Supporting information

Organic Contaminants in Chinese Sewage Sludge: A Meta-Analysis of the Literature of the Past 30 Years

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Search strategy.

The terms below were used to search by title, abstract, and keywords of articles: sewage sludge* OR biosolid* AND (China) served as the primary keywords, with results then being further limited by the following constraining terms (AND): organic contaminant*; organic pollutant*; antibiotic*; alkylphenol polyethoxylate*; aromatic amine*; azole antifungal*; bisphenol analog*; chlorinated hydrocarbon*; dechlorane plus*; hexabromocyclododecane*; hormone*; hydroxylated polybrominated diphenyl ether*; methoxylated polybrominated diphenyl ether*; naphthenic acid*; nitrogen-heterocyclic compound*; novel brominated flame retardant*; organochlorine pesticide*; organometal*; organophosphate ester*; paraben*; perfluorinated compounds*; pesticides*; pharmaceutical*; phenolic compound*; phthalate ester*; polybrominated diphenyl ether*; polychlorinated biphenyl*; polychlorinated dibenzo-p-dioxins and dibenzofuran*; polychlorinated naphthalene*; polycyclic aromatic hydrocarbon*; quaternary ammonium compound*; short chain chlorinated paraffin*; siloxane*; substituted polycyclic aromatic hydrocarbon*; surfactants*;synthetic musk*; synthetic phenolic antioxidant*; triclocarban*; triclosan*; ultraviolet filter*; ultraviolet stabilizer*; volatile aromatic hydrocarbon*.

Table S1. Summary of compounds analyzed in the 159 studies of organic contaminants in Chinese sewage sludge.

No.	Class	Compound	Reference
1	**Antibiotics (86)**	tetracycline; doxycycline; methacycline; minocycline; oxytetracyclin; oxytetracycline dehydrate; demeclocycline; chlortetracycline; sulfanilamide; sulfacetamide; sulfaguanidine; sulfapyridine; sulfadiazine; sulfamerazine; sulfamoxole; sulfabenzamide; sulfamethazine (sulfadimidine); sulfisomidine; sulfameter; sulfamonomethoxine; sulfamethoxypyridazine; sulfaclozine; sulfadimethoxine; sulfadoxine; sulfachinoxalin; sulfaquinoxaline; sulfachlorpyridazine; sulfamethizole; sulfamethoxazole; sulfisoxazole; sulfathiazole; nalidixic acid; oxolinic acid; cinoxacin; piromidic acid; pipemidic acid; norfloxacin; enoxacin; ciprofloxacin; danofloxacin; enrofloxacin; gatifloxacin; sparfloxacin; orbifloxacin; moxifloxacin; ofloxacin; marbofloxacin; pefloxacin; lomefloxacin; lomefloxacin hydrochloride; fleroxacin; sarafloxacin; sarafloxacin hydrochloride; difloxacin; difloxacin hydrochloride; carbadox; flumequine; berberine; kitasamycin; erythromycin; erythromycin-H_2O; midecamycin; roxithromycin; azithromycin; clarithromycin; josamycin; spiramycin; tilmicosin; tylosin; tylosin tartrate; leucomycin; oleandomycin; salinomycin; monensin; narasin; novobiocin; nacitracin; ormetoprim; trimethoprim; lincomycin; florfenicol; chloramphenicol; cefalexin; ceftiofur; cloxacillin; tiamulin	1-25
2	**Alkylphenol polyethoxylates (APEOs) (27)**	4-nonylphenol monoethoxylate; 4-nonylphenol diethoxylate; 4-nonylphenol triethoxylate; 4-nonylphenol tetraethoxylate; 4-nonylphenol pentaethoxylate; 4-nonylphenol hexaethoxylate; 4-nonylphenol heptaethoxylate; 4-nonylphenol octaethoxylate; 4-nonylphenol nonaethoxylate; 4-nonylphenol decaethoxylate; 4-nonylphenol undecaethoxylate; 4-nonylphenol dodecaethoxylate; 4-nonylphenol tridecaethoxylate; 4-nonylphenol tetradecaethoxylate; 4-nonylphenol pendecaethoxylate; 4-nonylphenoxy acetic acid; 4-nonylphenoxy monoethoxy acetic acid; 4-nonylphenoxy diethoxy acetic acid; 4-nonylphenoxy triethoxy acetic acid; 4-nonylphenoxy tetraethoxy acetic acid; 4-nonylphonol pentaethoxy acetic acid; 4-nonylphonol hexaethoxy acetic acid; 4-nonylphonol heptaethoxy acetic acid; 4-nonylphonol octaethoxy acetic acid; 4-nonylphenol; 4-*t*-octylphenol; 4-*n*-octylphenol	26-39
3	**Aromatic amines (AAs) (31)**	*o*-toluidine; 2,4-dimethylaniline; 2,6-dimethylaniline; 2-aminoanisole; *p*-chloroaniline; 2-methoxy-5-methylaniline; 2,4,5-trimethylaniline; 4-chloro-otoluidine; 2,4-toluenediamine; 2,4-diaminoanisole; nitrobenzene; 2,4-dinitrotoluene; 2,6-dinitrotoluene; phenyl azide; 2-naphthylamine; 5-nitro-o-toluidine; 4-aminobiphenyl; 4-aminoazobenzol; 4,4’-diaminodiphenyl ether; benzidine; diphenylamine; azobenzene; 4,4’-diamino diphenylmethane; *o*-aminoazotoluene; 3,3’-dimethyl-4,4’-diaminobiphenylmethane; 3,3’-dimethyl benzidine; 4,4’-thiobisbenzenamine; 3,3’-dichlorobenzidine; 4,4’-methylene-bis(2-chloroaniline); 3,3’-dimethoxybenzidine; *N*-nitroso-*N*-propylamine	40,41
4	**Azole antifungals (AAFs) (7)**	clotrimazole; econazole nitrate; ketoconazole; miconazole nitrate; propiconazole; tebuconazole; climbazole	42-45
5	**Bisphenol analogs (BPAs) (13)**	bisphenol A; bisphenol B; bisphenol C; bisphenol E; bisphenol F; bisphenol AF; bisphenol AP; bisphenol S; 4,4'-dihydroxybenzophenone; 4,4'-thiobis-phenol; tetramethylbisphenol	27,28,32,34,38,39,46-50

No.	Class	Compound	Reference
		A; tetrachlorobisphenol A; tetrabromobisphenol A	
6	**Chlorinated hydrocarbons (CHCs) (6)**	hexachloroethane; bis(2-chloroethoxy) methane; hexachlorocyclopentadiene; bis(2-chloroethyl) ether; bis(2-chloroisopropyl) ether; 4-chlorophenyl phenyl ether; hexachlorobutadiene	51,52
7	**Dechlorane plus (DPs) (7)**	*syn*-dechlorane plus; *anti*-dechlorane plus; Cl_{11}-dechlorane plus; Cl_{10}-dechlorane plus; dechlorane 602; dechlorane 603; dechlorane 604	53,54
8	**Hexabromocyclododecanes (HBCDs) (4)**	α-hexabromocyclododecane; β-hexabromocyclododecane; γ-hexabromocyclododecane; pentabromocyclododecene	53,55
9	**Hormones (40)**	estrone; 17β-estradiol; 17α-estradiol; estriol; 17α-ethynyl estradiol; hexestrol; diethylstilbestrol; androsta-1,4-diene-3,17-dione; progesterone; 17α-hydroxyprogesterone; 21α-hydroxyprogesterone; 17α,20β-dihydroxy-4-pregnen-3-one; 6α-methylhydroxyprogester; norgestrel; ethynyl testosterone; norethindrone; medroxyprogesterone; medroxyprogesterone acetate; megestrol acetate; androstenedione; 4-hydroxy-androst-4-ene-17-dione; 5α-dihydrotestosterone; testosterone; androsterone; epiandrosterone; 19-nor-4-androstene-3,17-diol; methyltestosteron; 17α-trenbolone; 17β-trenbolone; 17α-boldenone; 17β-boldenone; 19-nortestoserone; stanozolol; corticosterone; cortisol; cortisone; prednisone; prednisolone; dexamethasone; 6α-methylprednisolone	32,34,38,39,46-48,50,56-59
10	**Hydroxylated polybrominated diphenyl ethers (OH-PBDEs) (9)**	4-hydroxy-2,2',3,4'-tetrabromodiphenyl ether; 4'-hydroxy-2,2',4,5'-tetrabromodiphenyl ether; 3-hydroxy-2,2',4,4'-tetrabromodiphenyl ether; 5-hydroxy-2,2',4,4'-tetrabromodiphenyl ether; 6-hydroxy-2,2',4,4'-tetrabromodiphenyl ether; 2'-hydroxy-2,3',4,5'-tetrabromodiphenyl ether; 6-hydroxy-2,2',3,4,4'-pentabromodiphenyl ether; 6'-hydroxy-2,2',4,4',5-pentabromodiphenyl ether; 5'-hydroxy-2,2',4,4',5-pentabromodiphenyl ether	60
11	**Methoxylated polybrominated diphenyl ethers (MeO-PBDEs) (9)**	4-methoxy-2,2',3,4'-tetrabromodiphenyl ether; 4'-methoxy-2,2',4,5'-tetrabromodiphenyl ether; 3-methoxy-2,2',4,4'-tetrabromodiphenyl ether; 5-methoxy-2,2',4,4'-tetrabromodiphenyl ether; 6-methoxy-2,2',4,4'-tetrabromodiphenyl ether; 2'-methoxy-2,3',4,5'-tetrabromodiphenyl ether; 6-methoxy-2,2',3,4,4'-pentabromodiphenyl ether; 5'-methoxy-2,2',4,4',5-pentabromodiphenyl ether; 6'-methoxy-2,2',4,4',5-pentabromodiphenyl ether	60
12	**Nitrogen-heterocyclic compounds (NHCs) (34)**	oxazole; 3-acetylpyridine; thieno-[3,2-c]-pyridine; quinoline; 2-methylbenzyl cyanide; isoquinoline; methylquinoline I; methylquinoline II; methylquinoline III; 2-methylquinoline; 8-methylquinoline; 2,6-dimethylquinoline; dimethylquinoline II; 1-methoxyindole; pyrido[2,3-d]pyrimidin-4(1H)-one; 9H-fluoren-9-imine; 7,8-benzoquinoline; acridine; phenanthridine; 5,6-benzoquinoline; 3-methylbenzo[f]quinoline; 2-phenylindole; [1,1'-biphenyl]-4-acetonitrile; 9-cyanoanthracene; azapyrene; azafluoranthene; methylacridine; 7-methyl-4-aza-9-fluorenone; 1-methylaziridie; 2,3-dicyanopyridine; 4-methyl-5-thiazoleethanol; 2-methylquinoxaline; 3-(1-methyl-2-pyrrolidinyl)-pyridine; N-benzylideneaniline	40
13	**Novel brominated flame**	1,2-dibromo-4-(1,2-dibromoethyl)cyclohexane; 2,3,5,6-tetrabromo-p-xylene;	53

No.	Class	Compound	Reference
	retardants (N-BFRs) (12)	ctetrabromo-*o*-chlorotoluene; pentabromotoluene; pentabromoethylbenzene; hexabromobenzene; 1,3,5-tribromobenzene; hexachlorocyclopentadienyl-dibromocyclooctane; 2,2',4,4',5,5'-hexabromobiphenyl; decabromobiphenyl; 1,2-bis(2,4,6-tribromophenoxy)ethane; decabromodiphenylethane	
14	**Organochlorine pesticides (OCPs) (17)**	hexachlorobenzene; α-hexachlorocyclohexane; β-hexachlorocyclohexane; γ-hexachlorocyclohexane; δ-hexachlorocyclohexane; *p,p'*-dichlorodiphenyltrichloroethane; *o,p'*-dichlorodiphenyltrichloroethane; *p,p'*-dichlorodiphenyldichloroethylene; *p,p'*-dichlorodiphenyldichloroethane; aldrin; dieldrin; endrin ketone; heptachlor epoxide; endosulfan; endosulfan II; *trans*-chlordane; *cis*-chlordane	27,61-66
15	**Organometals (5)**	tributyltin; dibutyltin; diphenyltin; tetraethyllead; tetramethyllead	67
16	**Organophosphate esters (OPs) (7)**	tris(2-chloroethyl) phosphate; tris(2-chloroiso-propyl) phosphate; tris(1, 3-dichloro-2-propyl) phosphate; tri-n-butyl phosphate; triphenyl phosphate; tritolyl phosphate; tris(2-butoxyethyl) phosphate	68,69
17	**Parabens (4)**	methylparaben; ethylparaben; propylparaben; butylparaben	46
18	**Perfluorinated compounds (PFCs) (59)**	trifluoroacetic acid; pentafluoropropionic acid; perfluorobutyric acid; perfluoropentanoic acid; perfluorohexanoic acid; perfluoroheptanoic acid; perfluorooctanoic acid; perfluorononanoic acid; perfluorodecanoic acid; perfluoroundecanoic acid; perfluorododecanoic acid; perfluorotridecanoic acid; perfluorotetradecanoic acid; perfluorobutane sulfonate; perfluoro-1-butanesulfonic acid potassium salt; perfluorohexanesulfonic acid potassium salt; perfluorohexanesulfonic acid; perfluoroheptanesulfonic acid; perfluorooctanesulfonic acid; perfluorodecanesulfonic acid; 4:2 fluorotelomer sulfonate; 6:2 fluorotelomer sulfonate; 8:2 fluorotelomer sulfonate; 4:2 fluorotelomer alcohol; 6:2 fluorotelomer alcohol: 8:2 fluorotelomer alcohol; 10:2 fluorotelomer alcohol; 6:2 fluorotelomer unsaturated carboxylate; 8:2 fluorotelomer unsaturated carboxylate; 2-perfluorooctyl ethanoic acid; perfluorooctane sulfonamide; *N*-methylheptadecafluorooctane sulfonamide; *N*-ethylheptadecafluorooctane sulfonamide; *N*-methylheptadecafluorooctane sulfonamidoethanol; *N*-ethylheptadecafluorooctane sulfonamidoethanol; perfluoroalkyl ether potassium sulfonate; tetraethylammonium perfluorooctanesulfonic acid; 2-[(1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexyl)oxy]-1,1,2,2-tetrafluoroethanesulfonic acid potassium salt; 2-[6-chloro-1,1,2,2,3,3,4,4,5,5,6,6-dodecafluorohexyl]oxy]-1,1,2,2-tetrafluoroethanesulfonic acid potassium salt; 4:2 polyfluorinated ether sulfonate; 6:2 polyfluorinated ether sulfonate; 8:2 polyfluorinated ether sulfonate; 10:2 polyfluorinated ether sulfonate; 4:2 chlorinated polyfluorinated ether sulfonate; 6:2 chlorinated polyfluorinated ether sulfonate; 8:2 chlorinated polyfluorinated ether sulfonate; 10:2 chlorinated polyfluorinated ether sulfonate; perfluorohexyl phosphonic acid; 1-chloro-perfluorohexyl phosphonic acid; perfluorooctyl phosphonic acid; perfluorodecyl phosphonic acid; 6:2 mono-substituted polyfluoroalkyl phosphate; 8:2 mono-substituted polyfluoroalkyl phosphate; 10:2 mono-substituted polyfluoroalkyl phosphate; 6:2 di-substituted polyfluoroalkyl phosphate; 8:2 di-substituted polyfluoroalkyl phosphate; 10:2 di-substituted polyfluoroalkyl phosphate; 6:2 tri-substituted polyfluoroalkyl phosphate;	70-81

No.	Class	Compound	Reference
		8:2 tri-substituted polyfluoroalkyl phosphate	
19	**Pharmaceuticals (22)**	metoprolol; propranolol; atenolol; *N*,*N*-diethyl-meta-toluamide; gemfibrozil; clofibric acid; simvastatin; atorvastatin; amlodipine; caffeine; acetaminophen; phenacetin; salicylic acid; ibuprofen; diclofenac; ketoprofen; indomethacin; mefenamic acid; naproxen; carbamazepine; 10,11-dihydrocarbamazepine; bezafibrate	10,14,18-20,22,46,82,83
20	**Phenolic compounds (PCs) (16)**	phenol; 2-cresol; 3-cresol; 4-cresol; 2,4-xylenol; 2-phenylphenol; 4-cumylphenol; 4-chloro-3-methylphenol; 2-chlorophenol; 2,6-dichlorophenol; 2,4-dichlorophenol; 2,4,5-trichlorophenol; 2,4,6-trichlorophenol; 2,3,4,6-tetrachlorophenol; 2-nitrophenol; 4-nitrophenol	38
21	**Phthalate esters (PAEs) (16)**	dimethyl phthalate; diethyl phthalate; diisobutyl phthalate; dibutyl phthalate; dimethylglycol phthalate; di-n-amyl phthalate; di(2-ethoxyethyl) phthalate; butylbenzyl phthalate; di(4-methyl-2-pentyl) phthalate; dicyclohexyl phthalate; di-n-hexyl phthalate; hexyl-2-ethylhexyl) phthalate; di(2-butoxyethyl) phthalate; di(2-ethylhexyl) phthalate; di-*n*-octyl phthalate; di-*n*-nonyl phthalate	27,84-91
22	**Polybrominated diphenyl ethers (PBDEs) (48)**	2-bromodiphenyl ether; 3-bromodiphenyl ether; 4-bromodiphenyl ether; 2,4-dibromodiphenyl ether; 2,4'-dibromodiphenyl ether; 2,6-dibromodiphenyl ether; 3,3'-dibromodiphenyl ether; 3,4-dibromodiphenyl ether; 3,4'-dibromodiphenyl ether; 4,4’-dibromodiphenyl ether; 2,2',4-tribromodiphenyl ether; 2,3',4-tribromodiphenyl ether; 2,4,4’-tribromodiphenyl ether; 2,4,6-tribromodiphenyl ether; 2,4’,6-tribromodiphenyl ether; 2’,3,4-tribromodiphenyl ether; 3,3’,4-tribromodiphenyl ether; 3,4,4’-tribromodiphenyl ether; 2,2’,4,4’-tetrabromodiphenyl ether; 2,2',4,5'-tetrabromodiphenyl ether; 2,3',4,4'-tetrabromodiphenyl ether; 2,3',4,5'-tetrabromodiphenyl ether; 2,3',4',6-tetrabromodiphenyl ether; 2,4,4’,6-tetrabromodiphenyl ether; 3,3’,4,4’-tetrabromodiphenyl ether; 2,2',3,4,4'-pentabromodiphenyl ether; 2,2’,4,4’,5-pentabromodiphenyl ether; 2,2’,4,4’,6-pentabromodiphenyl ether; 2,3,4,5,6-pentabromodiphenyl ether; 2,3',4,4',5-pentabromodiphenyl ether; 2,3',4,4',6-pentabromodiphenyl ether; 3,3',4,4',5-pentabromodiphenyl ether; 2,2',3,4,4',5'-hexabromodiphenyl ether; 2,2’,4,4’,5,5’-hexabromodiphenyl ether; 2,2’,4,4’,5,6’-hexabromodiphenyl ether; 2,2',4,4',6,6'-hexabromodiphenyl ether; 2,3,4,4’,5,6-hexabromodiphenyl ether; 2,2’,3,4,4’,5,6-heptabromodiphenyl ether; 2,2',3,4,4',5',6-heptabromodiphenyl ether; 2,3,3',4,4',5,6-heptabromodiphenyl ether; 2,2',3,3',4,4',5,6'-octabromodiphenyl ether; 2,2’,3,3',4,4’,6,6'-octabromodiphenyl ether; 2,2',3,4,4',5,5',6-octabromodiphenyl ether; 2,3,3',4,4',5,5',6-octabromodiphenyl ether; 2,2',3,3’,4,4’,5,5',6-nonabromodiphenyl ether; 2,2',3,3',4,4’,5,6,6'-nonabromodiphenyl ether; 2,2',3,3',4,5,5',6,6'-nonabromodiphenyl ether; decabromodiphenyl ether	51,54,60,63,92-102
23	**Polychlorinated biphenyls (PCBs) (43)**	2-chlorobiphenyl; 2,3-dichlorobiphenyl; 2,4'-dichlorobiphenyl; 3,3’-dichlorobiphenyl; 4,4’-dichlorobiphenyl; 2,2',5-trichlorobiphenyl; 2,2’,6-trichlorobiphenyl; 2,4,4’-trichlorobiphenyl; 2,4’,5-trichlorobiphenyl; 2,2',3,5'-tetrachlorobiphenyl; 2,2’,5,5’-tetrachlorobiphenyl; 2,3',4,4'-tetrachlorobiphenyl; 2,3',4',5-tetrachlorobiphenyl; 2,4,4',5-tetrachlorobiphenyl; 3,3’,4,4’-tetrachlorobiphenyl; 3,4,4’,5-tetrachlorobiphenyl; 2,2',3,4,5'-pentachlorobiphenyl; 2,2',4,4',5-pentachlorobiphenyl; 2,2’,4,5,5’-pentachlorobiphenyl; 2,3,3’,4,4’-pentachlorobiphenyl;	27,61,64-66,103-107

No.	Class	Compound	Reference
		2,3,3',4',6-pentachlorobiphenyl; 2,3,4,4’,5-pentachlorobiphenyl; 2,3’,4,4’,5-pentachlorobiphenyl; 2’,3,4,4’,5-pentachlorobiphenyl; 3,3’,4,4’,5-pentachlorobiphenyl; 2,2',3,3',4,4'-hexachlorobiphenyl; 2,2',3,4,4',5-hexachlorobiphenyl; 2,2’,3,4,4’,5’-hexachlorobiphenyl; 2,2',3,4,5,5'-hexachlorobiphenyl; 2,2',3,5,5',6-hexachlorobiphenyl; 2,2’,4,4’,5,5’-hexachlorobiphenyl; 2,3,3’,4,4’,5-hexachlorobiphenyl; 2,3,3',4,4',5'-hexachlorobiphenyl; 2,3’,4,4’,5,5’-hexachlorobiphenyl; 3,3’,4,4’,5,5’-hexachlorobiphenyl; 2,2',3,3',4,4',5-heptachlorobiphenyl; 2,2’,3,4,4’,5,5’-heptachlorobiphenyl; 2,2',3,4,4',5',6-heptachlorobiphenyl; 2,2',3,4',5,5',6-heptachlorobiphenyl; 2,3,3’,4,4’,5,5’-heptachlorobiphenyl; 2,2',3,3',4,4',5,5’-octachlorobiphenyl; 2,2',3,3',4,4',5,6-octachlorobiphenyl; 2,2',3,3',4,4',5,5',6-nonachlorobiphenyl; decachlorobiphenyl	
24	**Polychlorinated dibenzo-*p*-dioxins and dibenzofurans (PCDD/Fs) (17)**	2,3,7,8-tetrachlorodibenzo-p-dioxin; 1,2,3,7,8-pentachlorodibenzo-p-dioxin; 1,2,3,4,7,8-hexachlorodibenzo-p-dioxin; 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin; 1,2,3,7,8,9-hexachlorodibenzo-p-dioxin; 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin; octachlorodibenzodioxin; 2,3,7,8-tetrachlorodibenzofuran; 1,2,3,7,8-pentachlorodibenzofuran; 2,3,4,7,8-pentachlorodibenzofuran; 1,2,3,4,7,8-hexachlorodibenzofuran; 1,2,3,6,7,8-hexachlorodibenzofuran; 1,2,3,7,8,9-hexachlorodibenzofuran; 2,3,4,6,7,8-hexachlorodibenzofuran; 1,2,3,4,6,7,8-heptachlorodibenzofuran; 1,2,3,4,7,8,9-heptachlorodibenzofuran; octachlorodibenzofuran	67,108-110
25	**Polychlorinated naphthalenes (PCNs) (75)**	1-chloronaphthalene; 2-chloronaphthalene; 1,2-dichloronaphthalene; 1,3-dichloronaphthalene; 1,4-dichloronaphthalene; 1,5-dichloronaphthalene; 1,6-dichloronaphthalene; 1,7-dichloronaphthalene; 1,8-dichloronaphthalene; 2,3-dichloronaphthalene; 2,6-dichloronaphthalene; 2,7-dichloronaphthalene; 1,2,3-trichloronaphthalene; 1,2,4-trichloronaphthalene; 1,2,5-trichloronaphthalene; 1,2,6-trichloronaphthalene; 1,2,7-trichloronaphthalene; 1,2,8-trichloronaphthalene; 1,3,5-trichloronaphthalene; 1,3,6-trichloronaphthalene; 1,3,7-trichloronaphthalene; 1,3,8-trichloronaphthalene; 1,4,5-trichloronaphthalene; 1,4,6-trichloronaphthalene; 1,6,7-trichloronaphthalene; 2,3,6-trichloronaphthalene; 1,2,3,4-tetrachloronaphthalene; 1,2,3,5-tetrachloronaphthalene; 1,2,3,6-tetrachloronaphthalene; 1,2,3,7-tetrachloronaphthalene; 1,2,3,8-tetrachloronaphthalene; 1,2,4,5-tetrachloronaphthalene; 1,2,4,6-tetrachloronaphthalene; 1,2,4,7-tetrachloronaphthalene; 1,2,4,8-tetrachloronaphthalene; 1,2,5,6-tetrachloronaphthalene; 1,2,5,7-tetrachloronaphthalene; 1,2,5,8-tetrachloronaphthalene; 1,2,6,7-tetrachloronaphthalene; 1,2,6,8-tetrachloronaphthalene; 1,2,7,8-tetrachloronaphthalene; 1,3,5,7-tetrachloronaphthalene; 1,3,5,8-tetrachloronaphthalene; 1,3,6,7-tetrachloronaphthalene; 1,3,6,8-tetrachloronaphthalene; 1,4,5,8-tetrachloronaphthalene; 1,4,6,7-tetrachloronaphthalene; 2,3,6,7-tetrachloronaphthalene; 1,2,3,4,5-pentachloronaphthalene; 1,2,3,4,6-pentachloronaphthalene; 1,2,3,5,6-pentachloronaphthalene; 1,2,3,5,7-pentachloronaphthalene; 1,2,3,5,8-pentachloronaphthalene;	27,111-113

No.	Class	Compound	Reference
		1,2,3,6,7-pentachloronaphthalene; 1,2,3,6,8-pentachloronaphthalene; 1,2,3,7,8-pentachloronaphthalene; 1,2,4,5,6-pentachloronaphthalene; 1,2,4,5,7-pentachloronaphthalene; 1,2,4,5,8-pentachloronaphthalene; 1,2,4,6,7-pentachloronaphthalene; 1,2,4,6,8-pentachloronaphthalene; 1,2,4,7,8-pentachloronaphthalene; 1,2,3,4,5,6-hexachloronaphthalene; 1,2,3,4,5,7-hexachloronaphthalene; 1,2,3,4,5,8-hexachloronaphthalene; 1,2,3,4,6,7-hexachloronaphthalene; 1,2,3,5,6,7-hexachloronaphthalene; 1,2,3,5,6,8-hexachloronaphthalene; 1,2,3,5,7,8-hexachloronaphthalene; 1,2,3,6,7,8-hexachloronaphthalene; 1,2,4,5,6,8-hexachloronaphthalene; 1,2,4,5,7,8-hexachloronaphthalene; 1,2,3,4,5,6,7-heptachloronaphthalene; 1,2,3,4,5,6,8-heptachloronaphthalene; 1,2,3,4,5,6,7,8-octachloronaphthalene	
26	**Polycyclic aromatic hydrocarbons (PAHs) (17)**	naphthalene; acenaphthylene; acenaphthene; fluorine; phenanthrene; anthracene; fluoranthene; pyrene; benzo[*a*]anthracene; benzo[*b*]anthracene; chrysene; benzo[*b*]fluoranthene; benzo[*k*]fluoranthene; benzo[*a*]pyrene; Indeno[*1,2,3-cd*]pyrene; dibenzo[*a,h*]anthracene; Benzo[*g,h,i*]perylene	27,64-66,106-108,111,114-129
27	**Quaternary ammonium compounds (QACs) (27)**	decyltrimethylammonium bromide; dodecyltrimethylammonium bromide; tetradecyltrimethylammonium bromide; hexadecyltrimethylammonium bromide; trimethyloctadecylammonium bromide; eicosyltrimethylammonium bromide; docosyltrimethylammonium chloride; benzyldimethyloctylammonium chloride; benzyldimethyldecylammonium chloride; benzyldimethyldodecylammonium chloride; benzyldimethyltetradecylammonium chloride; benzyldimethylhexadecylammonium chloride; benzyldimethyloctadecylammonium chloride; dioctyldimethylammonium bromide; didecyldimethylammonium bromide; didodecyldimethylammonium bromide; dimethylditetradecylammonium bromide; dihexadecyldimethylammonium bromide; dimethyldioctadecylammonium bromide; dimethyldieicosylammonium bromide; dimethyloctyldecylammonium bromide; dimethyldecyldodecylammonium bromide; dimethyldodecyltetradecylammonium bromide; dimethyltetradecylhexadecylammonium bromide; dimethylhexadecyloctadecylammonium bromide; dimethyltetradecyloctadecylammonium bromide; dimethyltetradecyleicosylammonium bromide	130,131
28	**Short chain chlorinated paraffins (SCCPs) (mixture)**	short chain chlorinated paraffins	132-134
29	**Siloxanes (19)**	hexamethylcyclotrisiloxane; octamethylcyclotetrasiloxane; decamethylcyclopentasiloxane; dodecamethylcyclohexasiloxane; tetradecamethylcycloheptasiloxane; octamethyltrisiloxane; decamethyltetrasiloxane; dodecamethylpentasiloxane; tetradecamethylhexasiloxane; hexadecamethylheptasiloxane; octadecamethyloctasiloxane; icosamethylnonasiloxane; docosamethyldecasiloxane; tetracosamethylundecasiloxane; hexacosamethyldodecasiloxane; octacosamethyltridecasiloxane; thacontamethyltetradecasiloxane; dotriacontamethylpentadecasiloxane; tetratriacontamethylhexadecasiloxane	135-137
30	**Substituted polycyclic aromatic hydrocarbons**	2-methylnaphthalene; 1-methylfluoranthene; 2,6-dimethylnaphthalene; 3,6-dimethylphenanthrene; 9-fluorenone; anthraquinone; 2-methylanthraquinone;	127,138

No.	Class	Compound	Reference
	(S-PAHs) (13)	benz[*a*]anthracene-7,12-dione; 2-nitrofluorene; 9-nitroanthracene; 3-nitrofluoranthene; 1-nitropyrene; 7-nitrobenz[*a*]anthracene	
31	**Synthetic musks (SMs) (9)**	cashmeran; celestolide; phantolide; galaxolide; traseolide; tonalide; musk ambrette; musk xylene; musk ketone	125,137,139-152
32	**Synthetic phenolic antioxidants (SPAs) (15)**	2,6-di-tert-butyl-4-methylphenol; 3,5-di-tert-butyl-4-hydroxybenzaldehyde; 2,6-di-tert-butyl-1,4-benzoquinone; 2,6-dit-butyl-4-hydroxy-4-methyl-2,5-cyclohexadien-1-one; 2,4,6-tri-tert-butylphenol; 2,6-di-tert-butyl-4-sec-butylphenol; 3-tert-butyl-4-methoxyphenol; 4-tert-octylphenol; 2,2'-methylenebis6-tert-butyl-4-ethylphenol; 4,4'-butylidenebis[3-methyl-6-tert-butylphenol]; 4,4'-methylenebis2,6-di-tert-butylphenol; 2,2'-methylenebis[6-tert-butyl-4-methylphenol]; 2,2'-ethylidenebis4,6-di-tert-butylphenol; 2,2'-methylenebis6-cyclohexyl-4-methylphenol; 1,3,5-trimethyl-2,4,6-tris3,5-di-tert-butyl-4-hydroxybenzyl-benzene	153
33	**Triclosan and triclocarban (TCS + TCC) (2)**	triclosan; triclocarban	46,151,154
34	**Ultraviolet stabilizers (UV stabilizers) (20)**	benzotriazole; 5-methyl-1H-benzotriazole; 5-chloro-1H-benzotriazole; 5,6-dimethyl-1H-benzotriazole; 2-[3',5'-bis(1-methyl-1-phenylethyl)-2'-hydroxyphenyl]benzotriazole; 2-(2'-hydroxy-3',5'-di-t-butyl-phenyl)-benzotriazole; 2-(3-t-butyl-2-hydroxy-5-methylphenyl)-5-chlorobenzotriazole; 2-(2'-hydroxy-3',5'-di-tert-butylphenyl)-5-chlorobenzotriazole; 2-(2-hydroxy-3,5-dipenryl-phenyl) benzotriazole; 2-(2'-hydroxy-5'-octylphenyl)-benzotriazole; 2-(3-sec-butyl-5-tert-butyl-2-hydroxyphenyl)benzotriazole; 3-(2H-Benzotriazolyl)-5-(1,1-di-methylethyl)-4-hydroxy-benzenepropanoic acid octyl esters; 3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxy-benzenepropanoic acid methyl ester; (2'-hydroxy-5mg-methylphenyl) benzotriazole; 2-(5-tert-butyl-2-hydroxyphenyl)benzotriazole; 2-hydroxy-4-methoxybenzophenone; 2,4-dihydroxybenzophenone; 2,2'-dihydroxy-4-methoxybenzophenone; 2,2',4,4'-tetrahydroxybenzophenone; 4-hydroxybenzophenone	155-159
35	**Volatile aromatic hydrocarbons (VAHs) (13)**	benzene; toluene; ethylbenzene; *m*-xylene, *o*-xylene, *p*-xylene; styrene; isopropylbenzene; isophorone; 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2,4-trichlorobenzene; 1,2,4,5-tetrachlorobenzene (1,2,4,5-TeCB)	52,62,160

Table S2. Spearman correlation analysis between the number of studies and per capita gross regional product and population density for provinces and municipalities of China.

		Number of study
Per capita gross regional product	Correlation coefficient (*r*)	0.51
	Significance level (two-tailed; *p*)	0.003
	N	31
Population density	Correlation coefficient (*r*)	0.59
	Significance level (two-tailed; *p*)	<0.001
	N	31

Table S3. The class of organic contaminants analyzed in Chinese sewage sludge per year.

Year	Analytes
1987	Aromatic amines (AAs); nitrogen-heterocyclic compounds (NHCs)
2001	Phthalate esters (PAEs); polycyclic aromatic hydrocarbons (PAHs)
2002	Alkylphenol polyethoxylates (APEOs); chlorinated hydrocarbons (CHCs); polybrominated diphenyl ethers (PBDEs); polychlorinated naphthalenes (PCNs)
2004	Alkylphenol polyethoxylates (APEOs); Aromatic amines (AAs); bisphenol analogs (BPAs); organochlorine pesticides (OCPs); phthalate esters (PAEs); polychlorinated biphenyls (PCBs); polychlorinated naphthalenes (PCNs); polycyclic aromatic hydrocarbons (PAHs)
2005	Alkylphenol polyethoxylates (APEOs); bisphenol analogs (BPAs); phthalate esters (PAEs); polybrominated diphenyl ethers (PBDEs); polychlorinated biphenyls (PCBs); synthetic musks (SMs)
2006	Alkylphenol polyethoxylates (APEOs); organochlorine pesticides (OCPs); polychlorinated biphenyls (PCBs)
2007	Antibiotics; alkylphenol polyethoxylates (APEOs); organochlorine pesticides (OCPs); polybrominated diphenyl ethers (PBDEs); polychlorinated biphenyls (PCBs); polychlorinated dibenzo-*p*-dioxins and dibenzofurans (PCDD/Fs); polycyclic aromatic hydrocarbons (PAHs); volatile aromatic hydrocarbons (VAHs)
2008	Organochlorine pesticides (OCPs); perfluorinated compounds (PFCs); phthalate esters (PAEs); polychlorinated biphenyls (PCBs); polychlorinated naphthalenes (PCNs); polycyclic aromatic hydrocarbons (PAHs); synthetic musks (SMs)
2009	Antibiotics; alkylphenol polyethoxylates (APEOs); bisphenol analogs (BPAs); hormones; polybrominated diphenyl ethers (PBDEs); polychlorinated biphenyls (PCBs); polycyclic aromatic hydrocarbons (PAHs); synthetic musks (SMs)
2010	Alkylphenol polyethoxylates (APEOs); azole antifungals (AAFs); bisphenol analogs (BPAs); hormones; perfluorinated compounds (PFCs); polybrominated diphenyl ethers (PBDEs); polycyclic aromatic hydrocarbons (PAHs); synthetic musks (SMs)
2011	Antibiotics; alkylphenol polyethoxylates (APEOs); bisphenol analogs (BPAs); hormones; parabens; perfluorinated compounds (PFCs); pharmaceuticals; polybrominated diphenyl ethers (PBDEs); polychlorinated biphenyls (PCBs); polychlorinated dibenzo-*p*-dioxins and dibenzofurans (PCDD/Fs); polycyclic aromatic hydrocarbons (PAHs); short chain chlorinated paraffins (SCCPs); siloxanes; synthetic musks (SMs); triclosan and triclocarban (TCS + TCC); ultraviolet stabilizers (UV Stabilizers)
2012	Antibiotics; alkylphenol polyethoxylates (APEOs); azole antifungals (AAFs); bisphenol analogs (BPAs); hormones; organometals (OMs); perfluorinated compounds (PFCs); pharmaceuticals; polybrominated diphenyl ethers (PBDEs); polychlorinated dibenzo-*p*-dioxins and dibenzofurans (PCDD/Fs); polycyclic aromatic hydrocarbons (PAHs); short chain chlorinated paraffins (SCCPs); substituted polycyclic aromatic hydrocarbons (S-PAHs); synthetic musks (SMs); ultraviolet stabilizers (UV Stabilizers); volatile aromatic hydrocarbons (VAHs)
2013	Antibiotics; azole antifungals (AAFs); hydroxylated polybrominated diphenyl ethers (OH-PBDEs); methoxylated polybrominated diphenyl ethers (MeO-PBDEs); organochlorine pesticides (OCPs); perfluorinated compounds (PFCs); pharmaceuticals; phthalate esters (PAEs); polybrominated diphenyl ethers (PBDEs); polychlorinated biphenyls (PCBs); polychlorinated dibenzo-*p*-dioxins and dibenzofurans (PCDD/Fs); polycyclic aromatic hydrocarbons (PAHs); short chain chlorinated paraffins (SCCPs); siloxanes
2014	Antibiotics; alkylphenol polyethoxylates (APEOs); bisphenol analogs (BPAs); chlorinated hydrocarbons (CHCs); dechlorane plus (DPs); hexabromocyclododecanes (HBCDs); hormones; novel brominated flame retardants (N-BFRs); organophosphate esters (OPs); pharmaceuticals; phenolic compounds (PCs); phthalate esters (PAEs); polybrominated diphenyl ethers (PBDEs); polychlorinated biphenyls (PCBs); polychlorinated naphthalenes (PCNs); polycyclic aromatic hydrocarbons (PAHs); quaternary ammonium compounds (QACs); siloxanes; substituted polycyclic aromatic hydrocarbons (S-PAHs); synthetic musks (SMs); triclosan and triclocarban (TCS + TCC); ultraviolet stabilizers (UV Stabilizers)
2015	Antibiotics; aromatic amines (AAs); bisphenol analogs (BPAs); hexabromocyclododecanes (HBCDs); hormones; organophosphate esters (OPs); perfluorinated compounds (PFCs); polybrominated diphenyl ethers (PBDEs); polycyclic aromatic hydrocarbons (PAHs); synthetic phenolic antioxidants (SPAs); volatile aromatic hydrocarbons (VAHs)

Table S4. Regulations on sewage sludge in China. National Standards are often referred to as "GB Standards", which are consistent across all of China and are developed for technical requirements. Industry Standards are developed and applied when no National GB Standard exists, but where a unified technical requirement is needed for a specific industry sector in China. Standards can be identified as mandatory or voluntary by their prefix code. GB: Mandatory National Standards; GB/T: Voluntary National Standards; CJ: Mandatory Standards issued by the Ministry of Housing and Urban-Rural Development of China; CJ/T: Voluntary Standards issued by the Ministry of Housing and Urban-Rural Development of China.

Level	Type	Name	Issue date	Implementation date
National Standards	Mandatory	Control standards for pollutants in sludges from agricultural use (GB 4284-84)	May 18, 1984	March 1, 1985
		Discharge standard of pollutants for municipal wastewater treatment plant (GB 18918-2002)	December 24, 2002	July 1, 2003
		Quality of sludge from municipal wastewater treatment plant (GB 24188-2009)	July 8, 2009	June 1, 2010
	Voluntary	Disposal of sludge from municipal wastewater treatment plant – Classification (GB/T 23484-2009)	April 13, 2009	December 1, 2009
		Disposal of sludge from municipal wastewater treatment plant – Quality of sludge for co-landfilling (GB/T 23485-2009)	April 13, 2009	December 1, 2009
		Disposal of sludge from municipal wastewater treatment plant – Quality of sludge used in gardens or parks (GB/T 23486-2009)	April 13, 2009	December 1, 2009
		Disposal of sludge from municipal wastewater treatment plant – Quality of sludge used in land improvement (GB/T 24600-2009)	November 15, 2009	June 1, 2010
		Disposal of sludge from municipal wastewater treatment plant – Quality of sludge used in separate incineration (GB/T 24602-2009)	November 15, 2009	June 1, 2010
		Disposal of sludge from municipal wastewater treatment plant – Quality of sludge used in making brick (GB/T 25031-2010)	September 2, 2010	May 1, 2011
Industry Standards	Mandatory	Wastewater and sludge disposal standard for municipal wastewater treatment plants (CJ 3025-1993)	July 17, 1992	January 1, 1994
		Quality of sludge from municipal wastewater treatment plant (CJ 247-2007)	January 29, 2007	October 1, 2007
		The disposal of sludge from municipal wastewater treatment plant – The quality of sludge used for afforestation in gardens or forests (CJ 248-2007)	March 1, 2007	October 1, 2007
	Voluntary	Determination method for municipal sludge in wastewater treatment plant (CJ/T 221-2005)	December 30, 2005	March 1, 2006

Level	Type	Name	Issue date	Implementation date
		The disposal of sludge from municipal wastewater treatment plant – The classification (CJ/T 239-2007)	January 29, 2007	October 1, 2007
		The disposal of sludge from municipal wastewater treatment plant – Sludge quality for co-landfilling (CJ/T 249-2007)	January 29, 2007	October 1, 2007
		The disposal of sludge from municipal wastewater treatment plant – The quality of sludge used in making brick (CJ/T 289-2008)	August 11, 2008	January 1, 2009
		The disposal of sludge from municipal wastewater treatment plant – Sludge quality for separate incineration (CJ/T 290-2008)	August 11, 2008	January 1, 2009
		The disposal of sludge from municipal wastewater treatment plant – Sludge quality for land improvement (CJ/T 291-2008)	August 11, 2008	January 1, 2009
		Disposal of sludge from municipal wastewater treatment plant – Control standards for agricultural use (CJ/T 309-2009)	April 7, 2009	October 1, 2009
		Disposal of sludge from municipal wastewater treatment plant – Quality of sludge used in the production of cement clinker (CJ/T 314-2009)	August 10, 2009	December 1, 2009
		Disposal of sludge from municipal wastewater treatment plant – Quality of sludge used in forestland (CJ/T 362-2011)	February 17, 2011	June 1, 2011

Table S5. The maximum tolerance concentration (MTC) of organic contaminants in sewage sludge derived from Chinese standards. The name of each regulation is shown in Table S4. Land improvement: sewage sludge used in saline-alkali soil, desertified land, and abandoned minefields. Class A: sewage sludge used in agricultural soils; Class B: sewage sludge used in agricultural soils not for vegetable and cereal production. Acidic soil: pH < 6.5; Neutral and alkaline soil: pH ≥ 6.5. B(a)P: benzo[a]pyrene; PAHs: polycyclic aromatic hydrocarbons; PCDD/Fs: polychlorinated dibenzo-*p*-dioxins and dibenzofurans; PCBs: polychlorinated biphenyls; AOX: adsorbable organic halogen (calculated by chlorine); VPCs: volatile phenolic compounds. GB: Mandatory National Standards; GB/T: Voluntary National Standards; CJ: Mandatory Standards issued by the Ministry of Housing and Urban-Rural Development of China; CJ/T: Voluntary Standards issued by the Ministry of Housing and Urban-Rural Development of China.

Standard code	**Disposal**	**B(a)P (μg/g dw)**		**PAHs (μg/g dw)**	**PCDD/Fs (ng TEQ/kg dw)**		**PCBs (μg/g dw)**		**AOX (μg/g dw)**		**VPCs (μg/g dw)**
		Acidic soil	Neutral and alkaline soil		Acidic soil	Neutral and alkaline soil	Acidic soil	Neutral and alkaline soil	Acidic soil	Neutral and alkaline soil	
CJ 247-2007	Discharge										40
GB 18918-2002	Discharge	3	3		100	100	0.2	0.2	500	500	
GB 24188-2009	Discharge										40
GB 4284-84	Agricultural use	3	3								
CJ 3025-1993	Agricultural use	3	3								
CJ/T 309-2009	Agricultural use (Class A)	2	2	5							
	Agricultural use (Class B)	3	3	6							
CJ 248-2007	Using in afforestation in gardens and forests	3	3		100	100	0.2	0.2	500	500	
GB/T 23486-2009	Using in gardens and parks	3	3						500	500	

Standard code	Disposal	B(a)P (μg/g dw)		PAHs (μg/g dw)	PCDD/Fs (ng TEQ/kg dw)		PCBs (μg/g dw)		AOX (μg/g dw)		VPCs (μg/g dw)
		Acidic soil	Neutral and alkaline soil		Acidic soil	Neutral and alkaline soil	Acidic soil	Neutral and alkaline soil	Acidic soil	Neutral and alkaline soil	
CJ/T 362-2011	Using in forestland	3	3	6							
CJ/T 291-2008	Using for land improvement	3	3		100	100	0.2	0.2	500	500	
GB/T 24600-2009	Using for land improvement						0.2	0.2	500	500	40
CJ/T 249-2007	Cover material for co-landfilling										40
GB/T 23485-2009	Cover material for co-landfilling										40
CJ/T 289-2008	Using in making brick										40
GB/T 25301-2010	Using in making brick										40

Table S6. The numbers of wastewater treatment plants in cities and counties of China. NA: not available. *: the date until the second season (June) of 2015. Data from the Ministry of Housing and Urban-Rural Development of China.

Year	WWTPs in city	WWTPs in county/town	Year	WWTPs in city	WWTPs in county/town
1975	28	NA	2001	452	NA
1978	37	NA	2002	537	NA
1980	35	NA	2003	612	NA
1985	51	NA	2004	708	117
1990	80	NA	2005	792	117
1991	87	NA	2006	815	205
1992	100	NA	2007	883	322
1993	108	NA	2008	1018	427
1994	139	NA	2009	1368	637
1995	141	NA	2010	1444	1052
1996	309	NA	2011	1848	1287
1997	307	NA	2012	1947	1393
1998	398	NA	2013	1999	1514
1999	402	NA	2014	2107	1610
2000	427	NA	2015*	2149	1653

Table S7. The discharge (million metric tons) of industrial wastewater, domestic wastewater, and the total discharge in each province/municipality and its capital city of China in 2013. Percentage (%) indicates the ratio of wastewater discharge between capital city and corresponding province/municipality. The numbers of 1, 2, and 3 refer to industrial wastewater, domestic wastewater, and total discharge, respectively. *: municipality. Data from China Statistical Yearbook on Environment 2013.

Province/ Municipality	Discharge of Industrial wastewater	Discharge of domestic wastewater	Total discharge of wastewater	Capital city	Discharge of Industrial wastewater	Discharge of domestic wastewater	Total discharge of wastewater	Percentage 1	Percentage 2	Percentage 3
Beijing*	95	1350	1445	Beijing*	95	1350	1445	100	100	100
Tianjin*	187	655	842	Tianjin*	187	655	842	100	100	100
Shanghai*	454	1772	2226	Shanghai*	454	1772	2226	100	100	100
Chongqing*	335	1089	1424	Chongqing*	335	1089	1424	100	100	100
Hebei	1099	2010	3108	Shijiazhuang	258	348	605	23	17	19
Shanxi	478	902	1380	Taiyuan	41	183	224	9	20	16
Inner Mongolia	370	699	1069	Hohhot	21	119	140	6	17	13
Liaoning	783	1561	2344	Shenyang	85	347	432	11	22	18
Jilin	427	750	1176	Changchun	55	208	263	13	28	22
Heilongjiang	478	1052	1530	Harbin	45	336	381	9	32	25
Jiangsu	2206	3735	5941	Nanjing	253	523	776	11	14	13
Zhejiang	1637	2550	4186	Hangzhou	392	539	931	24	21	22
Anhui	710	1951	2661	Hefei	60	421	481	8	22	18
Fujian	1047	1543	2589	Fuzhou	47	323	370	4	21	14
Jiangxi	682	1386	2068	Nanchang	106	335	441	16	24	21
Shandong	1812	3131	4943	Jinan	86	298	384	5	10	8
Henan	1308	2817	4124	Zhengzhou	118	486	605	9	17	15
Hubei	850	2088	2938	Wuhan	188	665	853	22	32	29
Hunan	923	2145	3068	Changsha	40	430	470	4	20	15
Guangdong	1705	6913	8618	Guangzhou	214	1352	1566	13	20	18

Province/ Municipality	Discharge of Industrial wastewater	Discharge of domestic wastewater	Total discharge of wastewater	Capital city	Discharge of Industrial wastewater	Discharge of domestic wastewater	Total discharge of wastewater	Percentage 1	Percentage 2	Percentage 3
Guangxi	895	1356	2251	Nanning	98	267	364	11	20	16
Hainan	67	294	361	Haikou	8	111	119	12	38	33
Sichuan	649	2426	3074	Chengdu	105	999	1104	16	41	36
Guizhou	229	701	930	Guiyang	23	218	240	10	31	26
Yunnan	418	1146	1565	Kunming	48	489	537	11	43	34
Tibet	4	46	50	Lhasa	4	21	25	95	46	50
Shaanxi	349	972	1320	Xi'an	78	327	404	22	34	31
Gansu	202	448	649	Lanzhou	49	140	190	24	31	29
Qinghai	84	136	219	Xining	28	77	105	33	57	48
Ningxia	157	228	385	Yinchuan	62	139	201	39	61	52
Xinjiang	347	659	1007	Urumqi	49	188	237	14	29	24

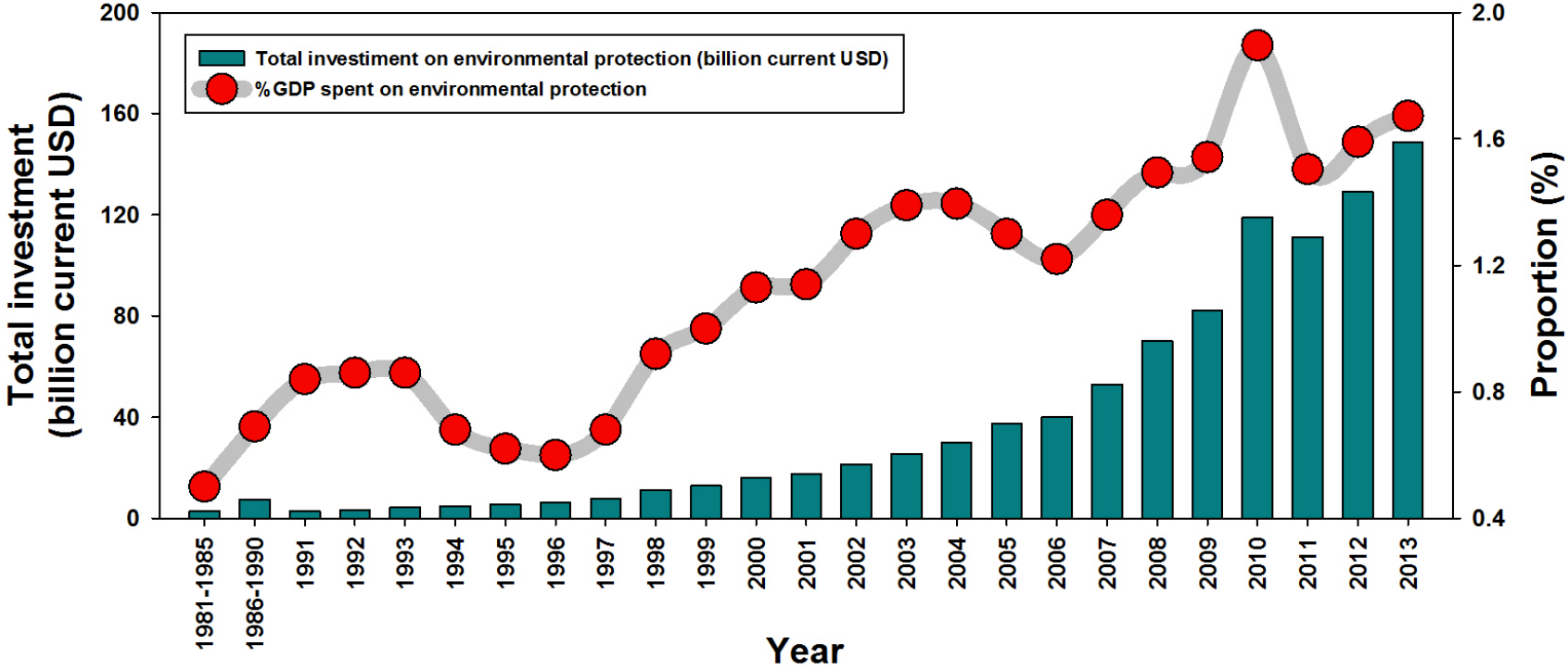

Figure S1. The total investment on environmental production (billion current USD) and the proportion of the investment to gross domestic product (GDP) of China from 1981 to 2013. Data from China Statistical Yearbook (2014), China Environment Bulletin (1989-2014), and a reference.[161]

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