**Appendix E**

**Confounding Assessment Results**

Appendix E. Odds ratios and 95% confidence intervals for associations between NDMA and TCE in maternal drinking water (during the year before birth) and childhood cancer following adjustment for confounding variables.

| **NDMA** | **Crude** |  | **Adjusted** |
| --- | --- | --- | --- |
|  | **ORa** |  | **95% CIb** |  | **ORa**  | **95% CIb** |
| **All Cancers** |  |
|  | Oxygen after Birth (n=77) |
| NDMA Low vs. Zero | 1.4 |   | (0.3 - 7.7) |  | 1.1 | (0.1 - 9.0) |
| NDMA High vs. Zero | 2.9 |   | (0.6 - 15) |  | 3.9 | (0.7 - 23) |
|  | Incubator at Birth (n=83) |
| NDMA Low vs. Zero | 1.2 |   | (0.2 - 6.1) |  | 0.9 | (0.2 - 4.9) |
| NDMA High vs. Zero | 2.4 |   | (0.5 - 11) |  | 2.5 | (0.5 - 11) |
|   | Low Birth Weight (n=85) |
| NDMA Low vs. Zero | 1.2 |   | (0.2 - 6.4) |  | 1.7 | (0.3 - 9.6) |
| NDMA High vs. Zero | 2.6 |   | (0.6 - 11) |  | 3.4 | (0.7 - 17) |
|  | Adverse Birth Event (n=80) |
| NDMA Low vs. Zero | 1.5 |   | (0.3 - 7.8) |  | 1.0 | (0.1 - 7.2) |
| NDMA High vs. Zero | 3.0 |   | (0.6 - 15) |  | 3.6 | (0.7 - 20) |
|   | Household Plastics/Synth./Resins Exposure (n=90) |
| NDMA Low vs. Zero | 1.4 |   | (0.3 - 6.6) |  | 1.2 | (0.2 - 5.8) |
| NDMA High vs. Zero | 2.9 |   | (0.8 - 10) |  | 3.3† | (0.9 - 12) |
|  | Household Metals/Alloys/Solder Exposure (n=91) |
| NDMA Low vs. Zero | 1.4 |   | (0.3 - 6.7) |  | 1.1 | (0.2 - 5.6) |
| NDMA High vs. Zero | 2.9† |   | (0.8 - 10) |  | 2.8 | (0.8 - 9.8) |
|  | Household Exhaust Fumes Exposure (n=92) |
| NDMA Low vs. Zero | 1.3 |  | (0.3 - 6.2) |  | 1.2 | (0.3 - 6.1) |
| NDMA High vs. Zero | 3.0† |  | (0.8 - 11) |  | 2.8 | (0.8 - 10) |
|  | Household Herbicide Exposure (n=89) |
| NDMA Low vs. Zero | 1.3 |  | (0.3 - 6.1) |  | 1.2 | (0.2 - 5.8) |
| NDMA High vs. Zero | 3.1† |  | (0.9 - 11) |  | 2.9 | (0.8 - 10) |
|  | Prenatal Ultrasound (n=85) |
| NDMA Low vs. Zero | 1.2 |   | (0.2 – 6.0) |  | 1.0 | (0.2 - 5.1) |
| NDMA High vs. Zero | 3.3 |   | (0.8 - 13)† |  | 2.9 | (0.7 - 12) |
|  | Childhood Antihistamine Use (n=91) |
| NDMA Low vs. Zero | 1.3 |  | (0.3 – 6.1) |  | 1.2 | (0.2 - 5.9) |
| NDMA High vs. Zero | 2.9 |  | (0.8 - 10)† |  | 2.7 | (0.7 - 9.5) |
|  | Occupational Ionizing Radiation, Maternal (n=91) |
| NDMA Low vs. Zero | 1.3 |   | (0.3 - 6.0) |  | 1.5 | (0.3 - 7.3) |
| NDMA High vs. Zero | 3.0† |   | (0.8 - 10) |  | 2.7 | (0.7 - 9.8) |
| **Leukemia/Lymphoma** |  |
|  | Oxygen after Birth (n=47) |
| NDMA Low vs. Zero | 2.0 |   | (0.2 - 17) |  | 1.4 | (0.1 - 22) |
| NDMA High vs. Zero | 11.0 |   | (0.8 - 145)† |  | 15.8 | (0.7 - 342)† |
|  | Incubator at Birth (n=49) |
| NDMA Low vs. Zero | 1.4 |   | (0.2 - 9.9) |  | 0.5 | (0.3 - 6.6) |
| NDMA High vs. Zero | 5.1 |   | (0.7 - 38) |  | 4.6 | (0.5 - 40) |
|  | Low Birth Weight (n=51) |
| NDMA Low vs. Zero | 1.4 |   | (0.2 - 10) |  | NC | NC NC |
| NDMA High vs. Zero | 5.4 |   | (0.8 - 39)† |  | NC | NC NC |
|  | Adverse Birth Event (n=47) |
| NDMA Low vs. Zero | 2.1 |   | (0.2 - 17) |  | NC | NC NC |
| NDMA High vs. Zero | 11.0 |   | (0.8 - 145)† |  | NC | NC NC |
|   | Household Plastics/Synth./Glues Exposure (n=54) |
| NDMA Low vs. Zero | 1.4 |   | (0.2 - 9.3) |  | 0.8 | (0.1 - 7.1) |
| NDMA High vs. Zero | 4.6 |   | (1.0 - 22)† |  | 16.3 | (1.7 - 154)‡ |
|  | Household Metals/Alloys/Solder Exposure (n=55) |
| NDMA Low vs. Zero | 1.4 |   | (0.2 - 9.5) |  | NC | NC NC |
| NDMA High vs. Zero | 4.8 |   | (1.0 – 23)‡ |  | NC | NC NC |
|  | Household Exhaust Fumes Exposure (n=56) |
| NDMA Low vs. Zero | 1.3 |   | (0.2 – 8.7) |  | 1.1 | (0.1 – 8.0) |
| NDMA High vs. Zero | 4.9 |   | (1.0 – 24)‡ |  | 4.3 | (0.9 – 21)† |
|  | Household Herbicide Exposure (n=56) |
| NDMA Low vs. Zero | 1.3 |   | (0.2 – 8.7) |  | 1.0 | (0.2 - 5.1) |
| NDMA High vs. Zero | 4.9 |   | (1.0 – 24)‡ |  | 2.9 | (0.7 - 12)† |
|  | Childhood Antihistamine Use (n=55) |
| NDMA Low vs. Zero | 1.3 |   | (0.2 – 8.5) |  | 1.1 | (0.2 - 7.0) |
| NDMA High vs. Zero | 4.7 |   | (1.0 – 23)† |  | 4.8 | (1.0 – 24)† |
|  | Prenatal Ultrasound (n=51) |
| NDMA Low vs. Zero | 1.3 |   | (0.2 – 9.2) |  | NC | NC NC |
| NDMA High vs. Zero | 7.3 |   | (1.1 – 47)‡ |  | NC | NC NC |
|  | Occupational Ionizing Radiation, Maternal (n=55) |
| NDMA Low vs. Zero | 1.3 |   | (0.2 - 8.3) |  | 1.5 | (0.2 - 11) |
| NDMA High vs. Zero | 4.9 |   | (1.1 - 23)‡ |  | 4.7 | (0.9 – 24)† |

\*Note: Sample sizes vary between models due to missing covariate data for some children.

aOR = Matched Odds Ratio

b95% CI = 95% Confidence Interval

†Marginally significant association with the odds of childhood cancer (*p* <0.10)

‡Statistically significant association with the odds of childhood cancer (*p* <0.05)

NC = Not calculated due to insufficient data (i.e. few discordant pairs)

|  |  |  |  |
| --- | --- | --- | --- |
| NDMA | Crude |  | Adjusted |
|  | ORa |   | 95% CIb |  | ORa  | 95% CIb |
| **All Cancers** |  |
|  | Oxygen after Birth (n=77) |
| NDMA Ever vs. Never | 2.0 |   | (0.5 - 8.4) |  | 1.1 | (0.1 - 9.0) |
|  | Incubator at Birth (n=83) |
| NDMA Ever vs. Never | 1.7 |   | (0.5 – 6.7) |  | 1.6 | (0.4 – 6.1) |
|   | Low Birth Weight (n=85) |
| NDMA Ever vs. Never | 1.8 |   | (0.5 – 6.8) |  | 2.4 | (0.6 – 10) |
|   | Adverse Birth Event (n=80) |
| NDMA Ever vs. Never | 2.1 |   | (0.5 – 8.7) |  | 2.1 | (0.4 – 9.8) |
|   | Household Plastics/Synth./Glues Exposure (n=90) |
| NDMA Ever vs. Never | 2.2 |   | (0.7 – 6.7) |  | 2.3 | (0.7 – 6.9) |
|   | Household Metals/Alloys/Solder Exposure (n=91) |
| NDMA Ever vs. Never | 2.2 |   | (0.7 – 7.1) |  | 2.0 | (0.6 – 6.4) |
|   | Household Exhaust Fumes Exposure (n=92) |
| NDMA Ever vs. Never | 2.2 |   | (0.7 – 7.0) |  | 2.1 | (0.6 – 6.7) |
|   | Household Herbicide Exposure (n=89) |
| NDMA Ever vs. Never | 2.2 |   | (0.7 – 7.0) |  | 2.0 | (0.6 – 6.7) |
|  | Prenatal Ultrasound (n=85) |
| NDMA Ever vs. Never | 2.1 |   | (0.6 – 7.4) |  | 1.8 | (0.5 – 6.7) |
|  | Childhood Antihistamine Use (n=91) |
| NDMA Ever vs. Never | 2.1 |   | (0.7 – 6.8) |  | 2.0 | (0.6 – 6.5) |
|  | Occupational Ionizing Radiation, Maternal (n=91) |
| NDMA Ever vs. Never | 2.2 |   | (0.7 – 6.8) |  | 2.2 | (0.7 – 7.0) |
|  |  |  |  |  |  |  |
| **Leukemia/Lymphoma** |  |
|  | Oxygen after Birth (n=47) |
| NDMA Ever vs. Never | 3.6 |   | (0.6 – 23) |  | 3.5 | (0.4 – 28) |
|   | Incubator at Birth (n=49) |
| NDMA Ever vs. Never | 2.5 |   | (0.5 – 13) |  | 1.7 | (0.3 – 11) |
|   | Low Birth Weight (n=51) |
| NDMA Ever vs. Never | 2.6 |   | (0.5 – 13) |  | NC | NC NC |
|   | Adverse Birth Event (n=47) |
| NDMA Ever vs. Never | 3.6 |   | (0.6 – 23) |  | 1.6 | (0.2 – 17) |
|   | Household Plastics/Synth./Glues Exposure (n=54) |
| NDMA Ever vs. Never | 2.9 |   | (0.8 – 11) |  | 3.7† | (0.9 – 15) |
|   | Household Metals/Alloys/Solder Exposure (n=55) |
| NDMA Ever vs. Never | 3.0 |   | (0.8 – 11) |  | NC | NC NC |
|   | Household Exhaust Fumes Exposure (n=56) |
| NDMA Ever vs. Never | 2.9 |   | (0.6 – 11) |  | 2.5 | (0.6 – 10) |
|   | Household Herbicide Exposure (n=56) |
| NDMA Ever vs. Never | 2.9 |   | (0.8 – 11) |  | 2.6 | (0.7 – 10) |
|  | Prenatal Ultrasound (n=51) |
| NDMA Ever vs. Never | 3.1 |   | (0.7 – 14) |  | NC | NC NC |
|  | Childhood Antihistamine Use (n=55) |
| NDMA Ever vs. Never | 2.8 |   | (0.7 – 11) |  | 2.9 | (0.7 – 11) |
|  | Occupational Ionizing Radiation, Maternal (n=55) |
| NDMA Ever vs. Never | 2.8 |   | (0.7 – 11) |  | 3.0 | (0.7 – 13) |

\*Note: Sample sizes vary between models due to missing covariate data for some children.

aOR = Matched Odds Ratio

b95% CI = 95% Confidence Interval

†Marginally significant association with the odds of childhood cancer (*p* <0.10)

‡Statistically significant association with the odds of childhood cancer (*p* <0.05)

|  |  |  |  |
| --- | --- | --- | --- |
| **TCE** | **Crude** |  | **Adjusted** |
|  | **ORa** |  | **95% CIb** |  | **ORa**  | **95% CIb** |
| **All Cancers** |  |
|  | Oxygen after Birth (n=) |
| TCE Ever vs. Never | 2.0 |   | (0.3 – 16) |  | 2.0 | (0.2 - 22) |
|  | Incubator at Birth (n=) |
| TCE Ever vs. Never | 1.5 |   | (0.2 – 9.4) |  | 1.5 | (0.2 – 10) |
|  | Low Birth Weight (n=) |
| TCE Ever vs. Never | 1.7 |   | (0.3 – 9.7) |  | 2.0 | (0.3 – 16) |
|  | Adverse Birth Event (n=) |
| TCE Ever vs. Never | 2.0 |   | (0.3 – 16) |  | 2.8 | (0.3 – 30) |
|   | Household Plastics/Synth./Glues Exposure (n=) |
| TCE Ever vs. Never | 2.2 |   | (0.4 – 11) |  | 2.2 | (0.5 – 11) |
|  | Household Metals/Alloys/Solder Exposure (n=) |
| TCE Ever vs. Never | 2.3 |   | (0.4 – 12) |  | 1.9 | (0.4 – 10) |
|  | Household Exhaust Fumes Exposure (n=) |
| TCE Ever vs. Never | 2.3 |   | (0.4 – 12) |  | 1.9 | (0.4 – 10) |
|  | Household Herbicide Exposure (n=) |
| TCE Ever vs. Never | 2.1 |   | (0.4 – 11) |  | 2.0 | (0.4 – 11) |
|  | Prenatal Ultrasound (n=) |
| TCE Ever vs. Never | 2.3 |   | (0.4 – 12) |  | 1.9 | (0.4 – 10) |
|  | Childhood Antihistamine Use (n=) |
| TCE Ever vs. Never | 2.2 |   | (0.4 – 11) |  | 2.2 | (0.4 - 12) |
|  | Occupational Ionizing Radiation, Maternal (n=) |
| TCE Ever vs. Never | 2.3 |   | (0.4 – 12) |  | 2.4 | (0.4 – 13) |