

Supplementary Data

Engineered silver nanoparticles in terrestrial environments: A meta-analysis shows that the overall environmental risk is small

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Table SI. Reported total silver concentrations in various technical and environmental compartments including sewage sludge, the effluent, in natural and sludge-treated soils, sediments, and waters.

Compartments	Reported total silver concentrations			References
	Mean	Median	Range	
WWTP effluent ($\mu\text{g/L}$)	69	0.8	0.004-2,500	Reference ¹⁻¹²
WWTP sludge (mg/kg)	281	17	0.1-27,000	Reference ^{6, 10, 13-25}
Water (ng/L)	366	2.7	0.01-38,000	Reference ^{2-4, 8, 11, 26-33}
Sediment (mg/kg)	7.4	0.8	0.0003-100	Reference ^{6, 8, 11, 29, 34-39}
Sludge-treated soil (mg/kg)	12	12	0.1-133	Reference ^{1, 10, 16, 22, 23, 25, 29, 40}

WWTP: waste water treatment plant.

Table S2. Reported percentage of silver sulfidated species (%) in both sludge and soils

	Range (%)	References
Sludge		
Stockpiled biosolid	60-95	Reference ^{13, 23}
Pilot WWTP produced sludge	85-100	Reference ⁴¹⁻⁴⁸
Soil		
Sludge or Ag ₂ S-NP treated soil	87-100	Reference ^{23, 43, 48, 49}
Ag-NP treated soil	0-95	Reference ⁴⁹⁻⁵⁴
AgNO ₃ treated soil	0-96	Reference ^{49, 51-53, 55, 56}

WWTP: waste water treatment plant.

Table S3. Available silver concentrations in soils and the toxic effect thresholds of various silver forms for seed germination or plant growth.

	Range ($\mu\text{g/L}$)	References
In soils		
Water extracted Ag	Undetectable to 5	Reference ^{43, 48, 57-60}
CaCl ₂ /DTPA extracted Ag	Undetectable to 5	Reference ^{23, 43, 48, 51, 61}
No-observed-effect concentrations (NOECs)		
Ag ₂ S	100,000 to 771,000	Reference ⁶²⁻⁶⁴
NanoAg	67 to 500	Reference ⁶⁴⁻⁶⁶
AgNO ₃	5.38 to 75,000	Reference ^{62-64, 66-68}
AgCl	7,500 to 750,000	Reference ^{62, 63}
NaAgS ₂ O ₃	10,000 to 1000,000	Reference ^{62, 63}

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