

**Supplementary Table S1.** Summary of physic-chemical information of 7 selected DBPs

Groups	Abb.	Compounds	Molecular formula	Molecular weight	CAS No.	Log K <sub>ow</sub>
Trihalomethanes (THMs)	TCM <sup>a</sup>	chloroform	CHCl <sub>3</sub>	119.38	67-66-3	1.97
	BDCM	bromodichloromethane	CHBrCl <sub>2</sub>	163.83	75-27-4	2.10
	DBCM	dibromochloromethane	CHBr <sub>2</sub> Cl	208.28	124-48-1	2.24
	TBM	bromoform	CHBr <sub>3</sub>	252.73	75-25-2	2.38
	DCM	dichloromethane	CH <sub>2</sub> Cl <sub>2</sub>	84.93	75-09-2	1.25
Haloacetic acids (HAAs)	DCA	dichloroacetic acid	CHCl <sub>2</sub> COOH	128.94	79-43-6	0.92
	TCA	trichloroacetic acid	CCl <sub>3</sub> COOH	163.38	76-03-9	1.33

**Note.** <sup>a</sup>PubChem. Chloroform. Accessed May 9, 2023. <https://pubchem.ncbi.nlm.nih.gov/compound/6212>. TCM, chloroform; BDCM, bromodichloromethane; DBCM, dibromochloromethane; TBM, bromoform; DCM, dichloromethane; DCA, dichloroacetic acid; TCA, trichloroacetic acid.

**Supplementary Table S2.** Exposure parameters of different genders in Shanghai

Exposure parameters	Male	Female
<b>The surface area of skin (m<sup>2</sup>)</b>		
Head	0.13	0.12
Torso	0.65	0.58
Arm	0.26	0.23
Hands	0.08	0.07
Legs	0.50	0.45
Feet	0.11	0.10
<b>Short-term respiratory rate (l/min)</b>		
Light physical activity	9.6	7.6
Physical activity	25.6	20.3
Heavy physical activity	38.4	30.4

**Supplementary Table S3.** The spray parameters of the three large amusement parks

Spray parameters	Integrated Park A	Water Park B	Amusement Park C
Source	tap water	tap water	tap water
Injection rate (L/h)	3.8	4	4.2
Spray height (m)	1.5 <sup>-3</sup>	2.5 <sup>-3</sup>	2 <sup>-3</sup>
Coverage area (m <sup>2</sup> )	30 <sup>-60</sup>	60	50