

**LANDFILL MANAGEMENT IN ASIA- NOTIONS ABOUT FUTURE APPROACHES  
TO APPROPRIATE AND SUSTAINABLE SOLUTIONS**

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Rapid population growth and urbanization in developing countries have led to the generation of enormous quantities of solid wastes and consequential environmental degradation. An estimated 8 million tons of municipal solid waste is produced per day in developing countries. The open dump approach still remains the predominant waste disposal practice. In India and other developing countries, more than 90% of the solid waste is disposed of in open dump. As the disposal in open dumps is creating considerable nuisance and environmental problems, identification and upgrading of such sites is one of the most important steps towards sustainable solid waste management system.

Most guidelines on design and operation of sanitary landfill management are based on technologies and practices suited to the conditions and regulations found in high-income countries. These are often based on extremely high levels of protection for aquifers, low gaseous emissions, high levels of leachate treatment and extended after-care period. Often the lack of technical knowledge, financial and human resources coupled with existing policies limit the extent to which landfills can be built, operated and maintained at minimum standards of sanitary practice. Meeting all specific outlines of sanitary landfills may be technologically and economically impractical in developing countries. Therefore, the objectives for transition should be to meet the more important aspects to the extent possible under the existing set of technical and financial circumstances.

This paper presents the comprehensive output of researchers from China, India, Sri Lanka and Thailand making suggestion on how to produce a sound landfill technology in this region. Primary focus has been given to the upgrading of the prevailing dumpsites, improving on first hand the reduction of both liquid and gaseous emissions. Further to that the future use of an upgraded location after rehabilitation considering land requirement and additional volumes for future sanitary landfills is considered and its pre-requisites are elaborated.

Especially the distinct influence of monsooning conditions, alternating perching periods and phases of intensive downpour landfills in the region is discussed. The needs to adopt the operation and the cover system will be dealt with in detail as practical approaches to improve landfill in tropical countries being achieved only by proper understanding of the water management.

Key technical issues that will be addressed are based on investigations on the degradation in landfills and generation of landfill gas/leachate, landfill liners and covers, landfill bioreactor, and methane oxidation in landfill cover. In combination with these issues further focus is given to simple and efficient pre-treatment technology like composting.

Our discussion and resulting proposal aims at an affordable and appropriate waste disposal practices and policies with provision for flexibility. The findings on the management of landfills and experience gained in undertaking this research will provide the basis for establishing and operating cost-effective sanitary landfill sites in Asia.