-** |  |  |  |
| Model-01 | Age | 0.52 | 0.03-1.84 |
| Model-02 | Model-01+ education | 0.49 | 0.03-1.74 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 0.56 | 0.04-2.02 |
| Model-08 | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 0.52 | 0.03-1.82 |
| Model-10 | Age + education + age first full term pregnancy + OC use duration + family history | 0.5 | 0.03-1.76 |
| **ER-/PR+** |  |  |  |
| No exposed cases. |  |  |  |
| **Avg Concentration Exposure to Xylene** | | |  |
| **ER+/PR-** |  |  |  |
| Model-01 | Age | 1.62 | 0.63-3.43 |
| Model-02 | Model-01+ education | 1.55 | 0.61-3.3 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.59 | 0.61-3.5 |
| Model-08 | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 1.78 | 0.7-3.81 |
| Model-10 | Age + education + age first full term pregnancy + OC use duration + family history | 1.75 | 0.69-3.74 |
| **Avg Concentration Exposure to Xylene** | | |  |
| ER+/PR+ |  |  |  |
| Model-01 | Age | 1.45 | 0.88-2.44 |
| Model-02 | Model-01+ education | 1.36 | 0.82-2.31 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.37 | 0.81-2.37 |
| Model-08 | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 1.4 | 0.84-2.39 |
| Model-10 | Age + education + age first full term pregnancy + OC use duration + family history | 1.39 | 0.83-2.37 |
| **Avg Concentration Exposure to Xylene** | | |  |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.51 | 0.91-2.57 |
| Model-02 | Model-01+ education | 1.43 | 0.86-2.43 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.42 | 0.84-2.47 |
| Model-08 | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 1.48 | 0.88-2.53 |
| Model-10 | Age + education + age first full term pregnancy + OC use duration + family history | 1.46 | 0.88-2.5 |
| **Avg Concentration Exposure to Xylene** | | |  |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.74 | 0.62-3.75 |
| Model-02 | Model-01+ education | 1.61 | 0.58-3.49 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.68 | 0.6-3.78 |
| Model-08 | Age + education + oral contraceptive use duration + family history + NO2 land use regression | 1.79 | 0.64-3.93 |
| Model-10 | Age + education + age first full term pregnancy + OC use duration + family history | 1.84 | 0.66-4.06 |

Chlorinated Alkanes

|  |  |  |  |
| --- | --- | --- | --- |
| Chlorinated Alkanes exposure duration 5 years before interview | | | |
| **Duration Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.03 | 0.99-1.09 |
| Model-02 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.03 | 0.99-1.08 |
| Model-03 | Age + cbfcumwks | 1.04 | 1-1.09 |
| Model-08 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.04 | 0.98-1.11 |
| Model-10 | | | |
| Chlorinated Alkanes exposure before 36 years duration | | | |
| **Duration Exposure to Chlorinated Alkanes** | | | |
| Model-01 | Age | 1.08 | 0.99-1.23 |
| Model-02 | Model-01+ education | 1.08 | 0.98-1.23 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.07 | 0.97-1.22 |
| Model-08 | Age + cbfcumwks | 1.09 | 0.99-1.24 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.09 | 0.97-1.26 |
| Chlorinated Alkanes exposure before 36 years | | | |
| **Avg Concentration Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.67 | 0.82-3.93 |
| Model-02 | Model-01+ education | 1.63 | 0.8-3.89 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.6 | 0.77-3.87 |
| Model-08 | Age + cbfcumwks | 1.74 | 0.85-4.18 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.57 | 0.67-4.17 |

|  |  |  |  |
| --- | --- | --- | --- |
| ER-/PR- |  |  |  |
| **Ever/Never Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 2.52 | 0.36-11.24 |
| Model-02: close backdoor paths | Model-01+ education | 2.38 | 0.34-10.70 |
| Model-03: known risk factors | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 3.9 | 0.51-20.49 |
| Model-08: Model-07- covariates not associated with solvents (change in OR 5%) but not age | Age + cbfcumwks | 2.87 | 0.4-13.39 |
| Model-10: Model-09- covariates not associated with solvents (change in OR 5%) but not age | Age + MAH + cbfcumwks + Chlorinated Alkenes | 6.94 | 0.62-82.95 |
| **ER-/PR+** | No exposed cases. |  |  |
| **ER+/PR-** | No exposed cases. |  |  |
| **Ever/Never Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 5.06 | 1.26-18.34 |
| Model-02 | Model-01+ education | 4.88 | 1.21-17.77 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 5.02 | 1.13-20.49 |
| Model-08 | Age + cbfcumwks | 5.66 | 1.36-21.77 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 5.93 | 1.03-40.93 |
| **ER+/PR+** |  |  |  |
| **Ever/Never Exposure to Chlorinated Alkanes** | | | |
| Model-01 | Age | 3 | 1.2-8.52 |
| Model-02 | Model-01+ education | 3 | 1.20-8.53 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.93 | 1.14-8.5 |
| Model-08 | Age + cbfcumwks | 3.11 | 1.24-8.87 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 2.54 | 0.84-8.61 |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| **Ever/Never Exposure to Chlorinated Alkanes** | | | |
| Model-01 | Age | 3.37 | 1.39-9.4 |
| Model-02 | Model-01+ education | 3.37 | 1.39-9.41 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 3.44 | 1.38-9.81 |
| Model-08 | Age + cbfcumwks | 3.5 | 1.44-9.81 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 2.92 | 1-9.73 |
|  |  |  |  |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| **Ever/Never Exposure to Chlorinated Alkanes** | | | |
| Model-01 | Age | 2.07 | 0.11-12.67 |
| Model-02 | Model-01+ education | 1.96 | 0.10-12.06 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.82 | 0.09-13.13 |
| Model-08 | Age + cbfcumwks | 2.4 | 0.12-15.12 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.97 | 0.08-21.28 |
| **ER negative/PR negative/HER-2 positive** | | | HER2 Overexpressed |
| **Ever/Never Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 4.08 | 0.21-26.29 |
| Model-02 | Model-01+ education | 3.99 | 0.20-25.84 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 6.95 | 0.25-80.43 |
| Model-08 | Age + cbfcumwks | 3.69 | 0.18-26.59 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 9.18 | 0.35-149.35 |
| **ER negative/PR negative/HER-2 negative** | | | Triple Negative |
| **Ever/Never Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.85 | 0.1-11.19 |
| Model-02 | Model-01+ education | 1.64 | 0.09-10.00 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.47 | 0.12-18.01 |
| Model-08 | Age + cbfcumwks | 2.16 | 0.11-13.61 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 3.29 | 0.1-67.5 |
| **Average Concentration (1, 2, 3)** | | |  |
| ER-/PR- |  |  |  |
| **Avg Concentration Exposure to Chlorinated Alkanes** | | | |
| Model-01 | Age | 1.89 | 0.32-7 |
| Model-02 | Model-01+ education | 1.79 | 0.3-6.64 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.3 | 0.38-9.87 |
| Model-08 | Age + cbfcumwks | 2.05 | 0.34-7.82 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 4.03 | 0.46-32.98 |
| ER-/PR+ | No exposed cases. |  |  |
| ER+/PR- | No exposed cases. |  |  |
| **Avg Concentration Exposure to Chlorinated Alkanes** | | | |
| Model-01 | Age | 3.57 | 1.2-10.58 |
| Model-02 | Model-01+ education | 3.35 | 1.11-10.23 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 3.39 | 1.09-10.83 |
| Model-08 | Age + cbfcumwks | 3.77 | 1.25-11.69 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 3.59 | 0.92-17.38 |
| **ER+/PR+** |  |  |  |
| **Avg Concentration Exposure to Chlorinated Alkanes** | | | |
| Model-01 | Age | 2.41 | 1.21-5.68 |
| Model-02 | Model-01+ education | 2.41 | 1.2-5.68 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.4 | 1.18-5.68 |
| Model-08 | Age + cbfcumwks | 2.47 | 1.23-5.86 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.84 | 0.79-4.89 |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| **Avg Concentration Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 2.63 | 1.33-6.15 |
| Model-02 | Model-01+ education | 2.62 | 1.33-6.17 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.68 | 1.33-6.36 |
| Model-08 | Age + cbfcumwks | 2.69 | 1.36-6.35 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 2.05 | 0.9-5.41 |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| **Avg Concentration Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.61 | 0.1-7.52 |
| Model-02 | Model-01+ education | 1.51 | 0.09-7.1 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.44 | 0.08-7.3 |
| Model-08 | Age + cbfcumwks | 1.77 | 0.11-8.39 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.43 | 0.08-11.14 |

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| ER-/PR- |  |  |  |
| **Duration of Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.02 | 0.92-1.09 |
| Model-02 | Model-01+ education | 1.02 | 0.92-1.09 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.03 | 0.93-1.11 |
| Model-08 | Age + cbfcumwks | 1.03 | 0.93-1.11 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.04 | 0.93-1.14 |
| ER-/PR+ | No exposed cases. |  |  |
| ER+/PR- |  |  |  |
| **Duration of Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.03 | 0.94-1.1 |
| Model-02 | Model-01+ education | 1.02 | 0.93-1.09 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.01 | 0.92-1.09 |
| Model-08 | Age + cbfcumwks | 1.04 | 0.94-1.12 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.06 | 0.96-1.16 |
| **ER+/PR+** |  |  |  |
| **Duration of Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.04 | 1-1.09 |
| Model-02 | Model-01+ education | 1.04 | 1-1.09 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.03 | 0.99-1.08 |
| Model-08 | Age + cbfcumwks | 1.04 | 1-1.09 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.03 | 0.97-1.09 |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| **Duration of Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.04 | 1-1.09 |
| Model-02 | Model-01+ education | 1.03 | 0.99-1.09 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.03 | 0.99-1.08 |
| Model-08 | Age + cbfcumwks | 1.04 | 1-1.09 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.03 | 0.98-1.1 |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| **Duration of Exposure to Chlorinated Alkanes** | | | |
| Model-01 | Age | 1.04 | 0.95-1.11 |
| Model-02 | Model-01+ education | 1.04 | 0.94-1.11 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.04 | 0.94-1.11 |
| Model-08 | Age + cbfcumwks | 1.05 | 0.95-1.12 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.04 | 0.94-1.14 |

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| --- | --- | --- | --- |
| ER-/PR- |  |  |  |
| **Avg Frequency Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.19 | 0.9-1.58 |
| Model-02 | Model-01+ education | 1.17 | 0.89-1.55 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.23 | 0.92-1.64 |
| Model-08 | Age + cbfcumwks | 1.2 | 0.9-1.59 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.75 | 0.98-6.16 |
| **ER-/PR+** | No exposed cases. |  |  |
| **ER+/PR-** |  |  |  |
| **Avg Frequency Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.31 | 0.95-1.84 |
| Model-02 | Model-01+ education | 1.27 | 0.93-1.81 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.29 | 0.94-1.81 |
| Model-08 | Age + cbfcumwks | 1.31 | 0.95-1.87 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.28 | 0.93-1.84 |
| **ER+/PR+** |  |  |  |
| **Avg Frequency Exposure to Chlorinated Alkanes** | | | |
| Model-01 | Age | 1.22 | 1.03-1.64 |
| Model-02 | Model-01+ education | 1.22 | 1.03-1.65 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.19 | 1.02-1.61 |
| Model-08 | Age + cbfcumwks | 1.23 | 1.03-1.66 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.22 | 1.02-1.64 |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| **Avg Frequency Exposure to Chlorinated Alkanes** | | | |
| Model-01 | Age | 1.26 | 1.04-1.69 |
| Model-02 | Model-01+ education | 1.25 | 1.04-1.69 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.23 | 1.03-1.68 |
| Model-08 | Age + cbfcumwks | 1.26 | 1.04-1.72 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.24 | 1.02-1.69 |
|  |  |  |  |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| **Avg Frequency Exposure to Chlorinated Alkanes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.19 | 0.7-1.72 |
| Model-02 | Model-01+ education | 1.17 | 0.68-1.69 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.15 | 0.66-1.69 |
| Model-08 | Age + cbfcumwks | 1.2 | 0.71-1.73 |
| Model-10 | Age + MAH + cbfcumwks + Chlorinated Alkenes | 1.21 | 0.7-1.8 |

Chlorinated Alkenes

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| --- | --- | --- | --- |
| Sensitivity analysis: Duration 5 years before interview date | | | |
| Chlorinated Alkenes exposure duration 5 years before interview | | | |
| **Duration Exposure to Chlorinated Alkenes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.02 | 0.97-1.08 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.01 | 0.96-1.07 |
| Model-08 | Age + education | 1.02 | 0.97-1.07 |
| Model-10 | Age + education + Chlorinated Alkanes | 0.99 | 0.92-1.05 |
| Sensitivity analysis: exposure before 36 years | | | |
| Chlorinated Alkenes exposure before 36 years duration | | | |
| **Duration Exposure to Chlorinated Alkenes** | | | |
| Model-01 | Age | 1.04 | 0.95-1.17 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.03 | 0.94-1.16 |
| Model-08 | Age + education | 1.03 | 0.94-1.15 |
| Model-10 | Age + education + Chlorinated Alkanes | 0.98 | 0.86-1.12 |

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| ER-/PR- |  |  |  |
| **Ever/Never Exposure to Chlorinated Alkenes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 0.77 | 0.04-4.29 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 0.84 | 0.04-4.92 |
| Model-08 | Age + education | 0.72 | 0.04-4.03 |
| Model-10 | Age + education + Chlorinated Alkanes | 0.27 | 0.01-2.62 |
| **ER-/PR+** |  |  |  |
| No exposed cases. |  |  |  |
| **ER+/PR-** |  |  |  |
| **Ever/Never Exposure to Chlorinated Alkenes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.55 | 0.23-6.33 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.45 | 0.18-7.01 |
| Model-08 | Age + education | 1.38 | 0.2-5.7 |
| Model-10 | Age + education + Chlorinated Alkanes | 0.5 | 0.05-2.85 |
| **ER+/PR+** |  |  |  |
| **Ever/Never Exposure to Chlorinated Alkenes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.89 | 0.82-4.61 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.79 | 0.75-4.47 |
| Model-08 | Age + education | 1.75 | 0.76-4.28 |
| Model-10 | Age + education + Chlorinated Alkanes | 1.03 | 0.36-2.9 |
| **Luminal A: ER positive and/or PR positive/HER-2 negative** | | |  |
| **Ever/Never Exposure to Chlorinated Alkenes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.92 | 0.84-4.64 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.75 | 0.74-4.38 |
| Model-08 | Age + education | 1.75 | 0.76-4.25 |
| Model-10 | Age + education + Chlorinated Alkanes | 0.93 | 0.33-2.6 |
| **Luminal B: ER positive and/or PR positive/HER-2 positive** | | |  |
| **Ever/Never Exposure to Chlorinated Alkenes** | | | |
| Model-01 | Age | 1.32 | 0.07-7.43 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.36 | 0.07-8.66 |
| Model-08 | Age + education | 1.22 | 0.06-6.89 |
| Model-10 | Age + education + Chlorinated Alkanes | 0.88 | 0.04-6.99 |
| **HER2 Overexpressed: ER negative/PR negative/HER-2 positive** | | |  |
| No exposed cases. |  |  |  |
| **ER negative/PR negative/HER-2 negative** | | | Triple Negative |
| **Ever/Never Exposure to Chlorinated Alkenes** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.12 | 0.06-6.28 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.2 | 0.06-7.43 |
| Model-08 | Age + education | 1.04 | 0.05-5.85 |
| Model-10 | Age + education + Chlorinated Alkanes | 0.68 | 0.02-6.79 |

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| Toluene exposure duration excluded 5 years before interview | | | |
| **Duration Exposure to Toluene** | | |  |
| Model-01 | Age | 1.08 | 1.02-1.16 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.08 | 1.02-1.16 |
| Model-08 | Age | 1.08 | 1.02-1.16 |
| Model-10 | Age + Chlorinated Alkanes | 1.08 | 1.02-1.16 |
| Sensitivity analysis: exposure before 36 years | | | |
| Toluene exposure before 36 years duration | | | |
| **Duration Exposure to Toluene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.22 | 1.04-1.52 |
| Model-02 | Model-01+ education | 1.21 | 1.03-1.51 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.22 | 1.04-1.53 |
| Model-08 | Age | 1.22 | 1.04-1.52 |
| Model-10 | Age + Chlorinated Alkanes | 1.22 | 1.04-1.52 |
| Toluene exposure before 36 years | | |  |
| **Avg Concentration Exposure to Toluene** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.43 | 0.84-2.58 |
| Model-02: close backdoor paths | Model-01+ education | 1.39 | 0.81-2.53 |
| Model-03: known risk factors | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.42 | 0.82-2.61 |
| Model-08: Model-07- covariates not associated with solvents (change in OR 5%) but not age | Age | 1.43 | 0.84-2.58 |
| Model-10: Model-09- covariates not associated with solvents (change in OR 5%) but not age | Age + Chlorinated Alkanes | 1.42 | 0.83-2.55 |

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| --- | --- | --- | --- |
| ER-/PR- |  |  |  |
| **Ever/Never Exposure to Toluene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 0.93 | 0.15-3.4 |
| Model-02: close backdoor paths | Model-01+ education | 0.91 | 0.14-3.36 |
| Model-03: known risk factors | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.14 | 0.17-4.25 |
| Model-08: Model-07- covariates not associated with solvents (change in OR 5%) but not age | Age | 0.93 | 0.15-3.4 |
| Model-10: Model-09- covariates not associated with solvents (change in OR 5%) but not age | Age + Chlorinated Alkanes | 0.95 | 0.15-3.45 |
| **ER-/PR+** | No exposed cases. |  |  |
| **ER+/PR-** |  |  |  |
| **Ever/Never Exposure to Toluene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 4.2 | 1.63-10.12 |
| Model-02 | Model-01+ education | 4.34 | 1.67-10.56 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 4.98 | 1.84-12.78 |
| Model-08 | Age | 4.2 | 1.63-10.12 |
| Model-10 | Age + Chlorinated Alkanes | 3.57 | 1.32-8.88 |
| **ER+/PR+** |  |  |  |
| **Ever/Never Exposure to Toluene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 2 | 1.04-3.97 |
| Model-02 | Model-01+ education | 1.93 | 1.00-3.85 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.03 | 1.04-4.09 |
| Model-08 | Age | 2 | 1.04-3.97 |
| Model-10 | Age + Chlorinated Alkanes | 1.92 | 0.99-3.81 |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| **Ever/Never Exposure to Toluene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 2.31 | 1.23-4.49 |
| Model-02 | Model-01+ education | 2.25 | 1.20-4.41 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.43 | 1.27-4.81 |
| Model-08 | Age | 2.31 | 1.23-4.49 |
| Model-10 | Age + Chlorinated Alkanes | 2.14 | 1.13-4.2 |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| **Ever/Never Exposure to Toluene** | | |  |
| Model-01 | Age | 3.12 | 0.86-9.1 |
| Model-02 | Model-01+ education | 3.12 | 0.85-9.18 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 3.6 | 0.95-11.14 |
| Model-08 | Age | 3.12 | 0.86-9.1 |
| Model-10 | Age + Chlorinated Alkanes | 3.04 | 0.83-8.93 |
| **ER negative/PR negative/HER-2 positive** | | | HER2 Overexpressed |
| **Ever/Never Exposure to Toluene** | | |  |
| Model-01 | Age | 1.47 | 0.08-7.75 |
| Model-02 | Model-01+ education | 1.47 | 0.08-7.77 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.78 | 0.09-10.83 |
| Model-08 | Age | 1.47 | 0.08-7.75 |
| Model-10 | Age + Chlorinated Alkanes | 1.51 | 0.08-8.01 |
| **ER negative/PR negative/HER-2 negative** | | | Triple Negative |
| **Ever/Never Exposure to Toluene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 0.68 | 0.04-3.47 |
| Model-02 | Model-01+ education | 0.67 | 0.04-3.48 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 0.82 | 0.04-4.37 |
| Model-08 | Age | 0.68 | 0.04-3.47 |
| Model-10 | Age + Chlorinated Alkanes | 0.69 | 0.04-3.5 |
| **Average Concentration (1, 2, 3)** | | |  |
| ER-/PR- |  |  |  |
| **Avg Concentration Exposure to Toluene** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.05 | 0.29-2.48 |
| Model-02 | Model-01+ education | 1.02 | 0.29-2.4 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.19 | 0.33-2.85 |
| Model-08 | Age | 1.05 | 0.29-2.48 |
| Model-10 | Age + Chlorinated Alkanes | 1.06 | 0.3-2.5 |
| **ER-/PR+** | No exposed cases. |  |  |
| **ER+/PR-** |  |  |  |
| **Avg Concentration Exposure to Toluene** | | | |
| Model-01 | Age | 2.5 | 1.26-4.76 |
| Model-02 | Model-01+ education | 2.43 | 1.22-4.68 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.65 | 1.3-5.24 |
| Model-08 | Age | 2.5 | 1.26-4.76 |
| Model-10 | Age + Chlorinated Alkanes | 2.2 | 1.05-4.3 |
| **ER+/PR+** |  |  |  |
| **Avg Concentration Exposure to Toluene** | | | |
| Model-01 | Age | 1.6 | 1-2.65 |
| Model-02 | Model-01+ education | 1.55 | 0.96-2.58 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.55 | 0.95-2.62 |
| Model-08 | Age | 1.6 | 1-2.65 |
| Model-10 | Age + Chlorinated Alkanes | 1.57 | 0.98-2.6 |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| **Avg Concentration Exposure to Toluene** | | | |
| Model-01 | Age | 1.75 | 1.1-2.89 |
| Model-02 | Model-01+ education | 1.7 | 1.06-2.83 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.72 | 1.06-2.92 |
| Model-08 | Age | 1.75 | 1.1-2.89 |
| Model-10 | Age + Chlorinated Alkanes | 1.66 | 1.03-2.75 |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| **Avg Concentration Exposure to Toluene** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 2.25 | 0.97-4.6 |
| Model-02 | Model-01+ education | 2.14 | 0.92-4.41 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.3 | 0.96-4.92 |
| Model-08 | Age | 2.25 | 0.97-4.6 |
| Model-10 | Age + Chlorinated Alkanes | 2.24 | 0.96-4.58 |

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| --- | --- | --- | --- |
| ER-/PR- |  |  |  |
| **Duration of Exposure to Toluene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.02 | 0.86-1.13 |
| Model-02 | Model-01+ education | 1.02 | 0.86-1.13 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.03 | 0.87-1.14 |
| Model-08 | Age | 1.02 | 0.86-1.13 |
| Model-10 | Age + Chlorinated Alkanes | 1.02 | 0.86-1.13 |
| **ER-/PR+** | No exposed cases. |  |  |
| **ER+/PR-** |  |  |  |
| **Duration of Exposure to Toluene** | | |  |
| Model-01 | Age | 1.09 | 1.02-1.18 |
| Model-02 | Model-01+ education | 1.1 | 1.03-1.19 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.11 | 1.03-1.2 |
| Model-08 | Age | 1.09 | 1.02-1.18 |
| Model-10 | Age + Chlorinated Alkanes | 1.09 | 1.02-1.18 |
| ER+/PR+ |  |  |  |
| **Duration of Exposure to Toluene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.07 | 1.01-1.14 |
| Model-02 | Model-01+ education | 1.06 | 1.01-1.14 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.06 | 1.01-1.14 |
| Model-08 | Age | 1.07 | 1.01-1.14 |
| Model-10 | Age + Chlorinated Alkanes | 1.06 | 1.01-1.14 |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| **Duration of Exposure to Toluene** | | |  |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.08 | 1.02-1.15 |
| Model-02 | Model-01+ education | 1.08 | 1.02-1.15 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.08 | 1.02-1.15 |
| Model-08 | Age | 1.08 | 1.02-1.15 |
| Model-10 | Age + Chlorinated Alkanes | 1.08 | 1.02-1.15 |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| **Duration of Exposure to Toluene** | | |  |
| Model-01 | Age | 1.06 | 0.92-1.17 |
| Model-02 | Model-01+ education | 1.06 | 0.92-1.18 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.07 | 0.92-1.18 |
| Model-08 | Age | 1.06 | 0.92-1.17 |
| Model-10 | Age + Chlorinated Alkanes | 1.06 | 0.92-1.17 |

|  |  |  |  |
| --- | --- | --- | --- |
| ER-/PR- |  |  |  |
| **Average Frequency Exposure to Toluene** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.01 | 0.91-1.08 |
| Model-02 | Model-01+ education | 1.01 | 0.9-1.07 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.01 | 0.91-1.08 |
| Model-08 | Age | 1.01 | 0.91-1.08 |
| Model-10 | Age + Chlorinated Alkanes | 1.01 | 0.91-1.08 |
| **ER-/PR+** | No exposed cases. |  |  |
| **ER+/PR-** |  |  |  |
| **Average Frequency Exposure to Toluene** | | | |
| Model-01 | Age | 1.05 | 0.99-1.11 |
| Model-02 | Model-01+ education | 1.04 | 0.98-1.1 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.04 | 0.98-1.11 |
| Model-08 | Age | 1.05 | 0.99-1.11 |
| Model-10 | Age + Chlorinated Alkanes | 1.04 | 0.98-1.1 |
| **ER+/PR+** |  |  |  |
| **Average Frequency Exposure to Toluene** | | | |
| Model-01 | Age | 1.04 | 1-1.08 |
| Model-02 | Model-01+ education | 1.03 | 1-1.08 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.04 | 1-1.08 |
| Model-08 | Age | 1.04 | 1-1.08 |
| Model-10 | Age + Chlorinated Alkanes | 1.04 | 1-1.08 |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| **Average Frequency Exposure to Toluene** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.04 | 1.01-1.09 |
| Model-02 | Model-01+ education | 1.04 | 1-1.08 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.04 | 1-1.09 |
| Model-08 | Age | 1.04 | 1.01-1.09 |
| Model-10 | Age + Chlorinated Alkanes | 1.04 | 1-1.08 |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| **Average Frequency Exposure to Toluene** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.06 | 1-1.11 |
| Model-02 | Model-01+ education | 1.05 | 1-1.11 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.05 | 0.99-1.11 |
| Model-08 | Age | 1.06 | 1-1.11 |
| Model-10 | Age + Chlorinated Alkanes | 1.06 | 1-1.11 |

Perchloroethylene

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| --- | --- | --- | --- |
| Perchloroethylene  exposure duration 5 years before interview | | | |
| **Duration Exposure to Perchloroethylene** | | | |
| Model-01 | Age | 0.99 | 0.89-1.1 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 0.99 | 0.89-1.11 |
| Model-08 | Age + education + OC duration | 0.99 | 0.89-1.1 |
| Model-10 | Age + Carbon Tetrachloride + education + OC duration + Chlorinated Alkanes | 1.01 | 0.9-1.15 |
| Sensitivity analysis: exposure before 36 years | | | |
| Perchloroethylene  exposure before 36 years duration | | | |
| **Duration Exposure to Perchloroethylene** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 0.99 | 0.83-1.17 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1 | 0.84-1.19 |
| Model-08 | Age + education + OC duration | 0.98 | 0.82-1.17 |
| Model-10 | Age + Carbon Tetrachloride + education + OC duration + Chlorinated Alkanes | 0.99 | 0.83-1.19 |

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| **ER-/PR-** | No exposed cases. |  |  |
| **ER-/PR+** | No exposed cases. |  |  |
| **ER+/PR-** |  |  |  |
| **Ever/Never Exposure to Perchloroethylene** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 2.32 | 0.11-18.68 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 3.3 | 0.15-28.94 |
| Model-08 | Age + education + OC duration | 2.42 | 0.12-19.62 |
| Model-10 | Age + Carbon Tetrachloride + education + OC duration + Chlorinated Alkanes | 1.81 | 0.07-22.52 |
| **ER+/PR+** |  |  |  |
| **Ever/Never Exposure to Perchloroethylene** | | | |
| Model-01 | Age | 2.52 | 0.66-12.04 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.85 | 0.71-14.1 |
| Model-08 | Age + education + OC duration | 2.44 | 0.63-11.75 |
| Model-10 | Age + Carbon Tetrachloride + education + OC duration + Chlorinated Alkanes | 3.56 | 0.81-24.57 |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| **Ever/Never Exposure to Perchloroethylene** | | | |
| Model-01 | Age | 2.43 | 0.63-11.64 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.69 | 0.67-13.44 |
| Model-08 | Age + education + OC duration | 2.39 | 0.62-11.52 |
| Model-10 | Age + Carbon Tetrachloride + education + OC duration + Chlorinated Alkanes | 3.12 | 0.69-21.84 |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| **Ever/Never Exposure to Perchloroethylene** | | | |
| Model-01 | Age | 3.8 | 0.18-30.77 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 4.63 | 0.2-45.16 |
| Model-08 | Age + education + OC duration | 3.82 | 0.18-31.3 |
| Model-10 | Age + Carbon Tetrachloride + education + OC duration + Chlorinated Alkanes | 5.44 | 0.25-59.23 |
| **ER negative/PR negative/HER-2 positive** | | | HER2 Overexpressed |
| No exposed cases. |  |  |  |
| **ER negative/PR negative/HER-2 negative:**  **NO exposed cases.** | | | Triple Negative |

|  |  |  |  |
| --- | --- | --- | --- |
| Reactive Metabolites exposure duration 5 years before interview | | | |
| **Duration Exposure to Reactive Metabolites** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.03 | 1-1.07 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.03 | 1-1.07 |
| Model-08 | Age | 1.03 | 1-1.07 |
| Sensitivity analysis: exposure before 36 years | | | |
| Reactive Metabolites exposure before 36 years duration | | | |
| **Duration Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.06 | 1-1.15 |
| Model-02 | Model-01+ education | 1.06 | 0.99-1.14 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.06 | 0.99-1.15 |
| Model-08 | Age | 1.06 | 1-1.15 |
| Reactive Metabolites exposure before 36 years | | | |
| **Avg Concentration Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.39 | 0.94-2.12 |
| Model-02 | Model-01+ education | 1.34 | 0.9-2.05 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.38 | 0.92-2.13 |
| Model-08 | Age | 1.39 | 0.94-2.12 |

|  |  |  |  |
| --- | --- | --- | --- |
| ER-/PR- |  |  |  |
| **Metric 1:Ever/Never Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.01 | 0.29-2.66 |
| Model-02 | Model-01+ education | 0.98 | 0.28-2.60 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.17 | 0.33-3.21 |
| Model-08 | Age | 1.01 | 0.29-2.66 |
| **ER-/PR+** | No exposed cases. |  |  |
| **ER+/PR-** |  |  |  |
| **Metric 1:Ever/Never Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 2.79 | 1.23-5.86 |
| Model-02 | Model-01+ education | 2.76 | 1.21-5.83 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.94 | 1.23-6.61 |
| Model-08 | Age | 2.79 | 1.23-5.86 |
| **ER+/PR+** |  |  |  |
| **Metric 1:Ever/Never Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.79 | 1.09-2.99 |
| Model-02 | Model-01+ education | 1.74 | 1.05-2.91 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.84 | 1.1-3.12 |
| Model-08 | Age | 1.79 | 1.09-2.99 |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| **Metric 1:Ever/Never Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.96 | 1.21-3.23 |
| Model-02 | Model-01+ education | 1.92 | 1.18-3.17 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.07 | 1.25-3.48 |
| Model-08 | Age | 1.96 | 1.21-3.23 |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| **Metric 1:Ever/Never Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 2.11 | 0.69-5.33 |
| Model-02 | Model-01+ education | 2.05 | 0.67-5.21 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.19 | 0.69-5.81 |
| Model-08 | Age | 2.11 | 0.69-5.33 |
| **ER negative/PR negative/HER-2 positive** | | | HER2 Overexpressed |
| **Metric 1:Ever/Never Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.64 | 0.26-5.97 |
| Model-02 | Model-01+ education | 1.64 | 0.25-5.95 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.91 | 0.27-7.95 |
| Model-08 | Age | 1.64 | 0.26-5.97 |
| **ER negative/PR negative/HER-2 negative** | | | Triple Negative |
| **Metric 1:Ever/Never Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 0.72 | 0.11-2.51 |
| Model-02 | Model-01+ education | 0.7 | 0.11-2.44 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 0.8 | 0.12-2.9 |
| Model-08 | Age | 0.72 | 0.11-2.51 |
| **Average Concentration of Exposure (1,2, 3)** | | | |
| ER-/PR- |  |  |  |
| **Avg Concentration Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.04 | 0.39-2.18 |
| Model-02 | Model-01+ education | 1 | 0.38-2.1 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.16 | 0.43-2.47 |
| Model-08 | Age | 1.04 | 0.39-2.18 |
| **ER-/PR+** | No exposed cases. |  |  |
| **ER+/PR-** |  |  |  |
| **Avg Concentration Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 2.1 | 1.12-3.73 |
| Model-02 | Model-01+ education | 2.02 | 1.07-3.6 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 2.08 | 1.07-3.82 |
| Model-08 | Age | 2.1 | 1.12-3.73 |
| **ER+/PR+** |  |  |  |
| **Avg Concentration Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.61 | 1.11-2.38 |
| Model-02 | Model-01+ education | 1.58 | 1.09-2.33 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.61 | 1.1-2.41 |
| Model-08 | Age | 1.61 | 1.11-2.38 |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| **Avg Concentration Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.7 | 1.18-2.51 |
| Model-02 | Model-01+ education | 1.67 | 1.15-2.46 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.72 | 1.17-2.58 |
| Model-08 | Age | 1.7 | 1.18-2.51 |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| **Avg Concentration Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.9 | 0.85-3.69 |
| Model-02 | Model-01+ education | 1.8 | 0.81-3.51 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.87 | 0.83-3.75 |
| Model-08 | Age | 1.9 | 0.85-3.69 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Duration of Exposure** | |  |  |
|  |  |  |  |
| ER-/PR- |  |  |  |
| **Duration of Exposure Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1 | 0.92-1.06 |
| Model-02 | Model-01+ education | 1 | 0.92-1.06 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.01 | 0.93-1.07 |
| Model-08 | Age | 1 | 0.92-1.06 |
| **ER-/PR+** | No cases exposed. |  |  |
| **ER+/PR-** |  |  |  |
| **Duration of Exposure Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.04 | 0.99-1.09 |
| Model-02 | Model-01+ education | 1.04 | 0.99-1.09 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.04 | 0.99-1.09 |
| Model-08 | Age | 1.04 | 0.99-1.09 |
| **ER+/PR+** |  |  |  |
| **Duration of Exposure Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.03 | 1-1.06 |
| Model-02 | Model-01+ education | 1.03 | 1-1.06 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.03 | 1-1.06 |
| Model-08 | Age | 1.03 | 1-1.06 |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| **Duration of Exposure Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.03 | 1.01-1.07 |
| Model-02 | Model-01+ education | 1.03 | 1-1.07 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.03 | 1-1.07 |
| Model-08 | Age | 1.03 | 1.01-1.07 |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| **Duration of Exposure Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.03 | 0.96-1.08 |
| Model-02 | Model-01+ education | 1.03 | 0.96-1.08 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.03 | 0.95-1.08 |
| Model-08 | Age | 1.03 | 0.96-1.08 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Avg Frequency of Exposure** | | |  |
|  |  |  |  |
| ER-/PR- |  |  |  |
| **Avg Frequency Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1 | 0.93-1.05 |
| Model-02 | Model-01+ education | 1 | 0.92-1.05 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1 | 0.93-1.05 |
| Model-08 | Age | 1 | 0.93-1.05 |
| ER-/PR+ | No exposed cases. |  |  |
| ER+/PR- |  |  |  |
| **Avg Frequency Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.03 | 0.99-1.07 |
| Model-02 | Model-01+ education | 1.02 | 0.98-1.06 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.03 | 0.98-1.07 |
| Model-08 | Age | 1.03 | 0.99-1.07 |
| ER+/PR+ |  |  |  |
| **Avg Frequency Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.03 | 1-1.06 |
| Model-02 | Model-01+ education | 1.03 | 1-1.06 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.03 | 1-1.06 |
| Model-08 | Age | 1.03 | 1-1.06 |
| **ER positive and/or PR positive/HER-2 negative** | | | Luminal A |
| **Avg Frequency Exposure to Reactive Metabolites** | | | |
| Model-01 | Age | 1.03 | 1-1.06 |
| Model-02 | Model-01+ education | 1.03 | 1-1.06 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.03 | 1-1.06 |
| Model-08 | Age | 1.03 | 1-1.06 |
| **ER positive and/or PR positive/HER-2 positive** | | | Luminal B |
| **Avg Frequency Exposure to Reactive Metabolites** | | | |
| Model Names | Covariates | OR | 95% CI |
| Model-01 | Age | 1.04 | 0.99-1.08 |
| Model-02 | Model-01+ education | 1.04 | 0.99-1.08 |
| Model-03 | Model-02+family history + ethnicity + age at bilateral oophorectomy + age at menarche + age at first full-term pregnancy + total duration of breast feeding + oral contraceptive use + duration of hormone replacement therapy + alcohol drinking (before 60, before 40) + smoking (pack years) +postmenopausal body mass index from 1 year prior | 1.04 | 0.99-1.08 |
| Model-08 | Age | 1.04 | 0.99-1.08 |