Sustainable waste management

In the United Kingdom, Cardiff University researchers are investigating different forms of sustainable waste management. At the Cardiff University Waste Research Station, the team is examining four main avenues – vermicomposting, traditional composting, energy from waste and life cycle assessment modelling.

Studies relating to metal recycling have shown this approach to be extremely energy efficient. For example, recycling copper from scrap requires about six times less energy than used to produce copper from raw ore. Furthermore, large-scale requirements for some metals could give recycling additional economic benefits, apart from the environmental rewards.

Gases generated within landfill sites can be tapped after a particular site has been completely filled. For the present, potential methane emissions will total about 660,000 t/y, enough to fulfil roughly 1 per cent of Britain's total energy requirements. Another potential method for exploiting stored energy from landfill sites is to burn waste along with coal, thereby reducing the total fossil fuel consumption needed for power generation. However, this would mean processing the waste to produce a homogenous material containing fewer large particles and less water so as to limit inconsistencies during combustion. In addition, a facility to reclaim valuable metals from the waste, before drying and shredding the residues into fuel pellets, would have to be established. At sites where small amounts of waste is available, gasification and pyrolysis can offer a suitable avenue. *Contact: Dr. A. J. Griffiths, School of Engineering, Cardiff University, P.O. Box 925, Queen's Buildings, The Parade, Newport Road, Cardiff CF24 0YF, the United Kingdom. Tel: +44 (29) 2087 4316; E-mail: griffiths AJ2@ cardiff.ac.uk; Website: www. waste research.co.uk.*