Composting of Sewage Sludge: Organic Matter Transformations and Chemical Characterization of the Product. (A05-chen064238-Oral)

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Abstract:

Compost maturity and/or stability reflects the degree of decomposition of the organic matter (OM). Since stability of natural OM is a relative term, defining it is not a trivial challenge. A series of chemical, physico-chemical and spectroscopic determinations is required to assess compost maturity. Biosolids obtained from a secondary sewage treatment plant, after anaerobic fermentation were composted along with woodchips and the OM transformations during the process were studied, using 13C-NMR, DRIFT, FTIR and dissolved OM (DOM). A decrease in DOM over composting time was observed and suggested as an indicator for compost maturity. The relative concentration of aromatic and carboxyl functionalities increased, whereas the content of aliphatic moieties especially carbohydrates decreased. Compost derived HS which are young relative to soil HS, differ from the latter, mostly in their high level of aliphatic and polysaccaride components, which tend to decompose during composting. The spectroscopic tools used suggest that DOM extracted from composts is one of the best indictors for compost maturity. In addition, DOM and its fractions were found to be the most effective chelating agents for iron.

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