



Rethinking waste for nutrient and energy recovery: challenges and opportunities for trace element biogeochemists

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Millions of tons of residual by-products with valuable resources (e.g. nutrients) such as agricultural waste (manure), municipal waste (biosolids, food scraps and other municipal solid waste), and industrial sludges are produced worldwide. There is increasing evidence that land application of a variety of residuals may provide agronomic and environmental benefits that were either not previously well understood and/or that are critical to addressing emerging environmental issues associated with climate change. We propose a special symposium focus on scientific investigations of biogeochemical cycling of potentially toxic trace elements, nanoparticulates and other potentially toxic substances in residual by-products. Effects on soil and water ecosystems, and their long-term bioavailability in residual-amended soils will also be considered.