

The Development of Low Cost Landfilling Techniques for Emerging Countries

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Abstract

The UK Department for International Development has commissioned a project with the aim of demonstrating and evaluating through field trials improved low-cost landfilling techniques suitable for application in developing countries. A particularly important objective of the project is to demonstrate how, with better disposal practices, the protection of water resources can be greatly enhanced. The field-scale landfills will be located in Thailand and South Africa to enable the assessment of tropical and temperate climates on the landfilling techniques used. Beyond the protection of water resources the field studies will demonstrate a number of additional benefits including:

- Illustration of low-cost techniques to confine, place, and cover wastes in a more environmentally acceptable manner;
- reduction of wind-blown litter and waste burning (by operations which rapidly cover waste deposits, and by better management to control on-site activities of scavengers);
- improvement of environmental quality in the vicinity of the deposits (eliminating smoke emissions and litter and reducing the potential for disease due to vector activity on wastes);
- demonstration of routine monitoring to confirm the environmental acceptability of landfilled wastes.

The programme of work began in 1999, and is scheduled for completion in 2003. The initial outputs were a literature review characterising the state of the art in this area and preparing detailed designs for the two pilot scale sites. This work has been completed for both countries and currently the sites are being filled with wastes using simple, readily available plant such as a JCB type backhoe excavator.

This paper will review the project to-date, providing a summary of the state of the art of low cost landfill techniques and an overview of the design of each pilot landfill. Data gained from the operational period including filling rates, bulk densities, rates of leachate evolution, leachate quality will be presented and compared to conventional landfill. Other operational information gathered during the filling phase will also be summarised.

The presentation will incorporate video footage from each location to illustrate the techniques evaluated.

Interim conclusions of the work will be presented as well as lessons learned.

The presentation will conclude with our plans for dissemination of the overall conclusions of the project to decision makers and operational managers in emerging countries via the world Bank collaborative working group, regional workshops and through the internet.