

Bio-reactor landfill is the solution for solid waste management

Four-nation research initiative set to enter third phase

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Once upon a time, there was a beautiful lake in the heart of Chennai city. It was not big enough to be a source of water, but it formed a pleasant feature in the landscape, a favourite dip-spot for birds and children. But some time in the early 1970s, they began dumping city wastes into it. The water disappeared yielding place to garbage. However, over time, the Government sealed it and built a monument for the ancient Tamil poet-sage, Thiruvalluvar.

The monument is called Valluvar Kottam. If only the lake was there today! In fact, there were a few other smaller lakes — or large ponds — in the neighbourhood, and they all disappeared in the same fashion.

DUMPSITES

What happened to them underlines the challenges posed by a problem that has been engaging the attention of the intelligentsia for some time — sustainable solid waste management. The lakes

are gone, but the city has grown and there is more garbage and, hence, more need for dumpsites. Urban Asia generates around 750,000 tonnes of solid waste each day and this is estimated to rise to 1.8 million tonnes by 2025.

The only way to tackle this is to recycle.

CONTAINMENT AND RECYCLING

Of the many researches that have been working on this is one called Asian Regional Research Programme on Environmental Technology (ARRPET), conducted jointly by four institutions in China, Thailand, Sri Lanka and India, and funded by the Swedish International Development Agency.

The Indian agency is the Anna University, Chennai.

The programme, which began in 2001, has gone into many ways of waste containment and recycling and is now nearing the conclusion of the second phase.

The experiments involved simulating landfills in tanks called 'lysimeters' and observing them over many years.

After seven years, the four-nation study has scientifically validated something that is intuitive — that the use of bio-reactor landfill is the way to go about it — but in the process has also determined that there is a good business model behind it.

The problem with open dumpsites is that when it rains, the leachate seeps through the soil and contaminates the neighbourhood. In a bio-reactor landfill, the leachate is trapped and put back into the dump.

The micro-organisms in the leachate help faster degradation of the waste — in about three years.

If this degradation happens in the absence of oxygen (anaerobic), then landfill gas — mainly methane — will come out, which could be piped away for use.

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