



TRIF Auto - Evaluating the effect of autoclaving on the rate of bioprocessing of waste

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Aims

The principal aims of this research were:

- (i) to determine whether autoclaving changes the rate of biodegradation in composting and anaerobic digestion and to what extent;
- ii) to determine whether the product from bioprocessing meets PAS 100 requirements for heavy metal concentration;
- (iii) to examine potential effects of thermal pre-treatment on gaseous emissions during subsequent bioprocessing

Autoclaved waste



- Autoclaved MSW

The material used in the research was produced from autoclaving of mixed MSW which is then passed through a trommel screen for mechanical sorting. Initial trials indicated that this part of the waste, which is high in organic material, has biodegradation characteristics distinctly different from the untreated material. The material was composted and anaerobically digested to determine what effect the autoclaving has had on the process kinetics.



- Trial reactors

Partners and Programme

Established research units at Leeds University, Southampton University and Cemagref (Rennes, France) with extensive experience with composting and anaerobic digestion worked at laboratory, pilot and full scale. The test programme was designed to determine the optimum operating conditions for bioprocessing the material. The prime variables in materials mixtures studied were the quantity and type of seed organisms, and the level of nutrients required. This enabled the research team to evaluate the likely impact of autoclaving on full scale bioprocesses.

Results

Initial indications are that autoclaving could substantially reduce processing times as well as facilitating compliance with ABPR requirements. In addition heavy metal analysis has indicated that the composted and/or digested material could comply with the PAS 100 requirements for high grade compost and if this is the case it could open up new markets for treated organic derived from mixed MSW collection. Heavy metal balances will be carried out to evaluate this aspect of product quality.

Collaborators:

University of Leeds
Cemagref