

**Supplemental Table 1: Spearman Correlation Coefficients for Disinfection By-Product Metrics**

	<b>DBP9</b>	<b>THM4</b>	<b>HAA5</b>	<b>THMBr</b>	<b>TCM</b>	<b>BDCM</b>	<b>TCAA</b>	<b>DCAA</b>	<b>DBCM</b>	<b>TBM</b>	<b>MCAA</b>	<b>DBAA</b>	<b>MBAA</b>
<b>DBP9</b>	1.00												
<b>THM4</b>	0.95	1.00											
<b>HAA5</b>	0.88	0.72	1.00										
<b>THMBr</b>	0.45	0.54	0.28	1.00									
<b>TCM</b>	0.94	0.97	0.74	0.37	1.00								
<b>BDCM</b>	0.57	0.66	0.39	0.96	0.50	1.00							
<b>TCAA</b>	0.88	0.75	0.95	0.28	0.77	0.40	1.00						
<b>DCAA</b>	0.82	0.69	0.92	0.25	0.72	0.35	0.83	1.00					
<b>DBCM</b>	0.10	0.19	0.01	0.86	0.04	0.74	0.00	-0.03	1.00				
<b>TBM</b>	-0.25	-0.19	-0.27	0.37	-0.29	0.19	-0.30	-0.28	0.54	1.00			
<b>MCAA</b>	0.46	0.37	0.55	0.30	0.37	0.32	0.43	0.54	0.15	-0.12	1.00		
<b>DBAA</b>	-0.10	-0.08	-0.06	0.26	-0.14	0.16	-0.14	-0.02	0.33	0.50	0.00	1.00	
<b>MBAA</b>	0.04	0.03	0.07	0.06	0.02	0.07	0.06	0.04	0.06	0.05	0.03	0.14	1.00

Note: DBP9 = sum of chloroform (TCM), bromodichloromethane (BDCM), dibromochloromethane (DBCM), bromoform (TBM), monochloroacetic acid (MCAA), dichloroacetic acid (DCAA), trichloroacetic acid (TCAA), monobromoacetic acid (MBAA), and dibromoacetic acid (DBAA); HAA5 = sum of MCAA, DCAA, TCAA, MBAA, and DBAA; THM4 = sum of TCM, BDCM, DBCM, and TBM; THMBr = sum of BDCM, DBCM, and TBM

**Supplemental Table 2: Limb Reduction Defects without multi-DBP adjustment**

Reduction of upper or lower limbs (RULL)			Reduction of upper limbs (RUL)		
DBP metrics (µg/L)	n <sup>a</sup>	aOR (95% CI)	DBP metrics (µg/L)	n <sup>a</sup>	aOR (95% CI)
<b>THM4</b>					
0-26.4	17/173	Ref <sup>b</sup>	0-32.3	19/173	Ref <sup>f</sup>
>26.4-41.6	17/175	2.96 (0.89, 9.92) <sup>b</sup>	>32.3-51.9	15/175	1.52 (0.56, 4.12) <sup>f</sup>
>41.6-59.8	14/179	2.18 (0.63, 7.54) <sup>b</sup>	>51.9-92.5	19/180	2.30 (0.78, 6.75) <sup>f</sup>
>59.8-93.2	21/170	4.10 (1.17, 14.31) <sup>b</sup>	--	--	--
<b>THMBr</b>					
0-5.2	25/231	Ref <sup>c</sup>	0-5.2	19/174	Ref <sup>g</sup>
>5.2-8.0	24/233	1.30 (0.49, 2.80) <sup>c</sup>	>5.2-8.0	20/169	1.83 (0.68, 4.91) <sup>g</sup>
>8.0-39.1	19/233	0.97 (0.42, 2.20) <sup>c</sup>	>8.0-35.2	14/183	1.31 (0.48, 3.55) <sup>g</sup>
<b>Chloroform</b>					
0-16.0	17/173	Ref <sup>b</sup>	0-23.6	19/173	Ref <sup>f</sup>
>16.0-33.9	16/175	2.29 (0.70, 7.53) <sup>b</sup>	>23.6-42.7	15/177	1.43 (0.49, 4.18) <sup>f</sup>
>33.9-50.1	15/176	2.42 (0.71, 8.23) <sup>b</sup>	>42.7-79.2	19/178	2.17 (0.70, 6.71) <sup>f</sup>
>50.1-79.2	20/173	3.20 (0.91, 11.24) <sup>b</sup>	--	--	--
<b>Bromodichloromethane (BDCM)</b>					
0-4.7	23/229	Ref <sup>c</sup>	0-4.7	18/174	Ref <sup>g</sup>
>4.7-6.8	23/231	1.83 (0.75, 4.47) <sup>c</sup>	>4.7-7.0	19/171	2.90 (1.04, 8.07) <sup>g</sup>
>6.8-34.6	22/237	1.45 (0.64, 3.29) <sup>c</sup>	>7.0-34.6	16/181	1.56 (0.58, 4.25) <sup>g</sup>
<b>Dibromochloromethane (DBCM)</b>					
0-1.5	54/522	Ref <sup>c</sup>	0-1.7	42/392	Ref <sup>g</sup>
>1.5-14.0	14/175	0.77 (0.35, 1.67) <sup>c</sup>	>1.7-13.3	11/134	1.03 (0.41, 2.58) <sup>g</sup>
<b>Bromoform</b>					
0	59/583	Ref <sup>c</sup>	0	45/431	Ref <sup>g</sup>
>0-6.8	9/114	0.91 (0.39, 2.12) <sup>c</sup>	>0-6.8	8/95	1.13 (0.44, 2.89) <sup>g</sup>
<b>HAA5</b>					
0-10.5	17/172	Ref <sup>d</sup>	0-14.8	21/171	Ref <sup>h</sup>
>10.5-21.6	16/177	2.31 (0.70, 7.64) <sup>d</sup>	>14.8-27.2	18/174	0.95 (0.36, 2.49) <sup>h</sup>
>21.6-30.6	20/174	3.05 (0.89, 10.43) <sup>d</sup>	>27.2-102.0	14/185	0.77 (0.27, 2.16) <sup>h</sup>

>30.6-102.0	16/174	2.40 (0.67, 8.66) <sup>d</sup>	--	--	--
<b>Trichloroacetic acid (TCAA)</b>					
0-4.2	16/172	Ref <sup>d</sup>	0-6.8	17/174	Ref <sup>h</sup>
>4.2-10.3	17/173	3.02 (0.82, 11.11) <sup>d</sup>	>6.8-14.2	19/171	2.32 (0.78, 6.91) <sup>h</sup>
>10.3-16.1	19/172	3.62 (0.94, 13.99) <sup>d</sup>	>14.2-61.7	15/181	1.49 (0.47, 4.79) <sup>h</sup>
>16.1-61.7	15/174	2.45 (0.62, 9.74) <sup>d</sup>	--	--	--
<b>Dichloroacetic acid (DCAA)</b>					
0-4.9	17/172	Ref <sup>d</sup>	0-7.0	20/167	Ref <sup>h</sup>
>4.9-10.2	18/173	2.06 (0.64, 6.70) <sup>d</sup>	>7.0-11.9	17/176	1.08 (0.39, 3.05) <sup>h</sup>
>10.2-13.6	15/173	1.83 (0.52, 6.46) <sup>d</sup>	>11.9-33.3	14/183	0.81 (0.27, 2.42) <sup>h</sup>
>13.6-33.3	17/173	2.06 (0.58, 7.26) <sup>d</sup>	--	--	--
<b>Monochloroacetic acid (MCAA)</b>					
0	40/344	Ref <sup>d</sup>	0	32/268	Ref <sup>h</sup>
>0-69.5	27/347	0.65 (0.36, 1.19) <sup>d</sup>	>0-69.5	19/258	0.66 (0.33, 1.33) <sup>h</sup>
<b>Dibromoacetic acid (DBAA)</b>					
0	50/516	Ref <sup>d</sup>	0	39/396	Ref <sup>h</sup>
>0-19.7	17/175	1.15 (0.61, 2.18) <sup>d</sup>	>0-19.7	12/130	1.16 (0.54, 2.49) <sup>h</sup>
<b>DBP9<sup>e</sup></b>					
0-39.4	17/173	Ref <sup>e</sup>	0-39.0	14/131	Ref <sup>i</sup>
>39.4-65.0	17/175	2.63 (0.80, 8.68) <sup>e</sup>	>39.0-63.1	13/130	2.62 (0.65, 10.61) <sup>i</sup>
>65.0-90.5	19/175	2.93 (0.88, 9.70) <sup>e</sup>	>63.1-89.3	15/129	3.48 (0.84, 14.35) <sup>i</sup>
>90.5-162.5	16/175	2.50 (0.69, 9.14) <sup>e</sup>	>89.3-162.5	11/133	1.99 (0.43, 9.16) <sup>i</sup>

Note: CI = confidence interval; DBP9 = sum of chloroform, BDCM, DBCM, bromoform, MCAA, DCAA, TCAA, MBAA, and DBAA; HAA5 = sum of MCAA, DCAA, TCAA, MBAA, and DBAA; THM4 = sum of chloroform, BDCM, DBCM, and bromoform; THMBr = sum of BDCM, DBCM, and bromoform. NA=not applicable.

<sup>a</sup>The numbers represent the case and control distributions across exposure groups prior to modeling.

<sup>b</sup>RULL & THM4/chloroform: Models adjusted for maternal race, number of prenatal care visits, ZIP code income, and water source and treatment type.

<sup>c</sup>RULL & THMBr/BDCM/DBCM/bromoform: Models adjusted for maternal race, number of prenatal care visits ZIP code income, and water source and treatment type.

<sup>d</sup>RULL & HAA5/TCAA/DCAA/MCAA/DBAA/MBAA: Models adjusted for maternal race, prenatal care source of payment, number of prenatal care visits, ZIP code income, and water source and treatment type.

<sup>e</sup>RULL & DBP9: Models adjusted for maternal education, maternal race, ZIP code income, and water source and treatment type.

<sup>f</sup>RUL & THM4/chloroform: Models adjusted for maternal race, trimester prenatal care began, number of prenatal care visits, prenatal care payment source, maternal health index (includes chronic or gestational diabetes, chronic or pregnancy-related hypertension, hydramnios/oligohydramnios, eclampsia, and cardiac disease), ZIP code income, and water source and treatment type.

<sup>g</sup>RUL & THMBR/BDCM/DBCM/bromoform: Models adjusted for trimester prenatal care began, number of prenatal care visits, maternal parity, maternal health index (includes chronic or gestational diabetes, chronic or pregnancy-related hypertension, hydramnios/oligohydramnios, eclampsia, and cardiac disease), ZIP code income, and water source and treatment type.

<sup>h</sup>RUL & HAA5/TCAA/DCAA/MCAA/DBAA/MBAA: Models adjusted for number of maternal marital status, prenatal care visits, prenatal care payment source, maternal health index (includes chronic or gestational diabetes, chronic or pregnancy-related hypertension, hydramnios/oligohydramnios, eclampsia, and cardiac disease), ZIP code income, and water source and treatment type.

<sup>i</sup>RUL & DBP9: Models adjusted for maternal marital status, maternal race, trimester prenatal care began, number of prenatal care visits, prenatal care payment source, maternal weight gain during pregnancy, maternal health index (includes chronic or gestational diabetes, chronic or pregnancy-related hypertension, hydramnios/oligohydramnios, eclampsia, and cardiac disease), ZIP code income, and water source and treatment type.

**Supplemental Table 3: Abdominal Wall and Diaphragm Defects without multi-DBP adjustment**

Gastroschisis or Omphalocele (GSOM)			Diaphragmatic Hernia (DH)		
DBP quantile (µg/L)	Cases (n) <sup>a</sup>	aOR (95% CI)	DBP quantile (µg/L)	Cases (n) <sup>a</sup>	aOR (95% CI)
<b>THM4</b>					
0.00-35.3	26/216	Ref <sup>b</sup>	0-32.8	10/134	Ref <sup>f</sup>
>35.3-59.4	24/221	1.44 (0.61, 3.42) <sup>b</sup>	>32.8-51.4	15/133	1.47 (0.50, 4.35) <sup>f</sup>
>59.4-140.9	15/218	0.55 (0.20, 1.50) <sup>b</sup>	>51.4-92.2	15/138	1.46 (0.46, 4.64) <sup>f</sup>
<b>THMBr</b>					
0.00-5.3	26/217	Ref <sup>c</sup>	0-4.9	9/134	Ref <sup>g</sup>
>5.3-8.5	21/218	0.75 (0.34, 1.67) <sup>c</sup>	>4.9-8.8	21/136	2.78 (0.75, 10.26) <sup>g</sup>
>8.5-35.3	18/218	0.72 (0.31, 1.69) <sup>c</sup>	>8.8-33.1	10/135	1.13 (0.28, 4.58) <sup>g</sup>
<b>Chloroform</b>					
0-26.9	22/219	Ref <sup>b</sup>	0-24.0	7/134	Ref <sup>f</sup>
>26.9-48.9	24/215	1.48 (0.59, 3.68) <sup>b</sup>	>24.0-41.8	17/133	3.90 (1.03, 14.82) <sup>f</sup>
>48.9-105.6	19/219	1.03 (0.34, 3.06) <sup>b</sup>	>41.8-81.4	16/138	3.40 (0.90, 12.82) <sup>f</sup>
<b>Bromodichloromethane (BDCM)</b>					
0-5.0	23/217	Ref <sup>c</sup>	0-4.7	9/135	Ref <sup>g</sup>
>5.0-7.6	24/218	1.13 (0.48, 2.62) <sup>c</sup>	>4.7-7.8	17/133	2.49 (0.77, 8.07) <sup>g</sup>
>7.6-28.9	18/218	0.88 (0.37, 2.07) <sup>c</sup>	>7.8-32.5	14/137	1.61 (0.48, 5.43) <sup>g</sup>
<b>Dibromochloromethane (DBCM)</b>					
0-1.4	49/489	Ref <sup>c</sup>	0-1.6	33/304	Ref <sup>g</sup>
>1.4-13.2	16/164	1.53 (0.69, 3.38) <sup>c</sup>	>1.6-14.0	7/101	0.42 (0.15, 1.21)
<b>Bromoform</b>					
0	59/562	Ref <sup>c</sup>	N/I <sup>j</sup>	--	--
>0-5.2	6/91	0.96 (0.35, 2.62) <sup>c</sup>	N/I <sup>j</sup>	--	--
<b>HAA5</b>					
0-17.9	24/220	Ref <sup>d</sup>	0-16.6	10/134	Ref <sup>h</sup>
>17.9-28.3	17/218	0.67 (0.26, 1.72) <sup>d</sup>	>16.6-29.4	16/135	1.29 (0.42, 3.99) <sup>h</sup>
>28.3-89.7	24/217	0.91 (0.37, 2.23) <sup>d</sup>	>29.4-75.4	14/137	1.18 (0.37, 3.71) <sup>h</sup>
<b>Trichloroacetic acid (TCAA)</b>					
0-8.7	23/217	Ref <sup>d</sup>	0-7.9	9/133	Ref <sup>h</sup>

>8.7-14.7	19/214	0.78 (0.30, 2.01) <sup>d</sup>	>7.9-15.1	20/137	1.86 (0.62, 5.60) <sup>h</sup>
>14.7-42.2	23/215	1.01 (0.39, 2.54) <sup>d</sup>	>15.1-46.7	11/132	1.00 (0.30, 3.41) <sup>h</sup>
<b>Dichloroacetic acid (DCAA)</b>					
0-8.0	22/215	Ref <sup>d</sup>	0-7.6	10/134	Ref <sup>h</sup>
>8.0-12.4	17/215	0.63 (0.24, 1.67) <sup>d</sup>	>7.6-12.8	16/134	1.35 (0.43, 4.26) <sup>h</sup>
>12.4-34.8	26/216	1.01 (0.39, 2.63) <sup>d</sup>	>12.8-33.3	14/134	1.04 (0.32, 3.38) <sup>h</sup>
<b>Monochloroacetic acid (MCAA)</b>					
0	33/306	Ref <sup>d</sup>	0	17/186	Ref <sup>h</sup>
>0-56.5	32/340	0.78 (0.41, 1.48) <sup>d</sup>	>0-31.7	23/216	1.02 (0.45, 2.30) <sup>h</sup>
<b>Dibromoacetic acid (DBAA)</b>					
0	51/495	Ref <sup>d</sup>	0	33/314	Ref <sup>h</sup>
>0-7.9	14/151	0.96 (0.44, 2.12) <sup>d</sup>	>0-14.7	7/88	0.56 (0.22, 1.46) <sup>h</sup>
<b>DBP9</b>					
0-46.6	17/165	Ref <sup>e</sup>	0-51.9	7/138	Ref <sup>i</sup>
>46.6-73.6	15/163	1.00 (0.25, 4.07) <sup>e</sup>	>51.9-82.9	19/130	5.14 (1.37, 19.30) <sup>i</sup>
>73.6-95.1	21/161	1.53 (0.40, 5.86) <sup>e</sup>	>82.9-165.8	14/137	2.98 (0.78, 11.44) <sup>i</sup>
>95.1-180.2	12/167	1.04 (0.26, 4.18) <sup>e</sup>	--	--	--

Note: CI = confidence interval; DBP9 = sum of chloroform, BDCM, DBCM, bromoform, MCAA, DCAA, TCAA, MBAA, and DBAA; HAA5 = sum of MCAA, DCAA, TCAA, MBAA, and DBAA; THM4 = sum of chloroform, BDCM, DBCM, and bromoform; THMBr = sum of BDCM, DBCM, and bromoform. NA=not applicable.

<sup>a</sup>The numbers represent the case and control distributions across exposure groups prior to modeling.

<sup>b</sup>GSOM & THM4/chloroform: Models adjusted for maternal age, maternal education, maternal marital status, maternal race, trimester prenatal care began, number of prenatal care visits, prenatal care payment source, maternal parity, any maternal tobacco smoking, complications during delivery, maternal health index (includes chronic or gestational diabetes, chronic or pregnancy-related hypertension, hydramnios/oligohydramnios, eclampsia, and cardiac disease), ZIP code income, and water source and treatment type.

<sup>c</sup>GSOM & THMBr/BDCM/DBCM/bromoform: Models adjusted for maternal education, trimester prenatal care began, number of prenatal care visits, prenatal care payment source, child's sex, maternal anemia, induced labor, any maternal tobacco smoking, maternal health index (includes chronic or gestational diabetes, chronic or pregnancy-related hypertension, hydramnios/oligohydramnios, eclampsia, and cardiac disease), and water source and treatment type.

<sup>d</sup>GSOM & HAA5/TCAA/DCAA/MCAA/DBAA/MBAA: Models adjusted for maternal age, maternal education, maternal marital status, maternal race, trimester prenatal care began, number of prenatal care visits, prenatal care payment source, any maternal tobacco smoking, maternal parity, maternal health index (includes chronic or gestational diabetes, chronic or pregnancy-related hypertension, hydramnios/oligohydramnios, eclampsia, and cardiac disease), ZIP code income, and water source and treatment type.

<sup>e</sup>GSOM & DBP9: Models adjusted for maternal age, maternal education, maternal marital status, trimester prenatal care began, prenatal care payment source, maternal parity, any maternal tobacco smoking, maternal health index (includes chronic or gestational diabetes, chronic or pregnancy-related hypertension, hydramnios/oligohydramnios, eclampsia, and cardiac disease), census tract income, and water source and treatment type.

<sup>f</sup>DH & THM4/chloroform: Models adjusted for maternal race, trimester prenatal care began, number of prenatal care visits, induced labor, maternal health index (includes chronic or gestational diabetes, chronic or pregnancy-related hypertension, hydramnios/oligohydramnios, eclampsia, and cardiac disease), town-level income, and water source and treatment type.

<sup>g</sup>DH & THMBr/BDCM/DBCM/bromoform: Models adjusted for maternal race, trimester prenatal care began, number of prenatal care visits, maternal parity, induced labor, maternal health index (includes chronic or gestational diabetes, chronic or pregnancy-related hypertension, hydramnios/oligohydramnios, eclampsia, and cardiac disease), town-level income, and water source and treatment type.

<sup>h</sup>DH & HAA5/TCAA/DCAA/MCAA/DBAA/MBAA: Models adjusted for maternal age, maternal race, number of prenatal care visits, induced labor, maternal health index (includes chronic or gestational diabetes, chronic or pregnancy-related hypertension, hydramnios/oligohydramnios, eclampsia, and cardiac disease), town-level income, and water source and treatment type.

<sup>i</sup>DH & DBP9: Models adjusted for maternal age, maternal race, trimester prenatal care began, number of prenatal care visits, induced labor, maternal health index (includes chronic or gestational diabetes, chronic or pregnancy-related hypertension, hydramnios/oligohydramnios, eclampsia, and cardiac disease), town-level income, and water source and treatment type.

<sup>j</sup>Not included due to sparse data (i.e. cell counts <5).