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New Perspectives for Sewage Sludge Treatment

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The use of stabilized sewage sludge has become a frequently discussed issue. The current analysis identifies potential research gaps in the development of sewage sludge treatment. Together with organic matter and nutrients, sludge contains a range of industrial and household pollutants, including heavy metals, drug and hormone residues, POPs, pathogens.[1,2] A new Sewage Sludge Directive is being prepared at the EU level, but many states already have their strict limits or strategy. Stabilized sludge will cease to be used in agriculture while thermal treatment in pyrolysis or mono-incinerated units will gradually prevail. Sludge char (pyrolysis product) is valuable if the input has not high inorganic pollution.[3] By applying sludge char to the soil, the physical soil properties are improved, such as fertility, water retention, drainage permeability, aeration, soil structure; contained phosphorus is gradually released. Compared to sludge char, sewage sludge ash is not sustainable for direct use in agriculture.[4] Phosphorus is not in bioavailable form and has only a positive liming effect.[4] Therefore, it is necessary to treat ash in processing plants where various substances from ash are recovered: phosphorus (fertilizer, H_3PO_4), iron salts, aluminium salts, metal concentrate, silicate sand and other minerals.[5] In this work, we review relevant thermochemical processes and current product treatment/utilization issues for continuing applied research according to European union strategic calls and industry demand.

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