

Biofiltration and disinfection codetermine the bacterial antibiotic resistome in drinking water: A review and meta-analysis

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Table S1. The selected publications reporting bacterial antibiotic resistance in drinking water treatment.

Date	Article Name	Authors	Journal
2009	Prevalence of antibiotic resistance in drinking water treatment and distribution systems	Xi et al.	Applied and Environmental Microbiology
2013	Metagenomic insights into chlorination effects on microbial antibiotic resistance in drinking water	Shi et al.	Water Research
2013	Microbiological contamination and resistance genes in biofilms occurring during the drinking water treatment process	Farkas et al.	Science of The Total Environment
2013	Metagenomic analysis reveals significant changes of microbial compositions and protective functions during drinking water treatment	Chao et al.	Scientific Reports
2014	Prevalence of sulfonamide and tetracycline resistance genes in drinking water treatment plants in the Yangtze River Delta, China	Guo et al.	Science of The Total Environment
2015	Bacterial Community Shift Drives Antibiotic Resistance Promotion during Drinking Water Chlorination	Jia et al.	Environment Science & Technology
2015	Presence of antibiotic resistant bacteria and antibiotic resistance genes in raw source water and treated drinking water	Bergeron et al.	International Biodeterioration & Biodegradation
2015	The drinking water treatment process as a potential source of affecting the bacterial antibiotic resistance	Bai et al.	Science of The Total Environment
2016	Effects of full-scale advanced water treatment on antibiotic resistance genes in the Yangtze Delta area in China	Zhang et al.	FEMS microbiology ecology
2016	High-throughput profiling of antibiotic resistance genes in drinking water treatment plants and distribution systems	Xu et al.	Environmental pollution
2017	Presence of antibiotic resistance genes in raw source water of a drinking water treatment plant in a rural community of USA	Bergeron et al.	International Biodeterioration & Biodegradation

Date	Article Name	Authors	Journal
2018	Metagenomic Characterization of Antibiotic Resistance Genes in Full-Scale Reclaimed Water Distribution Systems and Corresponding Potable Systems	Emily et al.	Environment Science & Technology
2018	Performance of ozonation and biological activated carbon in eliminating sulfonamides and sulfonamide-resistant bacteria: A pilot-scale study	Li et al.	Chemical Engineering Journal
2018	Antibiotic resistome promotion in drinking water during biological activated carbon treatment: Is it influenced by quorum sensing?	Zheng et al.	Science of The Total Environment
2018	Occurrence and removal of sulfonamide antibiotics and antibiotic resistance genes in conventional and advanced drinking water treatment processes	Hu et al.	Journal of hazardous materials
2018	Distribution and abundance of antibiotic resistance genes in sand settling reservoirs and drinking water treatment plants across the Yellow River, China	Lu et al.	Water
2018	Persistence of antibiotic resistance genes and bacterial community changes in drinking water treatment system: From drinking water source to tap water	Su et al.	Science of The Total Environment

Table S2. Data of absolute abundance of ARG extracted from publications

① Absolute abundance of ARG in DWTP1 (copies/l)_Based on qPCR detection (Su et al., 2018)						
Gene copies/l	Source water	Sedimentation	Sand filtration	PAC	GAC	
16s rRNA	4.36E+09	9.81E+09	3.33E+09	5.13E+09	6.37E+09	
sul1	9.88E+08	1.16E+09	4.06E+08	4.06E+08	6.42E+08	
sul2	3.84E+08	4.06E+08	1.14E+08	1.30E+08	2.24E+08	
ermB	6.83E+07	1.05E+08	9.26E+06	1.21E+07	1.20E+08	
tetA	1.18E+07	2.20E+07	6.70E+06	5.25E+06	9.26E+06	
tetM	2.65E+07	3.12E+07	1.64E+06	1.60E+06	3.41E+06	
tetO	2.73E+07	2.14E+07	5.29E+05	6.22E+05	9.85E+05	
tetQ	1.46E+07	1.32E+07	8.37E+05	1.07E+06	1.60E+06	
tetS	1.19E+06	1.48E+06	1.02E+05	1.61E+05	2.06E+05	
tetW	4.68E+07	6.13E+07	2.15E+06	3.32E+06	4.01E+06	
tetX	8.94E+07	1.49E+08	8.47E+07	3.04E+07	1.96E+08	
cfr	1.51E+07	4.01E+06	8.84E+05	9.58E+05	1.64E+06	
cmlA	2.70E+08	4.28E+08	1.90E+08	2.43E+08	3.18E+08	
flexA	4.71E+06	5.69E+06	8.60E+05	1.19E+06	1.64E+06	
flexB	3.83E+05	4.62E+05	1.08E+05	1.80E+05	2.11E+05	
floR	5.31E+08	1.02E+09	6.77E+08	6.25E+08	7.96E+08	
oqxB	6.01E+06	1.15E+07	1.29E+06	1.64E+06	2.21E+06	
qepA	1.80E+05	6.80E+04	0.00E+00	1.53E+05	1.02E+05	
qnrA	3.34E+05	3.63E+04	0.00E+00	0.00E+00	1.41E+05	
qnrB	2.17E+05	1.14E+05	0.00E+00	0.00E+00	1.27E+05	
qnrD	1.40E+06	2.27E+06	0.00E+00	0.00E+00	1.74E+06	
qnrS	3.26E+05	3.53E+05	0.00E+00	6.34E+06	0.00E+00	

② Absolute abundance of ARG in DWTP2 (copies/l)_Based on qPCR detection (Su et al., 2018)						
Gene copies/l	Source water	Sedimentation	Sand filtration	Ozonation	GAC	Chlorination
16s rRNA	9.08E+09	1.14E+09	3.49E+08	1.32E+08	4.17E+08	7.06E+07
sul1	5.61E+08	1.77E+08	4.80E+07	4.40E+07	7.95E+07	0.00E+00
sul2	8.95E+07	1.03E+07	3.06E+06	1.12E+06	1.69E+06	0.00E+00
ermB	7.72E+07	3.76E+06	2.56E+06	1.15E+06	2.56E+06	9.57E+04
tetA	4.24E+06	0.00E+00	0.00E+00	2.70E+05	2.95E+05	0.00E+00
tetM	1.00E+07	1.42E+06	1.19E+06	2.56E+06	3.55E+06	0.00E+00
tetO	1.56E+07	7.17E+05	9.29E+04	8.01E+04	1.54E+05	5.45E+04
tetQ	1.65E+07	1.79E+06	6.32E+04	5.45E+04	6.51E+04	1.10E+04
tetS	3.13E+05	3.49E+04	0.00E+00	0.00E+00	5.14E+04	0.00E+00
tetW	2.43E+07	4.36E+06	4.46E+05	1.26E+06	1.90E+06	3.96E+05
tetX	2.74E+07	3.25E+06	4.21E+05	4.43E+04	8.01E+04	4.99E+04
cfr	1.09E+07	3.34E+06	2.80E+06	8.62E+06	1.23E+07	6.37E+05
cmlA	3.29E+08	3.17E+07	1.56E+07	5.74E+07	7.72E+07	2.41E+06
flexA	5.37E+06	1.74E+06	9.36E+05	0.00E+00	1.08E+06	4.73E+05
flexB	1.46E+06	4.08E+05	4.60E+05	3.52E+05	2.07E+05	8.25E+04
floR	4.99E+08	8.95E+07	3.27E+07	1.47E+07	2.58E+07	4.91E+06
oqxB	4.02E+07	3.65E+06	2.64E+06	1.33E+06	2.34E+06	1.55E+06
qepA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.13E+04	0.00E+00
qnrA	8.75E+04	0.00E+00	0.00E+00	0.00E+00	3.99E+06	4.17E+04
qnrB	4.11E+06	1.73E+05	1.01E+05	1.41E+05	1.89E+05	0.00E+00
qnrD	2.21E+06	2.33E+05	0.00E+00	0.00E+00	6.61E+06	0.00E+00
qnrS	8.82E+05	9.02E+04	0.00E+00	3.04E+05	4.33E+05	0.00E+00

③ Absolute abundance of ARG in DWTP3 (copies/l)_Based on qPCR detection (Zhang et al., 2016)						
Gene copies/l	Source water	Sedimentation	Sand filtration	Ozonation+GAC 1	Ozonation+GAC 2	Chlorination
16s rRNA	4.87E+09	4.78E+09	8.23E+08	1.62E+08	5.02E+07	2.88E+07
tetA	9.01E+06	3.94E+06	6.84E+05	6.44E+03	0.00E+00	6.45E+03
ermB	9.47E+06	7.49E+06	2.96E+05	6.37E+03	5.45E+03	0.00E+00
cml	5.39E+04	3.13E+04	1.13E+04	0.00E+00	0.00E+00	0.00E+00
sulII	4.37E+07	4.17E+07	1.00E+07	2.82E+06	9.28E+05	1.56E+05
blaOXA-1	1.14E+07	7.92E+06	2.15E+06	3.47E+04	0.00E+00	0.00E+00
tetG	1.36E+06	1.31E+06	4.01E+05	3.01E+04	0.00E+00	0.00E+00
strA	2.75E+07	7.41E+06	1.26E+06	3.76E+04	1.49E+04	1.27E+04
blaTEM-1	5.34E+05	3.75E+05	2.10E+05	2.57E+06	2.38E+04	1.82E+04
DfrA	1.00E+07	7.17E+06	2.23E+06	1.34E+05	0.00E+00	0.00E+00

④ Absolute abundance of ARG in DWTP4 (copies/l)_Based on qPCR detection (Zhang et al., 2016)

Gene copies/l	Source water	Sedimentation	Sand filtration	Ozonation+GAC 1	Ozonation+GAC 2	Chlorination
16s rRNA	1.34E+10	9.98E+09	6.07E+09	1.77E+09	1.01E+09	4.02E+08
tetA	1.59E+07	6.91E+06	1.39E+07	4.32E+05	2.82E+05	1.55E+05
ermB	1.09E+06	1.52E+06	9.55E+04	3.22E+04	5.56E+03	0.00E+00
cml	4.79E+05	2.82E+05	1.73E+05	5.99E+04	4.59E+03	1.18E+03
sulII	2.16E+08	1.24E+08	8.29E+07	2.75E+07	6.03E+06	2.77E+06
blaOXA-1	3.52E+06	1.84E+06	1.39E+06	2.47E+05	5.40E+04	1.75E+04
tetG	1.25E+07	6.80E+06	3.90E+06	8.48E+05	1.66E+05	4.35E+04
strA	2.66E+07	1.44E+07	2.71E+06	5.89E+05	2.99E+05	1.27E+05
blaTEM-1	2.14E+06	1.96E+06	5.82E+05	1.95E+05	1.51E+05	2.14E+05
DfItA	1.11E+07	5.87E+06	5.63E+06	1.37E+06	1.42E+05	8.23E+04

⑤ Absolute abundance of ARG in DWTP5 (copies/l)_Based on qPCR detection (Zhang et al., 2016)

Gene copies/l	Source water	Sedimentation	Sand filtration	Ozonation+GAC 1	Ozonation+GAC 2	Chlorination
16s rRNA	1.42E+10	7.50E+09	7.92E+09	1.35E+09	9.34E+08	3.73E+08
tetA	8.06E+07	7.50E+06	3.16E+07	1.11E+06	1.39E+06	9.05E+04
ermB	5.00E+06	2.00E+06	2.79E+05	3.22E+04	2.30E+04	9.40E+03
cml	4.43E+05	1.83E+05	6.70E+05	3.84E+04	2.47E+04	3.94E+03
sulII	3.67E+08	1.15E+08	3.24E+08	4.58E+07	3.78E+07	6.51E+06
blaOXA-1	5.35E+06	7.73E+05	1.83E+07	3.94E+05	5.74E+05	4.40E+04
tetG	2.14E+07	4.97E+06	2.77E+07	1.11E+06	1.05E+06	9.28E+04
strA	3.47E+07	1.08E+07	9.83E+06	5.36E+05	7.41E+05	1.11E+05
blaTEM-1	5.03E+06	1.75E+06	1.04E+06	5.29E+04	6.61E+04	3.26E+04
DfItA	3.65E+07	5.07E+06	4.86E+07	2.64E+06	2.78E+06	1.95E+05

Table S3. Data of ARG removal extracted from publications

① ARG removal in DWTP1 (copies/ml)_Based on qPCR detection Su et al., 2018				
Treatment process	Sedimentation	Sand filtration	PAC	GAC
Description	From source water to sedimentation	From effluent of sedimentation to effluent of sand filter	From effluent of sand filter to effluent of PAC filter	From effluent of sand filter to effluent of GAC filter
16s rRNA	(0.35)	0.47	(0.19)	(0.28)
sul1	(0.07)	0.46	0.00	(0.20)
sul2	(0.02)	0.55	(0.06)	(0.29)
ermB	(0.19)	1.06	(0.12)	(1.11)
tetA	(0.27)	0.52	0.11	(0.14)
tetM	(0.07)	1.28	0.01	(0.32)
tetO	0.11	1.61	(0.07)	(0.27)
tetQ	0.05	1.20	(0.11)	(0.28)
tetS	(0.09)	1.16	(0.20)	(0.30)
tetW	(0.12)	1.45	(0.19)	(0.27)
tetX	(0.22)	0.25	0.45	(0.36)
cfr	0.57	0.66	(0.04)	(0.27)
cmlA	(0.20)	0.35	(0.11)	(0.22)
fexA	(0.08)	0.82	(0.14)	(0.28)
fexB	(0.08)	0.63	(0.22)	(0.29)
floR	(0.28)	0.18	0.04	(0.07)
oqxB	(0.28)	0.95	(0.11)	(0.23)
qepA	0.42	1.83	(2.18)	(2.01)
qnrA	(0.04)	2.56	0.00	(2.15)
qnrB	0.28	2.06	0.00	(2.10)
qnrD	(0.21)	3.36	0.00	(3.24)
qnrS	(0.04)	2.55	(3.80)	0.00

② ARG removal in DWTP2 (copies/ml)_Based on qPCR detection Su et al., 2018					
Treatment process	Sedimentation	Sand filtration	Ozonation	GAC	Chlorination
Description	From source water to sedimentation	From effluent of sedimentation to effluent of sand filter	From effluent of sand filter to effluent of ozonation tank	From effluent of ozonation tank to effluent of GAC filter	From effluent of GAC filter to effluent of chlorination
16s rRNA	0.90	0.51	0.42	(0.50)	0.77
sul1	0.50	0.57	0.04	(0.26)	4.90
sul2	0.94	0.53	0.44	(0.18)	3.23
ermB	1.31	0.17	0.35	(0.35)	1.43
tetA	3.63	0.00	(2.43)	(0.04)	2.47
tetM	0.85	0.08	(0.33)	(0.14)	3.55
tetO	1.34	0.89	0.06	(0.28)	0.45
tetQ	0.96	1.45	0.06	(0.08)	0.77
tetS	0.95	1.54	0.00	(1.71)	1.71
tetW	0.75	0.99	(0.45)	(0.18)	0.68
tetX	0.93	0.89	0.98	(0.26)	0.21
cfr	0.51	0.08	(0.49)	(0.15)	1.29
cmlA	1.02	0.31	(0.57)	(0.13)	1.50
fexA	0.49	0.27	2.97	(3.04)	0.36
fexB	0.55	(0.05)	0.12	0.23	0.40
floR	0.75	0.44	0.35	(0.24)	0.72
oqxB	1.04	0.14	0.30	(0.24)	0.18
qepA	0.00	0.00	0.00	(1.79)	1.79
qnrA	1.94	0.00	0.00	(3.60)	1.98
qnrB	1.38	0.23	(0.14)	(0.13)	2.28
qnrD	0.98	2.37	0.00	(3.82)	3.82
qnrS	0.99	1.95	(2.48)	(0.15)	2.64

③ ARG removal in DWTP3 (copies/ml)_Based on qPCR detection [Zhang et al., 2016](#)

Treatment process	Sedimentation	Sand filtration	Ozonation+GAC 1	Ozonation+GAC 2	Chlorination	
Description	From source water to sedimentation	From effluent of sedimentation to effluent of sand filter	From effluent of sand filter to effluent of primary GAC filter	From effluent of primary GAC filter to effluent of secondary GAC filter	From effluent of secondary GAC filter to effluent of chlorination	
January (water temperature 3.5°C)	16S rRNA	0.77	0.71	0.51	0.24	0.12
	tetA	1.12	2.03	2.81	(2.81)	0.14
	ermB	1.50	1.67	0.07	2.74	0.00
	cmI	0.68	3.05	0.00	0.00	0.00
	sulII	0.64	0.55	0.48	0.78	0.11
	bla _{oxa} -1	0.72	1.79	3.54	0.00	(2.70)
	tetG	0.53	1.12	3.48	0.00	(2.90)
	strA	1.34	1.52	0.40	0.07	(0.62)
April (water temperature 22°C)	16S rRNA	0.34	0.53	0.25	0.40	0.23
	tetA	0.06	1.51	0.18	0.26	1.19
	ermB	1.06	0.47	0.76	2.74	(1.23)
	cmI	0.44	0.46	1.12	0.59	2.07
	sulII	0.42	0.48	0.66	0.34	0.49
	bla _{oxa} -1	0.40	0.75	0.66	0.49	0.14
	tetG	0.51	0.66	0.71	0.58	0.62
	strA	0.99	0.66	0.29	0.37	(1.03)
July (water temperature 30°C)	16S rRNA	0.25	0.77	0.16	0.40	(0.80)
	tetA	0.41	1.46	(0.10)	1.19	(0.79)
	ermB	1.25	0.94	0.15	0.39	(0.05)
	cmI	(0.18)	1.24	0.19	0.80	(0.79)
	sulII	0.05	0.85	0.08	0.76	(0.59)
	bla _{oxa} -1	(0.53)	1.67	(0.16)	1.12	(1.12)
	tetG	(0.11)	1.40	0.02	1.05	(0.66)
	strA	0.55	1.26	(0.14)	0.82	(0.53)
blaTEM-1	0.68	1.29	(0.10)	0.31	(0.53)	
DfItA	(0.12)	1.26	(0.02)	1.15	(0.78)	

④ ARG removal in DWTP4 (copies/ml)_Based on HT-qPCR detection [Xu et al., 2016](#)

Treatment process	Pre-ozonation	Sedimentation	Sand filtration	Ozonation	GAC	Chlorination
Antibiotic resistance	From source water to effluent of pre-ozonation tank	From effluent of pre-ozonation tank to effluent of sedimentation	From effluent of sedimentation to effluent of sand filter	From effluent of sand filter to effluent of ozonation tank	From effluent of ozonation tank to effluent of GAC filter	From effluent of GAC filter to effluent of chlorination
Aminoglycoside	(0.06)	0.44	0.06	0.21	0.06	1.13
Beta-lactam	(0.12)	0.78	(0.12)	0.46	(0.03)	0.90
FCA	(0.34)	1.03	(0.16)	0.39	0.15	1.08
MLSB	(0.21)	0.87	(0.19)	0.34	(0.28)	1.52
other/efflux	(0.01)	0.42	0.12	(0.14)	0.25	1.62
Sulfonamide	(0.22)	0.83	(0.29)	0.28	0.09	1.40
Tetracycline	0.05	0.46	(0.07)	0.36	0.04	1.45
Vancomycin	(0.23)	0.83	(0.28)	0.58	(0.04)	0.44

⑤ ARG removal in DWTP5 (copies/ml)_Based on HT-qPCR detection [Xu et al., 2016](#)

Treatment process	Sedimentation	Chlorination
Antibiotic resistance	From source water to effluent of sedimentation	From effluent of sedimentation to effluent of chlorination
Aminoglycoside	0.59	1.92
Beta-lactam	0.71	1.75
FCA	1.04	1.31
MLSB	1.23	1.19
other/efflux	0.92	1.39
Sulfonamide	1.67	1.13
Tetracycline	1.12	1.31
Vancomycin	0.76	1.73

⑥ ARG removal in DWTP6 (copies/ml)_Based on HT-qPCR detection Zheng et al., 2018				
Treatment process	Sand filtration	Ozonation	GAC	Chlorination
Antibiotic resistance	From source to effluent of sand filter	From effluent of sand filter to effluent of ozonation tank	From effluent of ozonation tank to effluent of GAC filter	From effluent of GAC filter to effluent of chlorination
Aminoglycoside	0.96	0.08	0.89	2.34
Beta-lactam	1.79	(0.75)	0.33	2.15
FCA	0.67	0.05	0.58	2.46
MLSB	1.29	0.27	0.12	2.24
other/efflux	0.80	0.28	0.73	2.76
Sulfonamide	0.77	0.29	0.77	2.51
Tetracycline	0.68	0.27	0.45	2.55
Vancomycin	1.20	(0.75)	0.26	1.57

Table S4. Data of absolute abundance of ARG at genomic level.

DWTP 1. Zheng et al., 2018							
Copies/l	Source water	Sand filtration	Ozonation	GAC	Chlorination		
16S rRNA	4.18E+10	5.88E+09	3.80E+09	8.89E+08	2.30E+06		
ARG	3.41E+09	4.00E+08	2.88E+08	7.80E+07	4.82E+05		
Aminoglycoside	5.07E+08	5.59E+07	4.60E+07	5.87E+06	2.70E+04		
Beta-lactam	6.01E+08	9.76E+06	5.46E+07	2.57E+07	1.83E+05		
FCA	1.62E+08	3.44E+07	3.05E+07	8.04E+06	2.77E+04		
MLSB	2.84E+08	1.44E+07	7.66E+06	5.87E+06	3.36E+04		
Other/efflux	1.44E+09	2.28E+08	1.18E+08	2.23E+07	3.89E+04		
Sulfonamide	1.34E+08	2.28E+07	1.16E+07	1.97E+06	6.16E+03		
Tetracycline	1.31E+08	2.70E+07	1.44E+07	5.07E+06	1.44E+04		
Vancomycin	2.51E+07	1.58E+06	8.86E+06	4.83E+06	1.31E+05		
DWTP 2. Xu et al., 2016							
Copies/l	Source water	Pre-ozonation	Sedimentation	Sand filtration	Ozonation	GAC	Chlorination
16S rRNA	5.42E+10	1.19E+11	1.67E+10	3.27E+10	1.84E+10	4.95E+09	9.78E+07
ARG	3.37E+09	4.17E+09	1.16E+09	1.08E+09	9.12E+08	6.34E+08	2.95E+07
Aminoglycoside	8.07E+08	9.27E+08	3.38E+08	2.94E+08	1.83E+08	1.59E+08	1.19E+07
Beta-lactam	2.51E+08	3.31E+08	5.45E+07	7.20E+07	2.52E+07	2.73E+07	3.47E+06
FCA	4.12E+08	9.09E+08	8.43E+07	1.23E+08	5.04E+07	3.60E+07	3.02E+06
MLSB	1.16E+08	1.86E+08	2.52E+07	3.89E+07	1.80E+07	3.46E+07	1.04E+06
Other/efflux	1.43E+09	1.46E+09	5.54E+08	4.20E+08	5.76E+08	3.24E+08	7.82E+06
Sulfonamide	4.56E+07	7.64E+07	1.14E+07	2.24E+07	1.19E+07	9.73E+06	3.85E+05
Tetracycline	2.94E+08	2.61E+08	9.13E+07	1.07E+08	4.65E+07	4.21E+07	1.48E+06
Vancomycin	8.64E+06	1.47E+07	2.16E+06	4.15E+06	1.10E+06	1.21E+06	4.42E+05
DWTP 3. Xu et al., 2016							
Copies/l	Source water	Flocculation	Sedimentation	Sand filter + Chlorination			
16S rRNA	6.85E+10	2.49E+10	1.04E+10	4.43E+08			
ARG	2.01E+10	7.15E+09	2.97E+09	8.10E+07			
Aminoglycoside	3.72E+09		9.57E+08	1.15E+07			
Beta-lactam	3.21E+09		6.28E+08	1.11E+07			
FCA	3.93E+09		3.62E+08	1.79E+07			
MLSB	9.40E+08		5.48E+07	3.50E+06			
Other/efflux	5.77E+09		7.01E+08	2.89E+07			
Sulfonamide	3.76E+08		8.00E+06	5.92E+05			
Tetracycline	1.13E+09		8.51E+07	4.21E+06			
Vancomycin	9.93E+08		1.74E+08	3.26E+06			

Table S5. Fold change in relative abundance of ARG.

① DWTP1 Su et al., 2018			
Fold change	Source water	Sedimentation	Sand filtration
sul1	1	5.23E-01	5.37E-01
sul2	1	4.70E-01	3.89E-01
ermB	1	6.85E-01	1.78E-01
tetA	1	8.28E-01	7.43E-01
tetM	1	5.23E-01	8.12E-02
tetO	1	3.49E-01	2.54E-02
tetQ	1	3.99E-01	7.49E-02
tetS	1	5.52E-01	1.12E-01
tetW	1	5.83E-01	6.03E-02
tetX	1	7.43E-01	1.24E+00
cfr	1	1.18E-01	7.69E-02
cmIA	1	7.04E-01	9.22E-01
fexA	1	5.37E-01	2.39E-01
fexB	1	5.37E-01	3.68E-01
floR	1	8.50E-01	1.67E+00
oqxB	1	8.50E-01	2.81E-01
qepA	1	1.68E-01	-
qnrA	1	4.82E-01	-
qnrB	1	2.33E-01	-
qnrD	1	7.23E-01	-
qnrS	1	4.82E-01	-

② DWTP2. Su et al., 2018						
Fold change	Source water	Sedimentation	Sand filtration	Ozonation	GAC	Chlorination
sul1	1	2.50E+00	2.22E+00	5.41E+00	3.08E+00	-
sul2	1	9.15E-01	8.88E-01	8.62E-01	4.11E-01	-
ermB	1	3.88E-01	8.62E-01	1.03E+00	7.22E-01	1.59E-01
tetA	1	-	-	4.40E+00	1.51E+00	-
tetM	1	1.13E+00	3.08E+00	1.77E+01	7.72E+00	-
tetO	1	3.65E-01	1.55E-01	3.55E-01	2.14E-01	4.50E-01
tetQ	1	8.62E-01	9.93E-02	2.27E-01	8.56E-02	8.56E-02
tetS	1	8.88E-01	-	-	3.57E+00	-
tetW	1	1.43E+00	4.77E-01	3.57E+00	1.70E+00	2.10E+00
tetX	1	9.42E-01	3.99E-01	1.12E-01	6.37E-02	2.34E-01
cfr	1	2.43E+00	6.66E+00	5.45E+01	2.45E+01	7.49E+00
cmIA	1	7.66E-01	1.23E+00	1.20E+01	5.10E+00	9.42E-01
fexA	1	2.58E+00	4.53E+00	-	4.40E+00	1.13E+01
fexB	1	2.22E+00	8.19E+00	1.67E+01	3.08E+00	7.27E+00
floR	1	1.43E+00	1.70E+00	2.04E+00	1.13E+00	1.27E+00
oqxB	1	7.22E-01	1.70E+00	2.29E+00	1.27E+00	4.95E+00
qepA	1	-	-	-	-	-
qnrA	1	-	-	-	9.93E+02	6.13E+01
qnrB	1	3.34E-01	6.41E-01	2.36E+00	1.00E+00	-
qnrD	1	8.37E-01	-	-	6.51E+01	-
qnrS	1	8.13E-01	-	2.38E+01	1.07E+01	-

③ DWTP3 Guo et al., 2014		
Fold change	Source water	Sedimentation
sul1	1	1.17E+00
sul2	1	1.28E+00
tetC	1	3.00E-01
tetG	1	4.99E-02
tetX	1	4.91E-01
tetA	1	1.43E-01
tetB	1	5.31E+00
tetO	1	1.36E+00
tetM	1	1.67E-01
tetW	1	3.50E-01

④ DWTP4 Guo et al., 2014			
Fold change	Source water	Sedimentation	Ozonation+GAC
sul1	1	1.17E+00	1.63E-01
sul2	1	1.28E+00	3.52E-01
tetC	1	3.00E-01	4.36E-01
tetG	1	4.99E-02	1.08E-02
tetX	1	4.91E-01	1.53E-01
tetA	1	1.43E-01	5.21E-02
tetB	1	5.31E+00	1.00E+00
tetO	1	1.36E+00	9.06E-02
tetM	1	1.67E-01	7.08E-02
tetW	1	3.50E-01	2.00E-02

⑤ DWTP5 Guo et al., 2014			
Fold change	Source water	Sand filtration	Chlorination
sul1	1	4.28E+00	2.29E+00
sul2	1	5.74E-01	6.05E+00
tetC	1	1.77E-01	8.52E-02
tetG	1	1.89E-01	6.14E-01
tetX	1	1.54E-01	3.03E+00
tetA	1	1.86E+00	-
tetB	1	1.19E+00	4.13E+00
tetO	1	2.73E+00	-
tetM	1	2.07E+00	2.30E+02
tetW	1	5.85E+00	6.74E+02

⑥ DWTP6 Guo et al., 2014						
Fold change	Source water	Sedimentation	Sand filtration	Ozonation	GAC	Chlorination
sul1	1	9.18E+00	2.64E+00	1.41E+00	4.43E+00	1.00E+02
sul2	1	3.86E+00	1.15E+00	9.00E-01	4.43E+00	3.49E+02
tetC	1	3.85E-02	1.11E+00	7.45E+00	5.17E-01	3.13E+00
tetG	1	4.75E+00	8.27E+00	2.17E-01	1.07E+00	2.18E+01
tetX	1	7.60E+01	3.48E+00	1.02E+01	7.45E+00	2.07E+02
tetA	1	6.06E+00	7.57E-01	1.46E+00	5.45E+00	2.55E+02
tetB	1	7.99E+00	1.32E+00	4.13E+00	2.18E+01	6.07E+02
tetO	1	1.05E+01	2.55E+00	6.72E+00	1.54E+01	1.63E+02
tetM	1	2.18E+01	3.48E+00	2.42E+01	9.35E+01	2.48E+04
tetW	1	3.94E+01	3.36E+00	3.31E+01	1.23E+02	2.16E+04

⑦ DWTP7 Zhang et al., 2016					
Fold change	Source water	Sedimentation	Sand filtration	Ozonation+GAC 1	Chlorination
tetA	1	4.49E-01	2.15E-02	-	3.64E-02
ermB	1	1.85E-01	2.02E-02	6.94E-02	-
cm1	1	1.24E+00	-	-	-
sulII	1	1.36E+00	1.94E+00	2.12E+00	1.95E-01
blaOXA-1	1	1.12E+00	9.18E-02	-	3.10E-02
tetG	1	1.74E+00	6.64E-01	-	4.09E-01
strA	1	2.70E-01	4.11E-02	1.91E-01	1.34E-01
blaTEM-1	1	2.33E+00	1.44E+02	6.05E+00	3.29E+00
DfrtA	1	1.32E+00	4.04E-01	-	-

⑧ DWTP8 Zhang et al., 2016					
Fold change	Source water	Sedimentation	Sand filtration	Ozonation+GAC 1	Chlorination
tetA	1	1.94E+00	2.05E-01	2.36E-01	3.55E-02
ermB	1	1.92E-01	2.22E-01	6.73E-02	8.61E-03
cm1	1	7.93E-01	9.41E-01	1.27E-01	-
sulII	1	8.47E-01	9.59E-01	3.70E-01	2.34E-01
blaOXA-1	1	8.74E-01	5.30E-01	2.03E-01	2.03E-01
tetG	1	6.86E-01	5.10E-01	1.76E-01	4.68E-02
strA	1	2.25E-01	1.67E-01	1.49E-01	2.89E+00
blaTEM-1	1	5.99E-01	6.86E-01	9.32E-01	2.32E+00
DfrtA	1	1.12E+00	9.36E-01	1.70E-01	-

⑨ DWTP9 Zhang et al., 2016					
Fold change	Source water	Sedimentation	Sand filtration	Ozonation+GAC 1	Chlorination
tetA	1	7.06E-01	1.45E-01	2.63E-01	4.21E-02
ermB	1	1.00E-01	6.78E-02	7.00E-02	1.27E-02
cm1	1	2.72E+00	9.15E-01	8.50E-01	3.32E-01
sulII	1	1.59E+00	1.32E+00	1.57E+00	4.15E-01
blaOXA-1	1	6.14E+00	7.76E-01	1.63E+00	6.53E-01
tetG	1	2.33E+00	5.45E-01	7.50E-01	1.20E-01
strA	1	5.09E-01	1.63E-01	3.25E-01	6.52E-02
blaTEM-1	1	3.71E-01	1.11E-01	2.00E-01	1.33E-01
DfrtA	1	2.39E+00	7.63E-01	1.16E+00	1.96E-01

⑩ DWTP10 Xi et al., 2009		
Fold change	Source water	Chlorination
blaTEM	1	1.39E+00
blaSHV	1	1.16E+01
sul1	1	1.23E-01
sul2	1	7.61E-01
cat	1	3.73E+00
cmr	1	5.77E-01

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