

PLATE 13

ACTIVE SLUDGE PASTEURISATION (ASP) PROCESS

1. Suitable for the following sludge types:

- untreated primary
- lagoon stabilised
- anaerobically digested
- aerobically digested
- ATAD
- Dual digested

2. Dewatering requirements:

- minimum 15% dry solids content
- higher dry solids content is preferred

3. Stabilisation requirements:

- none required

4. Process description

This proprietary process was developed in South Africa which negates the need for stabilisation of biosolids while pasteurising and enriching it with the nutrients N and P.

Dewatered sludge (stabilised or non-stabilised primary, secondary, tertiary sludge) of at least 15%-20% dry solids is fed into the ASP process. It consists primarily of an alkaline reactor, acid reactor and drier.

Anhydrous ammonia (NH_3) is added to the sludge which raises the temperature and pH of the sludge to about 60°C and 12 respectively. This step provides pasteurisation of the sludge through high pH, high temperature and ammonia toxicity. In addition the NH_3 reacts with the organic matter in the sludge fixating part of the added NH_3 .

In the second stage of the process phosphoric acid (H_3PO_4) is added to neutralise the mixture to 7.0 while raising the temperature to about 70°C. The heat produced is utilised by a heat exchanger for the overall process. The non chemically bound NH_3 is evaporated and reused. Dry warm air is blown over a thin layer of final product to evaporate the moisture and dry the sludge.

The dried sludge is separated from the moist air in a cyclone separator to produce the final pelletised or granular product. It has a moisture content of about 15% (w/w) and is not unlike artificial fertiliser in size and appearance. It is registered as a quality grade agricultural fertiliser in South Africa.

5 Biosolids Classification (EPA Victoria Draft (2002) Guidelines for Environmental Management)

The biosolids classification for the incineration thereof is not specified in the EPA Victoria Draft (2002) Guidelines for Environmental Management. It is highly likely that it will be classified as a Class T1 because of the high degree of stability achieved through chemical heat treatment, high pH and high dry solids content.

6. Market for final product

Pelletised fertiliser market - not established yet. Application depending on classification

7. Benefits

- no stabilisation of sludge required
- dramatic reduction in sludge volume
- valuable marketable product
- containment of odours and dust
- compact process requiring small footprint
- no external energy requirements
- modular design to suit all treatment plant sizes

8. Limitations

- expected high capital cost
- expected high O&M cost
- no established market for product
- new technology, not proven with limited general experience available

9. Costs (ASP Process)

The process operator is likely to be contracted out. A typical contract cost excluding dewatering cost and transport cost to the process plant is estimated to be in the order of \$50/tonne ds.

